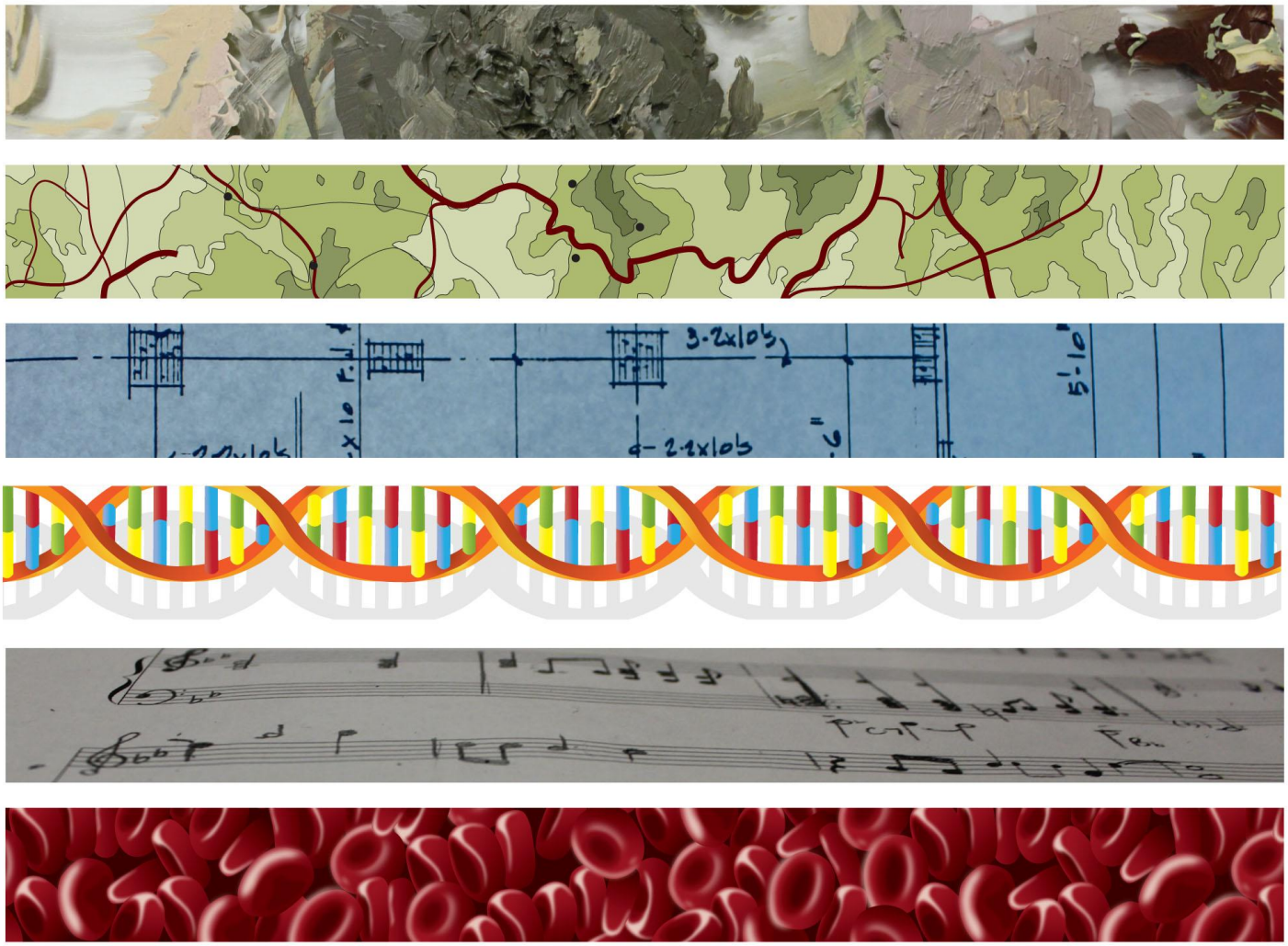
RESEARCH & CREATIVE ACHIEVEMENT WEEK 2012



6th ANNUAL DISCOVERING TOMORROW RESEARCH & CREATIVE ACHIEVEMENT WEEK

March 26 – 30, 2012

East Carolina University

Mendenhall Student Center

A week-long celebration recognizing research, scholarship, artistry and other forms of creative activity of ECU undergraduate and graduate students.

Research and Creative Achievement Week

March 26-30, 2012

Mendenhall Student Center

Research and Creative Achievement Week

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Letter from the Vice Chancellor

March 2012

Dear ECU Community:

The Division of Research and Graduate Studies invites you to participate in the **ECU Research and Creative Achievement Week** on the campus of East Carolina University. The week of **March 26-30, 2012**, has been set aside to highlight the extraordinary accomplishments of our students in research and creative activities. Because the number of events has increased, events will also be held the previous week. It is the hope of the organizing committee that you will attend, as much as your time allows, in order to see and hear what our students have achieved. In addition, we hope that you will strongly encourage your students to attend. The event is sponsored by a partnership of these entities: Division of Research & Graduate Studies, Division of Academic Affairs, Doctoral Student Association, Graduate and Professional Student Senate, Office of Undergraduate Research, *Sigma Xi*, The Scientific Research Society, and Graduate School.

The theme of the week's activities is "***Discovering Tomorrow***." The Research and Creative Achievement Week is a showcase of graduate and undergraduate student research and creative activities that are taking place here at ECU. There will be over 315 student presentations, an impressive number that reflects the current growth in research and creative activities at ECU in a variety of fields and disciplines. Oral presentations will take place on Monday, March 26 (Graduate Day) and Wednesday, March 28 (Undergraduate Day) with posters on display for an additional day each.

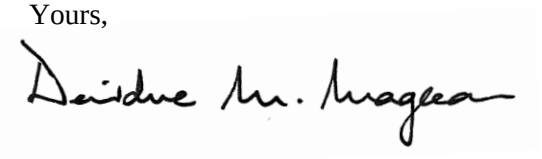
In addition to presentations by students, we also will be recognizing four of our own outstanding faculty for their research accomplishments through their individual research presentations and at an awards reception. Faculty inventors who are cited in U.S. patents issued in 2011 will also be recognized. As a kick-off event, on March 21 the RENCI Visualization Challenge will be held. The International Scholar Symposium will be held on March 27. The Scholar-Teacher Awards and Symposium at which ten faculty will be recognized for the integration of research into their teaching, as well as the College of Education Lecture Series and the Sigma Xi Lecture, will all be held on Thursday, March 29. The whole week is capped off with the announcement of the student participant winners on Friday, March 30.

Please consider encouraging your classes to attend specific discipline-related oral student presentations on Monday and Wednesday (March 26 and 28) or to view the poster presentations Monday through Thursday.

Visit the RCAW blog at **http://blog.ecu.edu/sites/rcaw/** for a schedule of events (click on Schedule of Events or Presentation Schedule).

What an exciting week and a great experience for our students. We look forward to seeing you at the Mendenhall Student Center and participating in these events.

Yours,



Deirdre M. Mageean, PhD
Vice Chancellor

2012 PROGRAM SPONSORS

The Division of Research and Graduate Studies

Division of Health Sciences

Graduate and Professional Student Senate

The Office of Undergraduate Research

Office of University Honors

Undergraduate Research/Creative Activities Committee

Doctoral Student Association Brody School of Medicine

Scientific Research Society of *Sigma Xi*

The Graduate School

Research and Creative Achievement Week
Planning Committee

The RCAW Committee comprises of students, staff, and faculty. They are listed as follows:

PLANNING COMMITTEE	
Tom McConnell: The Graduate School, Chair RCAW	**Rich Franklin**: Microbiology and Immunology, Brody School of Medicine
Mary Farwell: Biology, Research and Graduate Studies, Co-Chair RCAW	**Elizabeth Hodge**: Business and Information Technologies Education, College of Education
Abbie Brown: Mathematics, Science, and Instructional Technology Education, College of Education	**Derrick Isler**: The Graduate School
Evelyn Brown: Engineering, College of Technology and Computer Science	**Donna Kain**: English, Thomas Harriot College of Arts and Sciences
Brooke Chamberlain: Student, College of Business	**David Martinson**: Student, Microbiology and Immunology, President, Doctoral Student Association
Paul DeVita: Kinesology, College of Health and Human Performance	**Keon Pettiway**: Student, School of Art and Design
Christyn Dolbier: Psychology, Thomas Harriot College of Arts and Sciences	**Margaret Pio**: Research and Graduate Studies
Melani Duffrin: Nutrition and Dietetics, College of Human Ecology	**Drew Rockett**: Student, Biochemistry, and Vice President, Graduate and Professional Student Senate
Nehad Elsawaf: Economics, Thomas Harriot College of Arts and Sciences	**Mark Stevens**: Student, Public Health, and President, Graduate and Professional Student Senate
	Amy Tripp: The Graduate School

TECHINCAL COMMITTEE	
Josh Brown **Tony Cooke** **Wendy Creasey** **Laurie Godwin**	**Derrick Isler** **Matthew Powell** **Ginny Sconiers** **John Southworth**

We would like to give a special thanks to ECU School of Art & Design graphic design students Kendall Walston and Patrick Schrader for devoting so much time and effort to Research and Creative Achievement Week. Kendall and Patrick designed a beautiful program cover and poster for RCAW 2012 as well as an RCAW logo that we will use in the years to come!

Event Schedule
March 26th -30th

RENCI Visualization Challenge will be held March 21, 2:00 – 4:00 pm, Brewster C-202

MONDAY, MARCH 26:

- Graduate Student Presentations all day (8:30 am – 6:00 pm)
- Oral Presentations, Mendenhall Great Room 1
- Oral Presentations, Mendenhall Great Rooms 2+3
- Oral Presentations, Mendenhall Room 244
- Graduate Posters, Mendenhall Social Room
- Graduate Posters, Mendenhall Room 221
- Graduate Posters, Mendenhall 2nd floor balcony
- Lifetime Achievement Seminar, Mendenhall Room 244 – Dr. Jamie B. Kruse (5:30 – 7:00 pm)

TUESDAY, MARCH 27:

- Science Crossroads (Brody School of Medicine)
- International Scholars Symposium, Mendenhall Room 244 (1:00 – 5:00 pm)
- Graduate Posters will remain up for viewing until 3:00 pm
- Lifetime Achievement Seminar, Mendenhall Room 244 – Dr. Walter J. Pories (5:30 – 7:00 pm)

WEDNESDAY, MARCH 28:

- Undergraduate Student Presentations all day (8:30 am – 6:00 pm)
- Oral Presentations, Mendenhall Great Room 1
- Oral Presentations, Mendenhall Great Rooms 2+3
- Oral Presentations, Mendenhall Room 244
- Undergraduate Posters, Mendenhall Social Room
- Undergraduate Posters, Mendenhall Room 221
- Undergraduate Posters, Mendenhall 2nd floor balcony
- Distinguished Faculty Luncheon (Invitation only) – Lifetime, Five-Year, and Inventors/Innovators Recognition, Mendenhall Great Rooms 2+3 (noon – 1:30 pm)
- North Carolina Literature Into Film, Mendenhall Room 244 (1:30 – 3:00 pm)

THURSDAY, MARCH 29:

- Undergraduate Posters will remain up for viewing until 3:00 pm
- Teacher-Scholar Luncheon (Invitation only), Mendenhall Great Rooms 2+3 (noon – 1:30 pm)
- Teacher-Scholar Symposium, Mendenhall Great Room 1, Mendenhall 244 (1:30 – 4:00 pm)
- Sigma Xi Lecture & Meeting, Mendenhall Room 244 (4:00 – 6:00 pm)

FRIDAY, MARCH 30:

- Student Awards Luncheon (Invitation only), Mendenhall Great Rooms 1+2+3 (noon – 2:00 pm)
    - RENCI VISLAB Challenge Award
    - Visual Art & Design Awards
    - URCA Awards
    - RCAW Awards
    - Thesis/Dissertation Awards

MONDAY, APRIL 2:

- Five-Year Achievement Seminar – Dr. Craig Landry, Mendenhall Room 244 (noon – 1:30 pm)

TUESDAY, APRIL 3:

- Five-Year Achievement Seminar – Dr. Guili Zhang, Speight 129 (5:30 – 7:00 pm)

FACULTY RECOGNITION

RESEARCH AND CREATIVE ACTIVITY

Lifetime Achievement Awards,

Five-Year Achievement Awards,

and

Inventor & Innovator Awards

East Carolina University Achievement Award for Excellence in Research and Creative Activity

Recipients of the Achievement for Excellence in Research and Creative Activity Award are recognized for the originality and excellence of their research and creative activities, as evidenced by sustained high quality work performed at ECU. Recipients of the lifetime achievement award are recognized for accomplishments made across the entire span of their professional career, and recipients of the five year award are recognized for their achievements during five years of continuous service at ECU. All recipients were nominated by their peers in acknowledgement of their achievements. Awardees were selected by the vice chancellor for Research and Graduate Studies upon recommendation of the subcommittee of the Faculty Senate Academic Awards Committee.

Lifetime Achievement Awards:

Walter J. Pories, M.D., Professor, Department of Surgery, Brody School of Medicine

"Diabetes: No Longer a Hopeless Disease"

Dr. Walter J. Pories is a native of Germany who earned his B.A. at Wesleyan University, his M.D. with Honor at the University of Rochester and completed his training in general and cardio-thoracic surgery at Strong Memorial Hospital in 1962. From 1962–1967, he served as the chief of surgery at Wright Patterson Air Force Base during the Viet Nam War and then returned to Rochester as an assistant professor to found the Cancer Center. In 1969, he became the vice-chair at Case Western Reserve and chief of surgery at the Cleveland Metropolitan General Hospital where he founded the Cancer Center in that city. In 1977, he became the founding chairman of the Department of Surgery at East Carolina University (ECU), a post he held until 1997. His present position is professor of Surgery, Biochemistry, Exercise and Sport Science as well as director of Bariatric Surgery Research. He is the Principal Investigator for the ECU Longitudinal Assessment of Bariatric Surgery (LABS) funded by the NIH/NIDDK as well as other grants from J&J and GlaxoSK addressing insulin action and the molecular effects of bariatric surgery.

Dr. Pories served 12 years as a regular Air Force Officer from 1955–1967 and another 12 years in the US Army Reserves. In 1990, he retired with the rank of Colonel after serving as a Commander during the first Gulf War. He received several commendation medals from both services, the Legion of Merit and, at the end of the action in the Gulf, his unit, the 3274th USA Hospital, received a Presidential Citation.

Dr. Pories's research accomplishments include the development of a method for the large scale isolation of mitochondria; and with Dr. William Strain, the discovery that zinc is an essential element for animals and man. He was also the first to demonstrate that zinc is required for healing and to document the need for micronutrients for adequate parenteral and oral nutrition. He also published first description of wound suction; designed the radio-opaque Penrose drain, and contributed advances in the design of the gastric bypass operation. He was also the first

to describe full remission of diabetes following the gastric bypass and to propose and define the role of the gut in the pathogenesis of the disease. His current research continues to explore this phenomenon on a molecular biology level. As the founding chairman of the Board of the Surgical Review Corporation, he has been a leader in the Centers of Excellence initiative of the American Society for Metabolic and Bariatric Surgery. For his contributions to nutrition, he received the Barry Goldwater Service Medal, the McGraw Medal, the McLester Award in Nutrition, and the TOPS Award from the Obesity Society.

Dr. Pories's honors include membership in Alpha Omega Alpha and Sigma Xi, past vice chair of the Residency Review Committee for Surgery, and the presidency of a number of organizations including the North Carolina Medical Board, the American Society for Metabolic and Bariatric Surgery, the Association of Program Directors in Surgery, the Society for Geochemistry and Health, the North Carolina Chapter of the American College of Surgeons, the North Carolina Surgical Association, the Center for Creative Living, a day care center for the elderly, and two hospices–one in Cleveland and the other in Greenville. He was the founding chairman of the Board of Directors of the Surgical Review Corporation and still serves as a trustee of this nonprofit organization for improved quality control of bariatric surgery. He completed his service as the founding director of the ECU Metabolic Institute in June 2008. He is a trustee of the Methodist Retirement Communities of North Carolina, chairman of the Local Committee at the Cypress Glen Retirement Community and a founder of Camp Timber Creek, a camp for obese children.

Dr. Pories has received a number of teaching awards including Outstanding Professor from the Board of Governors of the University of North Carolina System. In 2002, he received the O. Max Gardner Award, given for service to humanity to one faculty member in the 16 university system each year. He is well known for his published cartoons and has had two exhibitions of his paintings, one at the Greenville Museum of Art, the other at the Grove Park Inn in Asheville, both in North Carolina

He is married to Dr. Mary Ann Rose, professor and interim associate dean undergraduate program in the College of Nursing. They have six children and live on a farm with cattle, goats, guinea hens, geese, pets and various forms of wildlife.

Jaime Brown Kruse, PhD, Professor, Department of Economics, Thomas Harriot College of Arts and Sciences

"Economics and Natural Hazards"

Dr. Jamie Kruse is recognized for her research in economics and decision making under uncertainty, especially as it relates to natural hazards. She completed her doctoral work at University of Arizona under dissertation advisor, Vernon Smith (2002 Nobel Laureate). Dr. Kruse has published over fifty refereed journal articles in addition to proceedings, abstracts and reports. Her work has appeared in *Econometrica*, RAND *Journal of Economics, Southern Economic Journal, Journal of Economic Behavior and Organization, Economic Inquiry, Natural Hazards Review, Journal of Wind Engineering and Industrial Aerodynamics, Environmetrics, Weather and Forecasting, Journal of Risk and Insurance* and others.

She has held faculty positions at the University of Colorado, Texas Tech University, East Carolina University and a visiting position at the Swiss Federal Institute of Technology. During her tenure at ECU, Dr. Kruse has been the founding director of the Center for Natural Hazards Research within the Thomas Harriot College of Arts and Sciences and served as director of the RENCI Center for Coastal Systems Informatics and Modeling for its first two years of operation. Her funded research has been supported by National Science Foundation, Department of Energy, National Institute of Standards and Technology, Federal Emergency Management Agency, Federal Deposit Insurance Corporation, Niagara Mohawk, State of Texas and the State of North Carolina. She has been PI or Co-I of research projects totaling almost $20 million.

During 2010, Dr. Kruse completed a one-year intergovernmental personnel assignment as the chief economist at National Oceanic and Atmospheric Administration (NOAA). The incumbent of this senior executive service (SES) position serves as senior advisor for the National Oceanic and Atmospheric Administration for all aspects of NOAA's economics and social science efforts in support of the Department of Commerce goals of a climate responsive nation, sustainable coastal communities and ecosystems, a weather-ready nation and sustainable and resilient fisheries. Dr. Kruse represented NOAA in interagency committees that included membership on the White House Office of Science and Technology Policy (OSTP) Subcommittee on Social, Behavioral and Economic Science; OSTP Subcommittee on Ocean Science and Technology Policy (SOST); and co-chairmanship of the OSTP-SOST Interagency Working Group on Ocean Social Science. On April 20, an explosion of the drilling rig known as the Deepwater Horizon triggered a response from NOAA that involved all line offices. Dr. Kruse was lead in the social science thematic area for the NOAA Deepwater Horizon Science Team and served on the National Incident Command Economic Solutions Team.

Dr. Kruse's responsibilities within NOAA included membership on the NOAA Research Council and chair of the Research Council Social Science Committee. She was co-chair of the *ad hoc* committee for Scientific Integrity. The main body of work by the committee was to write NOAA's draft policy on Scientific Integrity (NAO 202-735) which was released to NOAA's more than twelve thousand employees for review and comment followed by a 60 day public comment period. NOAA is now in the process of finalizing the policy and handbook for public release. Dr. Jane Lubchenco referenced the policy drafted by the *ad hoc* committee in comments to the Union of Concerned Scientists on February 8, 2011. Dr. Lubchenco's comments can be found at the following link: **http://tinyurl.com/7ykveer**

Following the May 2011 tornado outbreak that caused widespread damage to homes and businesses in Joplin, Missouri and other communities in the Midwest and South, Dr. Kruse was quoted in a page one article of the *New York Times* titled "Reconstruction Lifts Economy After Disasters."

Five –Year Achievement Awards:

Craig Elliott Landry, PhD, Associate Professor, Department of Economics, Thomas Harriot College of Arts and Sciences

"A Defense of Rational Choice as Meaningful Baseline in Natural Resource and Hazard Economics"

Craig Landry received a B.S.A. and M.S. in Environmental Economics and Natural Resource Management from the University of Georgia in 1996 and 1998, respectively. While at the UGA, he became interested in economic analysis of coastal erosion management and worked as research assistant on a FEMA-funded project to examine the impact of coastal erosion on the National Flood Insurance Program. He earned a Ph.D. in Natural Resource Economics from the University of Maryland, College Park in 2004. As part of his dissertation research, he applied methods of non-market valuation to assess the economic value of beaches, and he formulated dynamic optimization models to analyze coastal erosion management decisions.

Dr. Landry has secured nine external grants in the past eight years, including funding from the National Science Foundation, Bureau of Ocean Energy Management, National Oceanic & Atmospheric Administration, the North Carolina Energy Center, and NC Sea Grant. External grant projects have focused on determinants of disaster migration and preference for rebuilding New Orleans in the wake of Hurricane Katrina, the impacts of coastal wind farms on recreation and tourism, economic impacts and value of the North Carolina for-hire recreational fishing fleet, individual risk perceptions and behavior in the context of tropical storms, and economic values for coastal erosion management, while bringing in over $650,000 in funding directly to ECU.

Dr. Landry has served as an *ad hoc* scientific peer reviewer on over 80 scholarly papers and research proposals and is current associate editor for *Marine Resource Economics* and associate editor of Behavioral & Social Science for *The Natural Hazards Review*. He has served as dissertation advisor for four students in the interdisciplinary Coastal Resources Management PhD program at ECU and served on many other students PhD and Master's degree committees (including students in Economics, Recreation and Leisure Studies, and Sustainable Tourism).

Dr. Landry has over 25 peer-reviewed publications on various topics including individual decision making in the context of natural hazards risk, recreation demand, econometrics of non-market valuation, hedonic property price models, community hazard mitigation, and experimental analysis of individual charitable giving. He is currently assistant director of the Center for Natural Hazards Research and recently took on a joint appointment with the interdisciplinary Institute for Coastal Science and Policy at ECU.

His current research projects include an analysis of amenity and structural capitalization in coastal property rental and sales markets, assessing individual preferences for multi-hazard insurance coverage, understanding the relationship between beach quality and coastal property values, and assessing economic costs of beach replenishment operations.

Guili Zhang, PhD, Assistant Professor, Department of Curriculum and Instruction, College of Education

"Improving Statistical Methods for Better Quantitative Research and Evaluation"

Dr. Guili Zhang is an assistant professor of Research and Evaluation Methods in the Department of Curriculum and Instruction, East Carolina University. She received a Ph.D. in Research and Evaluation Methodology from the University of Florida.

Dr. Guili Zhang has published extensively and made significant original research contributions to statistical/quantitative research methods, including the development and evaluation of three new statistical procedures that are significant breakthroughs in statistical and measurement methods. Dr. Zhang originated the Robust Root Mean Square Standardized Effect Size ($RMSSE_R$), and derived the robust non-central *F* distribution-based Confidence Intervals for $RMSSE_R$. She created a new internal consistency measure, the Bayesian Coefficient Alpha, and generated its Credible Intervals. She also conducted a critical evaluation of the commonly used *t*-test, and provided solutions to counter *t*-test's deficiencies. Her applied quantitative research and evaluation work in education has made significant impact at the national and international levels.

Dr. Zhang has received many prestigious international and national awards. She is a recipient of the *Frontiers in (Engineering) Education Benjamin J. Dasher Best Paper Award*, the *American Society for Engineering Education Best Paper Award*, the *Edward C. Pomeroy Award for Outstanding Contributions to Teacher Education* from the American Association of Colleges for Teacher Education (AACTE), the *2010 American Educational Research Association Statistics Institute for Faculty Award*, and the *2012 AERA Institute on Statistical Analysis for Education Policy Award* from the National Science Foundation and the American Educational Research Association. In 2010, Dr. Zhang was officially recognized by the United States government as an *Outstanding Professor and Researcher* for her extraordinary research achievements and national and international recognition (USCIS category E17).

Dr. Zhang has directed 12 national grant projects. She is the PI for NSF's flagship *Integrative Graduate Education and Research Traineeship (IGERT) Assessment Grant.* She also served as the lead Data Analyst and Program Evaluator for the NSF Southeastern Universities and Colleges Coalition for Engineering Education (SUCCEED) grant project, and for the Multiple-Institution Database for Investigating Engineering Longitudinal Development (MIDFIELD) grant project. Additionally, Dr. Zhang has been the PI, program evaluator, or data analyst on $43 million in grants in education. Dr. Zhang has conducted numerous studies to assess and evaluate various innovative educational initiatives.

Dr. Zhang serves in many leadership roles in premier national professional associations. She has served as chair of the American Educational Research Association (AERA) Quantitative Dissertation Award Committee, chair of the American Evaluation Association (AEA) Quantitative Methods TIG, editor and advisor of *Journal of Curriculum and Instruction,* and numerous program chairs and session chairs for American Educational Research Association, American Evaluation Association, and American Institute of Higher Education.

Recognition of East Carolina University Inventors and Innovators

INVENTORS

Michael Van Scott
Department of Physiology
Patent # 7,907,999
Apparatus and Method for Measuring Physiological Characteristics of an Intract Trachea
Issued 3/15/2011

Qun Lu & Yan-Hua Chen
Department of Anatomy & Cell Biology
Patent # 8,058,020
Methods of Detecting Cancer Using Delta-Catenin
Issued 11/15/2011

Anne Kellogg
Department of Pathology & Laboratory Medicine
Patent # 8,067,186
Monoclonal Antibody DS6 Tumor-Associated Antigen CA6, and Methods of Use Thereof
Issued 11/29/2011

INNOVATORS

Lee Toderick
Department of Technology Systems
Copyright # TXu 1-775-853
Collegiate Tartan Apparel
Issued 8/26/2011

Runying Chen
Department of Interior Design and Merchandising
Copyright # VAu 1-075-403
Collegiate Tartan Apparel
Issued 11/25/2011

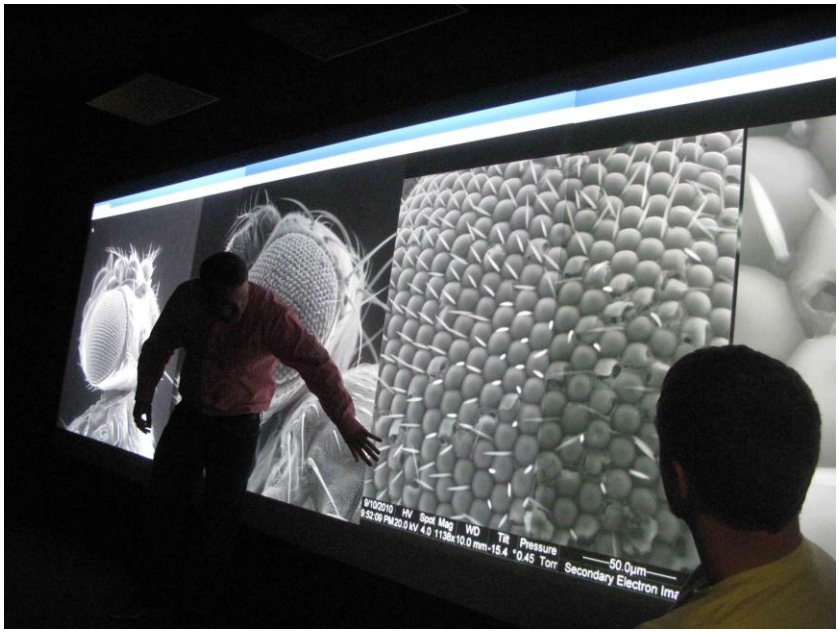
LECTURES

&

SYMPOSIA

RENCI VISUALIZATION CHALLENGE

Each year the RENCI, the Rennaissance Computing Institute's Engagement Center challenges graduate and undergraduate students to use their creative abilities to design a visualization of a research project for ECU's 21x6-foot visualization wall ("VisWall"), a high-resolution, immersive display in Brewster C-202. Past visualizations have included three dimensional reconstructions of ships using recovered artifacts, electron micrographs depicting genetically linked fruit fly abnormalities, three dimensional models of sedimentation in the Tar River and a walkthrough of a planning redesign for downtown Nashville, North Carolina. Students presented their entries in the 5th Annual Visualization Challenge on March 21th. Faculty judges evaluated entrants and will award the winners during ECU's Student Awards Luncheon on Friday March 30th.



Biology graduate student Chad Hunter describes his genetics research using a scanning electron micrograph of Drosophila melanogaster, the common fruit fly.

NORTH CAROLINA LITERATURE INTO FILM POSTER CONTEST

The *North Carolina Literary Review* (*NCLR*) is seeking original art to accompany an article in its 2012 print issue and on the *NCLR* website. The article on ten works of North Carolina Literature that *should* be films, by George Hovis, will be included in the special feature section on North Carolina Literature into Film.

The **North Carolina Literature into Film Poster Contest** is an opportunity for students to have their creativity featured in the award-winning *North Carolina Literary Review* (*NCLR*). Entrants will create an original, full-size movie poster that promotes one of the ten imaginary adaptations discussed in the essay.

ELIGIBILITY

The North Carolina Literature into Film Poster Contest is largely an ECU competition, but it is open to any undergraduate or graduate student currently enrolled at any college or university based in North Carolina.

JUDGING

Submissions will be evaluated on originality, creativity, and credibility as a movie poster. Diane Rodman, *NCLR* Art Editor, and George Hovis, author of the special feature article, will serve as judges for the contest, selecting which posters will appear in the 2012 issue of *NCLR* and on *NCLR*'s website.

Students whose posters are selected for publication in *NCLR* will receive two copies of the issue (per team member) in which their poster appears. Posters/poster files become the property of *NCLR*, but full credit to the creators will be included for all posters used in the layout of the article and displayed on the website.

ADDITIONAL RECOGNITION

Posters will be displayed, either projected on a screen or, if provided by students, in print copy, during East Carolina University's Research and Creative Activity Week (March 26-30, 2012). Students who wish to participate in this event may wish to print their posters by the submission deadline. Select students will be invited to present their posters at a poster session during that week.

In addition, some posters will be selected for display on the *NCLR* website and at the Eastern North Carolina Literary Homecoming in September 2012, in all cases with full credit to the creator(s). Selected students will be asked to print their posters for this event.

EAST CAROLINA UNIVERSITY
INTERNATIONAL SCHOLARS SYMPOSIUM

SPONSORED BY

INTERNATIONAL FACULTY AND STAFF COMMITTEE
IN ASSOCIATION WITH ECU RESEARCH AND CREATIVE ACHIEVEMENT WEEK 2012

Tuesday, March 27, 2012
1:00 PM - 4:30 PM
Mendenhall Student Center
Room 244

Purpose and Goal:

The purpose of the International Scholars Symposium is to advance ECU's mission of internationalization by fostering research among ECU faculty and scholars. The symposium will not only serve as a platform to provide visibility to international scholars, but non-international scholars can also benefit by showcasing the research that they conduct through international partnerships and collaborations.

PRESENTATION SCHEDULE

1:00-1:20

Opening Remarks:

Dr. Nehad Elsawaf: International Scholar Symposium chair and organizer.

Dr. James (Jim) Gehlhar: Associate Vice Chancellor for International Affairs

SESSION 1:

SESSION CHAIR- DR. NEHAD ELSAWAF

1:20-1:45

Scaling ECU's Global Understanding Across the UNC System

Rosina C. Chia and Elmer Poe, Global Academic Initiatives, East Carolina University, Greenville, NC 27858

1:45-2:10

Attracting International Students to U.S, Campuses

Cheryl McFadden, William Mallett, East Carolina University, Greenville, North Carolina, 27858 and Cathy Maahs-Fladung, Utah State University, Logan, Utah, 84322

2:10-2:35

The Challenges of Asian Students Learning in the West

Ran Hu, Department of Curriculum and Instruction, College of Education, East Carolina University, Greenville, NC, 27858

2:35 PM - 3:00 PM

BREAK

SESSION 2:

SESSION CHAIR- DR. NEHAD ELSAWAF

3:00-3:25

Incorporating Direct Digital Manufacturing Innovation Projects In An Advanced Technology Course: An Assessment and Evaluation

Ranjeet Agarwala, Department of Technology Systems, East Carolina University, Greenville, NC-27858

3:25-3:50

Characterization of a Novel ECF Sigma Factor in Bacteroides fragilis Important for Protection Against Oxidative Stress

Ivan C. Ndamukong, Jason Gee and C. Jeffrey Smith, Department of Microbiology and Immunology, Brody School of Medicine, East Carolina University, Greenville, NC, 27834

3:50-4:15

Representing the Revolution: Social Memory and the Moncada Barracks in Santiago de Cuba

Luci M. Fernandes, Department of Anthropology, East Carolina University, Greenville, NC, 27858

4:15:4:30

Concluding remarks

2011-2012 ECU Scholar-Teaching Awards and Symposium

Thursday, March 29, 2012
Mendenhall Student Center

12:00 -1:15 pm	Awards Presentation and Reception for Recipients and Invited Guests, Great Rooms 2+3
1:30 – 3:30 pm	Presentations in Mendenhall Great Room 1 and 244 *(Concurrent session schedule and titles to be finalized)*
12:00 – 3:30 pm	Poster Display – Mendenhall Great Rooms

The ECU Scholar-Teacher Award recognizes outstanding faculty members who integrate scholarship and teaching. Each year the colleges in Academic Affairs and colleges and schools in Health Sciences recognize one or more scholar-teacher(s), based on the number of faculty in the unit. During the symposium, each scholar-teacher provides a succinct presentation (approximately 15 minutes) concerning his/her integration of scholarship in teaching. Each recipient also develops a poster presentation or display for viewing during the symposium. This year the symposium will be held during the Annual Research & Creative Achievement Week: March 26 - 30. Prior to the symposium, 2012 Scholar-Teachers and their guests will be hosted by the Provost at an awards presentation and reception. This year two concurrent sessions will be held in the Mendenhall Great Room 1 and Room 244. Faculty, staff, students, and community friends are encouraged to attend all or parts of the afternoon symposium and to enjoy another wonderful celebration of scholarship and teaching at ECU!

Great Room 1

Dr. Mamadi K. Corra
Department of Sociology
Thomas Harriot College of Arts and Sciences
"Engaging Students in Instruction through Active Learning: A Research-Based, Student-Centered Approach to Teaching"

Dr. Lee Maril
Department of Sociology
Thomas Harriot College of Arts and Sciences
"Integrating Research into the ECU Classroom"

Dr. Kirk St. Amant
Department of English
Thomas Harriot College of Arts and Sciences
"Globalizing the Online Classroom: Approaches to Internationalizing Distant Education"

Ms. Susan Martin Meggs
Department of Interior Design and Merchandising
College of Human Ecology
"Thinking Outside of the (Classroom) Box: Collaboration to Enhance Pedagogy"

Dr. Robert D. Quinn
School of Art and Design
College of Fine Arts and Communication
"Building Hope through Art"

Mendenhall 244

Dr. Doyle M. Cummings
Department of Family Medicine
Brody School of Medicine
"From Medical Model to Population Health"

Dr. Martha K. Engelke
Department of Nursing Graduate Science
College of Nursing
"Creating an Environment for Learning: Everyone Deserves a Mayfair Street"

Dr. Carol Kline
Department of Recreation and Leisure Studies
Center for Sustainable Tourism
College of Health and Human Performance
"Keeping it R.E.A.L."

Dr. Bonita Sasnett
Department of Health Services and Information Management
College of Allied Health Sciences
"A Community Campus Partnership: Ah-Ha Moments in Service Learning"

Dr. Christy Ashley
Department of Marketing and Supply Chain Management
College of Business
"Contagious Curiosity"

ECU Chapter of the Society of Sigma Xi

Induction Ceremony & Lecture

Guided by Cold Light: From Ancient Settlements via Antarctica to Mars

Dr. Regina DeWitt

SCHEDULE

Induction Ceremony

Speaker Presentation

Reception

Thursday, March 29, 2012

Mendenhall Room 244

4:00 – 6:00 PM

PRESENTATION OF AWARDS

2011-2012 UNDERGRADUATE RESEARCH AND CREATIVE ACTIVITY AWARDS

Fall 2011 Awards

Student Awardee	Major	Mentor	Department and College
Michael Avery	English	Margaret Bauer	English, THCAS
Ben Aydelette	Psychology	Christyn Dolbier	Psychology, THCAS
Ian Bryan	Biology and Chemistry	Jamie DeWitt	Pharmacology & Toxicology, BSOM
Jonathan Burger	Studio Arts and Philosophy	Carl Billingsley	Sculpture, CFAC
Megan Campbell	Biochemistry and Chemistry	Jean-Luc Scemama	Biology, THCAS
Sarah Chowdhury	Biochemistry	Matthew Schrenk	Biology, THCAS
Timothy Darden	Biology	Ethan Anderson	Pharmacology & Toxicology, BSOM
Jacqueline Dolan	Speech and Hearing Sciences	Heather Ramsdell	Comm Sciences & Disorders, CAHS
Adrien Ennis	Biology	Xiaoping Pan	Biology, THCAS
Katherine Ferri	Health Education and Promotion and Hispanic Studies	Charles Humphrey	Health Education and Promotion, CHHP
Suzanne Frisbee	Neuroscience	Christyn Dolbier	Psychology, THCAS
Meredith Hayek	Exercise Physiology	Paul DeVita	Kinesiology, CHHP
Jacob Herrmann	Art	Jim Tisnado	Ceremics, CFAC
Danielle Martin	Neuroscience	David Tulis	Physiology, BSOM
Lily Medina	Hispanic Studies and Psychology	Tuan Tran	Psychology, THCAS
Pamela Muscher	Health Fitness Specialist	Lucas Carr	Kinesiology, CHHP
Amber Norris	Biology	Ian Hines	Nutrition Science, CHE
Rachel Pollard	Biology and Chemistry	Trip Lamb	Biology, THCAS
Emilee Quinn	Biology and Chemistry	Matthew Schrenk	Biology, THCAS
Dioval Remonde	Biology	Alexander Murashov	Physiology, BSOM
Kathryn Reynolds	Exercise Physiology	Paul DeVita	Kinesiology, CHHP
Tori Rodriguez	Communication	Calvin Mercer	Religious Studies, THCAS
Samuel Scott	Computer Science	Quin Ding	Computer Science, TECS

Victoria Sellers	Environmental Health and Geology	Alice Anderson	Health Education and Promotion, CHHP
Juliann Stalls	Psychology	Derrick Wirtz	Psychology, THCAS
Lindsay Stump	Special Education	Melissa Engleman	Curriculum and Instruction, COE
Erik Thornton	Geology	Eric Horsman	Geological Sciences, THCAS
Alvin Tsang	Psychology	Christopher Wingard	Physiology, BSOM
Jamie Wheeler	Geography	Burrell Montz and Alex Manda	Geography and Geological Sciences, THCAS
Oksana Williams	Biology	Alexander Murashov	Physiology, BSOM

Spring 2012 Awards

Student Awardee	**Major**	**Mentor**	**Department and College**
Arun Ajmera	Biology/Chemistry	Barbara Muller-Borer	Cardiovascular Sciences, HS BSOM
Christina Booth	Environmental Health & Safety	Charlie Humphrey	Health Education and Promotion, CAHS
Shelley Burgess	Exercise Physiology	Sonja Bareis	Physical Therapy, CAHS
Jeffrey Carroll	Biology/Chemistry	Shouquan Huo	Chemistry, THCAS
Alyssa Champine	Elementary Education & Hispanic Studies Education	Margaret Bauer	English, THCAS
Emily Dixon	Mechanical Engineering	Tarek Abdel-Salam	Engineering, TECS
Angela Korleski	Biology	Sonja Bareiss	Physical Therapy, CAHS
Thomas Mahar	Exercise Physiology	Matthew Mahar	Kinesiology, CHHP
Amanda Mutio	Psychology	Scott Methe	Psychology, THCAS
Kathryn Reavis	Environmental Geography	Thad Wasklewicz	Geography, THCAS
Edward Sanderlin	Biology	Ian Hines	Nutrition & Dietetics, CHE
Charlotte Smith	Biology/Chemistry	Tim Christensen	Biology, THCAS
Jackson Vuncannon	Biochemistry/ Chemistry	David Tulis	Physiology, HS BSOM
Samantha Woitovich	Fine Art, Sculpture	Carl Billingsley	Sculpture, CFAC
Benjamin Woodall	Biology	Jeff McKinnon	Biology, THCAS

USDA AWARD

Student Awardee	**Major**	**Mentor**	**Department and College**
Ashlock Jordan	Biology	Baohong Zhang	Biology, THCAS

2012 Research and Creative Achievement Week Judges

Faculty

Achut Malur	Microbiology and Immunology	**Junhua Ding**	Computer Science
Alex Manda*	Geology	**Karen De Urquidi**	Engineering
Angela Thompson*	History	**Karl Abrahamson***	Computer Science
Anne Mallory	English	**Li Yang**	Hemotology Oncology
Anne Ticknor	Education	**Lucas Carr***	Kinesiology
Annette Greer	Bioethics Interdisciplinary Studies	**Margit Schmidt***	Biology
Art Rodriguez	Chemistry	**Mario Rey**	Music
Badr Ibrahim	Pharmacology	**Mark Bowler**	Psychology
Barbara Muller-Borer	Cardiovascular Sciences	**Martha Engelke**	Nursing
Beverly L. Sheaffer	Rehabilitation Studies	**MD Motaleb**	Microbiology and Immunology
Carol Goodwillie*	Biology	**Melani Duffrin***	Nutrition and Dietetics
Cheryl McFadden	Education	**Melissa Haithcox-Dennis**	Health Education
Chris Duffrin*	Health Education	**Michael Brown**	Psychology
Cindy Putnam-Evans*	Arts & Sciences	**Norma Epley***	Research and Graduate Studies
Claudia Jolls	Biology	**Orville Day**	Physics
Clifton Ruehl	Biology	**Pamela Hopkins**	Communication
Crystal Chambers	Education	**Patrick Rider**	Kinesiology
David A. Tulis	Physiology	**Rachel Murrell**	Biochemistry
Derek Maher*	Philosophy	**Rebecca Allen**	Kinesiology
Derrick Wirtz	Psychology	**Rebecca Macdonald**	Construction Management
Dianne M. Walters	Physiology	**Renee E Neal**	Mathematics

Donna Kain*	English	**Rich Franklin***	Microbiology and Immunology
Douglas Weidner	Microbiology and Immunology	**Richard E. Ericson**	Economics
Eban Bean	Engineering	**Robert Thompson**	Political Science
Edson R. Rocha	Microbiology and Immunology	**Rosana Nieto Ferreira**	Geography
Elizabeth Wall-Bassett	Nutrition and Dietetics	**Sachiyo Shearman**	Communication
Erika J. Galluppi	English	**Sandra Warren**	Education
Ethan Anderson	Pharmacology and Toxicology	**Scott Curtis**	Geography
Evelyn Brown*	Engineering	**Sergio Arce**	Pulmonary Research
George Bailey	Philosophy	**Stefan Clemens**	Physiology
Gerald Weckesser	Art	**Sviatoslav Archava**	Mathematics
Ginger Woodard	Human Ecology	**Tarun Podder**	Radiation Oncology
Jarrett Whelan	Biochemistry and Molecular Biology	**Tim Gavin**	Kinesiology
Jason Brinkley	Health Biostatistics	**Tom Braswell**	Art
Jean-Luc Scemama*	Biology	**Tuan Tran**	Psychology
Jennifer Bowler	Psychology	**Vesna A Chappell**	Anatomy & Cell Biology
Jo Phipps	Anthropology	**Will Forsythe**	Nutrition and Dietetics
Joe Houmard*	Kinesiology	**Xiaoping Pan**	Biology
John Kros	Marketing and Supply Chain Management	**Yan-Hua Chen**	Anatomy & Cell Biology
John Stiller	Biology		

** Judge Coordinator*

Graduate Students

Anusha Penumarti	**Diana Wright**	**Michelle Covi**
Daniel Kim	**Julia "Kaitlin" Morrison**	**Taylor Ann Mattox**
David Martinson	**Lenny Yong**	**Zhe Lu**
Di Wu	**Michael Betteken**	

ORAL AND POSTER PRESENTATIONS:

Mentor Listing

And

Presenter Schedule by Index Number

Mentor Listing

Abdel-Rahman Abdel-Rahman
Achut Malur
Adriana Heimann Rios
Alan Taylor
Alex Manda
Alexander Murashov
Alfred Lamb
Alice Anderson
Alleah Crawford
Allison Danell
Amy Carr-Richardson
Ann Sperry
Anne Spuches
Anthony Cellucci
Anthony Kulas
Anthony Overton
Barbara Bullington
Beth Thompson
Brett Keiper
Burrell Covey
Carl Billingsley
Carol Kline
Charles Ewen
Charles Humphrey
Charles Smith
Charles Tanner
Christine Avenarius
Christine Zoller
Christopher Wingard
Christyn Dolbier
Claudia Jolls
Craig Landry
Daniel Goldberg
Daniel Kariko
David Brown
David Chalcraft
David Cistola
David Kimmel
David Pravica
David Taylor
David Tulis
Derek Alderman
Dorsey Williams
Elizabeth Fogarty
Enrique Reyes
Eric Horsman
Ethan Anderson
Eugene Dixon
Evelyn Brown
Gunnar Swanson
Hamid Fonooni
Hanna Jubran
Holly Mathews
Ian Hines
Isabelle Lemasson
Jae Jung
James Smith
James Tisnado
Jamie DeWitt
Jamie Perry
Janet Malek
Janice VanRiper
Jason Brinkley
Jason Oliver
Jean-Luc Scemama
Jeffrey McKinnon
Jennifer Bowler
Jennifer Brewer
Jennifer Hodgson
Jennifer Valko
Jessica Christie
Jian Dean
Jianchu Yao
Jill Twark
Jimmy Linn
Johannes Hattingh
John Eagle
John Kros
John Walsh
Jonathan Reed
Joseph Houmard
Joseph Kalinowski
Karen Vail-Smith
Kathryn Verbanac
Keeley Pratt
Kelley Reinsmith-Jones
Kenneth Bova
Kimberly Heidal
Kori Brewer
Krishnan Gopalakrishnan
Kyle Summers
Laura Mazow
Lena Carawan
Lesley Lutes
Leslie Allison
Li Yang
Lisa Baranik
Loren Limberis
Lucas Carr
Margaret Bauer
Marieke Van Willigen
Mark Bowler

Matthew Mahar
Matthew Schrenk
MD Motaleb
Megan Perry
Melani Duffrin
Melissa Engleman
Michael Baker
Michael Behm
Michael Bosse
Michael McCammon
Michael Van Scott
Moha Nassehzadeh-Tabrizi
Mona Russell
Myon Hee Lee
Nelson Cooper
Patricia Sullivan
Patrick Rider
Paul DeVita
Paul Kauffmann
Peter Neufer
Philip Lunsford
Qun Lu
Rachel Roper
Ranjeet Agarwala
Rebecca Sweet
Richard Miller
Robert Chin
Robert Christian
Robert Edwards
Robert Hickner
Robert Lust
Roger Rulifson
Rosana Ferreira
Roy Roop
Rukiyah Van Dross
Runying Chen
Ruth Schwalbe
Saame Shaikh
Sachiyo Shearman
Sergiy Vilkomir
Siddhartha Mitra
Sonja Bareiss
Stefan Clemens
Stephanie Sullivan
Susan Leach
Susan McRae
Susan Meggs
Terry Jones
Te-Shun Chou
Timothy Christensen
Timothy Gavin
Timothy Lazure
Timothy Romack
Todd Savitt
Tracy Carpenter-Aeby
Tracy Tuten
Tuan Tran
Wade Dudley
Walter Curtis
Walter Jenkins
Warren Knudson
Wendy Sharer
William Allen
William Rouse
Xiaoping Pan
Xuan Liu
Yan-Hua Chen

Monday, March 26, 2012 – Graduate Oral

MSC Room 244

Visual Art and Design – Graduate (8:30am –11:45 ***and*** *1:00 – 4:30pm)*

8:30-8:45	GO1	**Powdercoating: The New Sculpture Surface,** Graham Erisman
8:45-9:00	GO2	**Art as an Environmental Defense,** Sydney J. Sogol
9:00-9:15	GO3	**Creativity Hurts: A Look at the Effect of Depression on the Visual Arts,** Katherine K. Hobbs
9:15-9:30	GO4	**Paint & Pixels,** Jonathan R. Peedin
9:30-9:45	GO5	**Exploration, Discovery, and Travel,** Dan Willett
9:45-10:00	GO6	**Revelations,** Lorraine Turi
10:00-10:15	GO7	**Domestic Traditions for Global Awareness,** Lori Ary
10:15-10:30	GO8	**Beyond Social Innovation: Dynamics of Collaboration in Design Practice,** Keon Pettiway
10:30-10:45	GO9	**Connection: Facilitating interaction using public sculpture,** Michael Dodson
10:45-11:00	GO10	**Mapping the Micro,** Bethany Pipkin
11:00-11:15	GO11	**Traditional Bronze Casting, Contemporary Art,** Cathy Perry
11:15-11:30	GO12	**Overlapping Legacies and Contemporary Companions: Cartography and Art,** Kathryn Cole
11:30-11:45	GO13	**My Diabetic Body,** Mike McAteer

Break

1:00-1:15	GO15	**Researching Steel as a Jewelry Element**, Leia Zumbro
1:15-1:30	GO16	**Industrial Veneration: A Look at the Death of Labor Force Respect and its Re-Appreciation in the Arts,** Kevin M. Vanek
1:30-1:45	GO17	**Value Hierarchy**, Danielle James
1:45-2:00	GO18	**The Nature of Relationship**, Tina Lazzarine
2:00-2:15	GO19	**Wood Fire, Clay and the American Shino**, Patrick Hutti
2:15-2:30	GO20	**Click: a craft artist's response to emerging technology**, Joshua Craig
2:30-2:45	GO22	**Pond Life: A Landscape of Sustainability for the Table**, Catherine Stasevich
2:45-3:00	GO23	**Invisible Masque,** Alison Flegel
3:00-3:15	GO25	**Give Fuel Spark and Air: Harness the Explosion**, Matt Harding
3:15-3:30	GO26	**Graffiti: The Word Has Spread**, Kyle C. Rees
3:30-3:45	GO27	**Sisters: Obesity and Body Dysmorphic Disorder, A Comparative Study**, Sally L. Sutton
3:45-4:00	GO28	**Finding Inspiration**, Audrey Peck
4:00-4:15	GO29	**Record of Consumption**, Liz Brown
4:15-4:30	GO30	**Irish Iconography; the past to the present**, Aisling Millar

Great Room 1

*Social Sciences – Graduate (8:30am – 10:15am **and** 10:30-12:15)*

8:30-8:45	GO32	**Water's Gonna Rise: Sea-Level Rise Risk Perception and Decision Making in Plymouth, North Carolina,** Michelle Covi, Jack Thigpen, Gloria Putnam, Jessice Whitehead
8:45-9:00	GO33	**Disproportionate Disaster Impacts on Special Needs Populations: Programmatic Responses and their Implementation,** Jennifer O'Neill
9:00-9:15	GO34	**Social Work and College Sports--Penn State and Child Abuse: What Happened? A Problem Analysis Using the Chamber Model,** Donna Ramsey, Carl Cogndell, David Peterson, Ninis Regis, Heather Ross, Tracy Carpenter-Aeby, Victor G. Aeby
9:15-9:30	GO35	**Adults with Dyslexia and Invisible Disability: The Impact of Concealment/Disclosure on Self-Esteem,** S.B. Sauber, L.W. Carawan, B.A. Nalavany
9:30-9:45	GO36	**Going on the Account: Examining Golden Age Pirates as a Distinct Culture Through Artifact Patterning**, Courtney Page
9:45-10:00	GO37	**A Comparative Analysis of Paleopathology and Mortuary Practice at West Site (31CK22) in Currituck County, North Carolina**, Lauren Souther
10:00-10:15	GO38	**Ethical Dilemmas in Providing End-of-Life Care**, Jing X
Break		
10:30-10:45	GO39	**Generational Struggles and Identity Conflict Among Vietnamese Immigrants: Finding a Middle Ground**, Bach Pham
10:45-11:00	GO40	**Main House, Slave Quarter, or Dependency?: Identifying the Structure in the Vault Field at Foscue Plantation,** Amanda S. Keeny
11:00-11:15	GO41	**SLAM (Science, Language Arts, & Math) DUNK (Dynamically Unleashing Newfangled Knowledge) - Striving for the Best Instruction Possible**, Sabrina T. Smith-Epley

11:15-11:30	GO42	**Individual Behavioral Characteristics and Their Effects on Weather Hazard Mitigation and Insurance Purchase**, Chris M. Sparks, Craig E. Landry
11:30-11:45	GO43	**Discovering Tradition and Innovation in the Adagio from Brahms's String Quartet No. 2, Op. 111,** Joanna Pepple
11:45-12:00	GO44	**Whiteness and the Rhetorical Challenge in an Online College Classroom**, Mary-Lynn Chambers
12:00-12:15	GO45	**Is It Happening To You? A Health Campaign against Domestic Violence**, Allison Frazier

*Technology and Computer Sciences – Graduate (1:00pm – 3:15pm **and** 3:30-4:15)*

1:00-1:15	GO46	**Being Open While Securing The Social Web**, John Vail
1:15-1:30	GO47	**A Novel Method for Web Feeds Information Extraction and Ranking**, Majid Darabi
1:30-1:45	GO48	**New Communication Systems for Individuals with Severe/Profound Intellectual Disabilities Using Brain-Computer Interface**, Hossein Adeli, Pooya Rahimian
1:45-2:00	GO49	**Cloud Performance Testing**, Puneet Sharma
2:00-2:15	GO50	**Effectiveness of Pair-wise Testing for Software with Boolean Inputs**, William Balance
2:15-2:30	GO51	**Deriving Test Cases from System-Environment Relationship Models**, Brittany N. White
Break		
2:45-3:00	GO52	**Augmentative and Alternative Communication (AAC) Intervention system using Human Computer Interface for Individuals with Severe/Profound Intellectual Disabilities**, Pooya Rahimian, Hossein Adeli
3:00-3:15	GO53	**Černý's Conjecture concerning Synchronizing Automata**, Miciah Dashiel Butler Masters

3:15-3:30	GO54	**The Promotion of Research and Collaborative Technology Through the ADEAP System,** Christopher R. Westbrook
3:30-3:45	GO55	**Irredundant Ramsey Numbers**, Ann Clifton
3:34-4:00	GO56	**Experimental Investigation Of t-way Testing**, Ranjan Bhambroo, Oleksii Starov

Great Rooms 2 & 3

*Biomedical Sciences – Graduate (8:30am –10:15pm **and** 10:30-12:15)*

8:30-8:45	GO57	**Fish Oil Diet Increased B Cell Lipid Raft Size and Molecular Order, Associated with Immunosuppressive Effects**, Benjamin Drew Rockett, Heather Teague, Mitchel Harris, and Saame Raza Shaikh
8:45-9:00	GO58	**Irr is the Main Iron Responsive Transcriptional Regulator in Brucella Abortus**, David A. Martinson, R.M. Roop II
9:00-9:15	GO59	**Injury-induced miR-431 promotes axon growth in murine dorsal root ganglion neurons**, Di Wu, Elena Pak, Alexander Murashov
9:15-9:30	GO60	**Increases in glutathione reductase activity following short-term exercise decrease infarct size in isolated rat hearts**, Chad R. Frasier, Hetal D. Patel, Luke M. Stewart, Ruben C. Sloan, Brian Hayes, David A. Brown
9:30-9:45	GO61	**The HTLV-1 Basic Leucine Zipper Factor (HBZ) inhibits the HAT activity of the cellular coactivators p300/CBP,** D. G. Wright, T. Wurm, N. Polakowski, I. Lemasson
9:45-10:00	GO62	**Erectile dysfunction precedes coronary artery endothelial dysfunction in response to a western diet: Influence of endothelial nitric oxide synthase uncoupling and prevention by exercise training**, Justin D. La Favor, Ethan J. Anderson, Miranda P. Chaaban, Robert C. Hickner, Christopher J. Wingard
10:00-10:15	GO63	**Lead and lag speaker positions during shadow speech inhibits stuttering,** Daniel Hudock, M.S., Doctoral Candidate, Joseph Kalinowski, Ph.D.
Break		
10:30-10:45	GO64	**Apigenin Inhibits Two-stage Chemical Carcinogenesis and COX-2 Signaling in SKH-1 Mouse Epidermis**, Alex J Kiraly, MS, Rukiyah T. Van Dross, PhD

10:45-11:00	GO65	**The bhuTUV and bhuO gene products play vital roles in the ability of Brucella abortus to use heme as an iron source and are regulated in an iron-responsive manner by RirA and Irr, respectively**, Jenifer Ojeda, RM Roop
11:00-11:15	GO66	**Oxygen Induced Resistance to Tert-butyl Hydroperoxide is mediated by DPS in Bacteroides fragilis**, Michael Betteken, Edson Rocha, C.J. Smith
11:15-11:30	GO67	**PPP1R42 IS A PUTATIVE REGULATORY SUBUNIT OF PROTEIN PHOSPHATASE-1 IN DEVELOPING MALE GERM CELLS**, Nicole DeVaul, Rong Wang, Ann O. Sperry
11:30-11:45	GO68	**Pulmonary exposure to multi-walled carbon nanotubes and C60 fullerenes activate indomethacin sensitive coronary responses to ET-1,** L. Thompson, E. Mann, A. Vidanapathirana, B. Harrison, L. Han, A. Lewin, S. Sumner, T. Fennell, J. Brown, C. Wingard
11:45-12:00	GO69	**Identification of the cytotoxic prostaglandin metabolite produced in Arachidonoyl Ethanolamide-treated Tumorigenic Keratinocytes,** Drisheka Thati, Allison Danell, Rukiyah T. Van Dross
12:00-12:15	GO70	**Examination of Neurobehavioral Impairments in a Triple-Transgenic Mouse Model of Alzheimer's Disease Across Development**, Iola D. Conchar, Lily M. Medina, Mark Mannie, Qun Lu, Tuan D. Tran

*Natural Sciences – Graduate (1:00pm – 3:15pm **and** 3:30-4:45)*

1:00-1:15	GO71	**Phenotypic Transition: Evolution of female coloration in threespine sticklebacks via ecological divergence in behavioral and hormonal mechanisms,** Lengxob Yong
1:15-1:30	GO72	**Are interactions between spiny dogfish (Squalus acanthias) and striped bass (Morone saxatilis) mediated by prey availability?,** Charles W. Bangley, Roger A. Rulifson
1:30-1:45	GO73	**Shell Microchemistry of Juvenile Mercenaria mercenaria: Spatiotemporal Patterns and Implications for Modeling Larval Dispersal,** Andrew M. Cathey, Nathan R. Miller, David G. Kimmel
1:45-2:00	GO74	**High-Resolution Measurements of Shoreline Change, Albemarle-Pamlico Estuarine System, North Carolina, USA,** Devon Olivola Eulie, J.P. Walsh, D. Reide Corbett
2:00-2:15	GO75	**Evidence and Implications of Horizontal Gene Transfer in Batrachochytrium dendrobatidis,** Tiffany Kosch, Guiling Sun, Zefeng Yang, Kyle Summers and Jinling Huang

2:15-2:30	GO76	**Sex Ratio Changes In Spiny Dogfish (Squalus acanthias) Fishery-Dependent Surveys In the Cape Cod Area: Fishery Management Aspects,** Andrea Dell'apa, Jennifer Cudney-Burch, Roger A. Rulifson
2:30-2:45	GO77	**Local and regional aspects of habitat quality jointly affect the biodiversity of ephemeral ponds**, Robert A. Deans, David R. Chalcraft
2:45-3:00	GO78	**Seed mass variation and cryptic seed heteromorphism in Packera tomentosa (Asteraceae),** L.D. Leverett
Break		
3:15-3:30	GO79	**Estimating straying rates of spawning blueback herring returning to Albemarle Sound, North Carolina tributaries,** Daniel H. Zapf, Roger A. Rulifson
3:30-3:45	GO80	**Evidence of River Herring Recovery in Chowan River, North Carolina**, Anne Dowling, Matthew Butler, Anthony Overton
3:45-4:00	GO81	**Characterizing Environmental and Physicochemical Conditions in Nursery Areas of River Herring in Chowan River, NC**, Matthew Butler, Anthony Overton, Annie Dowling
4:00-4:15	GO82	**Calibrated gillnets for use in population estimates**, Garry L. Wright, Roger A. Rulifson
4:15-4:30	GO83	**Reproductive ecology and population genetics of the king rail, Rallus elegans, at MacKay Island National Wildlife Refuge, NC**, Carol L. Brackett, Susan B. McRae

Monday, March 26, 2012 – Graduate Poster

MSC Room 221

*Biomedical Sciences – Graduate (8:30am – 11:30am **and** 1:30pm – 4:30pm)*

8:30-10:00	GP1	**Discovering a novel role of claudin-7 in regulating cell proliferation and maintaining cell-matrix interactions in human lung cancer cells,** Zhe Lu, Yan-Hua Chen
8:30-10:00	GP2	**Vascular PI3K-Akt Signaling contributes to Peripheral NMDAR-mediated Pressor Response in conscious rats,** Marie A. McGee, Abdel Abdel-Rahman
8:30-10:00	GP3	**Androgen signaling promotes Tmeff2 translation in prostate cancer cells through the phosphorylation of eIF2*α*,** Ryan Overcash, Maria Ruiz-Echevarria
8:30-10:00	GP4	**AMP-Activated Protein Kinase Inhibits Vascular Smooth Muscle Cell Migration via Stabilization of Actin Cytoskeleton and Focal Adhesions,** Joshua D. Stone, Avinash Narine, MD, MPH, Jackson R. Vuncannon, Jonathan C. Fox, Patti R. Shaver, David A. Tulis, PhD, FAHA
8:30-10:00	GP5	**Extracellular Processing of Aggregate and its Effect on CD44 Mediated Internalization of Hyaluronan,** Ben Danielson, Warren Knudson
8:30-10:00	GP6	**Fusion protein pretreatment inhibits Experimental Autoimmune Myocarditis,** Shaun Reece, Robert Lust Ph.D., Mark Mannie Ph.D., Michael Van Scott Ph.D.
8:30-10:00	GP7	**The Route of Administration of Fullerene (C60) Influences the Vasoconstrictor Response of the Uterine Artery of Pregnant Sprague Dawley Rats,** A.K. Vidanapathirana, L.C. Thompson, E.E. Mann, S. Sumner, Li, Han, A.H. Lewin, T.R. Fennell, J.M. Brown, and C.J. Wingard
8:30-10:00	GP8	**N-3 Polyunsaturated fatty acids as regulators of antigen presentation,** Heather Teague, Ron Ross, Mitchel Harris, Benjamin Rockett, Drake C. Mitchell, Saame Raza Shaikh

8:30-10:00	GP9	**Altered Expression Of Glycogen Synthase Kinase3² In The Dorsal Column Of The Spinal Cord Is Associated With Neuropathic Pain Following Spinal Cord Injury,** Molly Pleasants, Kori L. Brewer, Ph.D., Shelley Burgess, Sonja K. Bareiss PT, Ph.D.
8:30-10:00	GP39	**The iron transporter Bfe is a critical virulence determinant in Brucella abortus 2308 and expression of the genes encoding this transporter is regulated by iron and acidic pH,** Ahmed E. Elhassanny, Eric S. Anderson, Clayton C. Caswell, R. M. Roop II
10:00-11:30	GP10	**The dual roles of TMEFF2 in tumorigenesis,** Xiaofei Chen, Dong Seok Cha, Myon Hee Lee, Maria Ruiz-Echevarria
10:00-11:30	GP11	**Effects of a high fat diet and exercise on fatty acid oxidation and mitochondrial content in lean and obese individuals,** GM Battaglia, D Zheng, JA Houmard
10:00-11:30	GP12	**A Novel Role for the Central Atypical Cannabinoid Receptor GPR18 in Modulating Cardiovascular Function,** Anusha Penumarti, Abdel Abdel-Rahman
10:00-11:30	GP13	**A dissection of Mcm10's functions in D. melanogaster,** Michael C. Reubens, Casi Strickland, Tim W. Christensen
10:00-11:30	GP14	**Utilization of alternative mRNA forms of CED-4/Apaf-1 during germ cell apoptosis,** J. Kaitlin Morrison, Vince Contreras, Enhui Hao, Brett Keiper
10:00-11:30	GP15	**The Effect of Chronic Morphine Treatment on the Abundance of Cell Signaling Proteins in the Guinea Pig Longitudinal Muscle-Myenteric Plexus,** Ben Thompson, Peng Li, Kathleen Thayne, Jackie Masterson, David A. Taylor
10:00-11:30	GP16	**Mitochondrial glutathione depletion reveals a novel role for pyruvate dehydrogenase as a key H2O2 emitting source,** Kelsey H. Fisher-Wellman, Laura A. A. Gilliam, Chien-Te Lin, Brook L. Cathey, P. Darrell Neufer
10:00-11:30	GP17	**Modulating Oscillatory Neurons in the Suprachiasmatic Nucleus (SCN) with Transcranial Magnetic Stimulation,** Bineyam Kassahun, Martin Bier, Jian Ding

10:00-11:30	GP18	**THE IMPACT OF BISPHENOL-A (BPA) EXPOSURE ON NEURO-DEVELOPMENT AND SUBSEQUENT VISUOSPACIAL LEARNING AND MEMORY,** JN Franklin, JC DeWitt
10:00-11:30	GP40	**Cyclooxygenase-2 is a Crucial Contributor to Anandamide-induced ER Stress in Non-melanoma Skin Cancer Cells**, Eman Soliman, MS, Rukiyah Van Dross, Ph.D.
Break		
1:30-3:00	GP19	**Cytokine-OVA(323-339) fusion proteins as a means to modulate allergic responses to ovalbumin in mouse models of asthma,** Stefanie C. M. Burleson, Michael R. Van Scott, Mark D. Mannie
1:30-3:00	GP20	**Contributions of Thiol Redox State and Mitochondrial Calcium to Augmented Mitochondrial Permeability Transition in the Diabetic Heart,** Fatiha Moukdar, Ruben C. Sloan, Chad R. Frasier, Phillip A. Bostian, Hetal D. Patel, Robert M. Lust, David A. Brown
1:30-3:00	GP21	**Exploration of potential mechanisms of perfluorooctanoic acid-induced developmental cardiotoxicity in an avian model,** Qixiao Jiang, Robert Lust, Jamie C DeWitt
1:30-3:00	GP22	**Benchtop time domain-NMR Lipoprotein Studies,** Michelle Robinson, Nate Kingsbury, Katie Tyson, Emily Svoboda, Dr. David Cistola
1:30-3:00	GP23	**ZCL278, a Small Molecule Targeting Rho GTPase Subclass Cdc42 Disrupts Golgi Organization and Suppresses Cell Motility,** Amy Friesland, Yan-Hua Chen, Qun Lu
1:30-3:00	GP24	**Dopamine's modulatory actions in the spinal cord depend on the location of the reflex circuitry and are mediated via gap junctions,** Tracy Johnson, Stefan Clemens, PhD
1:30-3:00	GP25	**The Effects of a 6 month Exercise Program on Abdominal Adiposity in Roux-en-Y Gastric Bypass Patients,** Jennifer Worley, Joseph Houmard, Charles Tanner, Gabriel Dubis
1:30-3:00	GP26	**POPLITEAL ARTERY BLOOD FLOW VARIABILITY IN RELATION TO MEAN ARTERIAL PRESSURE AND VASCULAR CONDUCTANCE IN WOMEN,** SE Kehe, TP Gavin, FACSM

1:30-3:00	GP27	**Activation of the proton sensing GPR4 receptor in B16F10 melanoma cell lines decreases cell migration and regulates cytoskeletal structures,** Calvin R. Justus, Nancy R. Leffler, Li V. Yang
3:00-4:30	GP28	**Psf2: A Role In Chromosome Condensation,** Jeffrey Chmielewski, Laura Henderson, Tim Christensen
3:00-4:30	GP29	**Effect of amidated gastrin and glycine-extended gastrin on Hox A1 gene expression in HT29 cells,** Daniel R. White, Jean-Luc Scemama
3:00-4:30	GP30	**Hox gene differential expression during the differentiation of human colon cancer cell line HT29,** Lucy D. Conaty, Margit Schmidt, Jean-Luc Scemama
3:00-4:30	GP31	**THE EFFECT OF A PLANTARFLEXOR STRENGTH TRAINING PROGRAM ON GAIT BIOMECHAINCS IN HEALTHY OLD ADULTS,** Rachel Tatarski, Robert Brady, Katie Yamamoto, Benjamin Anderson, Zachary Domire, Patrick Rider, Paul DeVita
3:00-4:30	GP32	**Using Transformations to Analyze Data With Statistical Software,** James L. Byrd III, Dr. Jason S. Brinkley
3:00-4:30	GP33	**Mesothelin: A Path to Pancreatic Cancer Treatment?,** Andrew Freistaedter, Gwendolyn Jones, Emmanuel Zervos, Rachel L. Roper
3:00-4:30	GP34	**Role and function of synaptopodin-2 Isoform B in HT29 cells,** S. Thalhamer, K. Shortt, M. Campbell, M. Schmidt, J. Chalovich, JL. Scemama
3:00-4:30	GP35	**Variations in velopharyngeal mechanism between the upright and supine position using MRI in young children,** Lakshmi Kollara Sunil, BSc, Jamie Perry, PhD
3:00-4:30	GP36	**Ca2+ binding to Human Cardiac Troponin C,** Rachel A. Skowronsky, Anne M. Spuches, PhD
3:00-4:30	GP37	**Thermodynamic Studies of Copper Binding to Alzheimer's Amyloid-Beta Peptide,** Sunitha Gade, Anne Spuches

Balcony

Natural Sciences – Graduate (8:30am – 11:30am)

8:30-10:00	GP38	**Using Otolith and Water Chemistry to Determine Philopatry and Vagrancy of Striped Bass (Morone Saxatilis) in the Albemarle Sound/Roanoke River Stock**, C.S. Hughes, R. Rulifson
8:30-10:00	GP40	**Cyclooxygenase-2 is a Crucial Contributor to Anandamide-induced ER Stress in Non-melanoma Skin Cancer Cells**, Eman Soliman, MS, Rukiyah Van Dross, Ph.D.
8:30-10:00	GP41	**Zooplankton dispersal from temporary versus permanent ponds,** Lauren C. McCarthy, David R. Chalcraft
8:30-10:00	GP42	**Jellyfish-human interactions at estuarine recreation sites are influenced by local wind dynamics,** Mahealani Y. Kaneshiro-Pineiro, Meghan B. Lell, David G. Kimmel
8:30-10:00	GP43	**An application of volunteer-collected data: water quality dynamics as a result of Hurricane Irene in the Albemarle-Pamlico estuary,** M. Chad Smith
8:30-10:00	GP44	**Dosimetric Investigation of Eye Plaque Applicator with Praseodymium-142 using Monte Carlo Simulation**, MC Ferreira, JW Jung
8:30-10:00	GP45	**Characterization of the Roles of Mcm10 in Drosophila Melanogaster,** Ritu Dalia, Michael Reubens, Dr. Tim Christensen
8:30-10:00	GP46	**Export of Terrigenous Material Through the Neuse River Estuary, NC Following Hurricane Irene: Evidence from Field Measurements, Remote Sensing and Numerical Modeling**, Matthew M. Brown, Richard L. Miller, Ryan P. Mulligan
10:00-11:30	GP47	**Mathematical Analysis of Tsunamis and Rogue Waves,** Bradley Eidschun
10:00-11:30	GP48	**Characterization of preserved overwash deposits, North Carolina coast,** Ian Conery
10:00-11:30	GP49	**Groundwater flow and water table position within the surficial aquifer, Emerald Isle, North Carolina: An assessment of causes and solutions to storm-water flooding**, Michael S. Sisco, Alex K. Manda
10:00-11:30	GP50	**Investigating condition indices of Central Southern Management Area striped bass (Morone saxatilis) to asses seasonal variability in condition and reproductive enrgy allocation**, Jeffrey M. Dobbs, Roger A. Rulifson
10:00-11:30	GP51	**Gahnite Composition in Granitic Pegmatites**, Joshua Bitner, Adriana Heimann, Michael Wise, Dwight Rodrigues Soares, Ana Cláudia Mousinho Ferreira

10:00-11:30	GP52	**Sedimentological and Geochemical Signatures of Flood and Storm Deposits on the Louisiana Continental Shelf,** David Young, JP Walsh, DR Corbett
10:00-11:30	GP53	**Phenotypic characterization of vegetative development in the maize fuzzy tassel mutant,** Christine Todd, Beth Thompson
10:00-11:30	GP54	**A Climatology of the Structure and Propagation of Midlatitude Cyclones that affect North Carolina**, Lin Hall, Rosana Nieto-Ferreira
10:00-11:30	GP55	**Pharmaceutical and Personal Care Product Chemicals in Eastern North Carolina Onsite Wastewater Systems**, Katie Super, Dr. Siddhartha Mitra, Dr. Charlie Humphre, Dr. Mike O'Driscoll

Balcony

Humanities – Graduate (1:30pm – 3:00pm)

1:30-3:00	GP56	**Comparative Beliefs Among Rural African-Americans and Health Care Workers Regarding Organ Donation in Eastern North Carolina,** Aaron Vose
1:30-3:00	GP57	**Readers' Theater as a Tool in Combating Childhood Obesity**, Brandon Mills, Olivia Money
1:30-3:00	GP58	**An Exploration of the Provision of Women's Reproductive Care in a Regional Hospital in Cusco, Peru,** Sarah M Bennett, Nichelle A Barbari
1:30-3:00	GP59	**Hispanics in Eastern North Carolina have created a Health Care Network from Non-Traditional Resources,** Katherine Shannon Booker, Aseem Kaul, Anusha Vadlamudi
1:30-3:00	GP60	**Chief Junaluska: Fact or Folklore?**, Emily Joyce Bone

Visual Art and Design – Graduate (1:30pm – 3:00pm)

1:30-3:00	GP114	**Vessels for Growth,** Karen H. Silinsky

Social Room

*Human Health – Graduate (8:30am – 11:30am **and** 1:30pm – 3:00pm)*

8:30-10:00	GP61	**Comparison of lifting mechanics, hamstring flexibility, and functional strength in active and non-active computer users**, Leah Hollar, SPT, Susan Leach, PT, PhD, NCS
8:30-10:00	GP62	**COMPLETE FATTY ACID OXIDATION IS DEPRESSED FOLLOWING CHRONIC HYPERINSULINEMIA AND HYPERLIPIDEMIA IN HUMAN MYOTUBES FROM SEVERELY OBESE WOMEN**, JM Maples, TM Weber, MA Reed, TP Gavin, WJ Pories, GL Dohm, Joseph A. Houmard
8:30-10:00	GP63	**Relationship of Hamstring Flexibility and Ankle Joint Function during Running in Male and Female Runners,** Paul W. Kline, Lee M. Welch, DS Blaise Williams III
8:30-10:00	GP64	**THE RELIABILITY AND VALIDITY OF THE SWAY SLED AS A NEW CLINICAL MEASURE OF STABILITY LIMITS**, Ryan Shoaf, Melissa van der Linde, Courtney Ross, N. Jones, Leslie Allison
8:30-10:00	GP65	**THE EFFECTS OF CHRONIC PAIN ON SKELETAL MUSCLE AND ITS RESPONSE TO EXERCISE**, Melissa W. Wilson, Eamon Doherty, Morgan Pearce, Sonja K. Bareiss, Kori L. Brewer, Terry E. Jones
8:30-10:00	GP66	**Vitamin D receptor expression with aging and exercise in skeletal muscle,** Brittanny C. Matthews, Rengfei Shi, Hoke B. Whitworth, William T. Mixon, Scott E. Gordon, Terry E. Jones
8:30-10:00	GP67	**Gender Differences in Frontal Plane Excursion at the Knee during a Single Leg Landing**, H Bendahmane, KJ Waggoner, J Hefner, WL Jenkins, DB Williams
8:30-10:00	GP68	**Comparison of static & dynamic balance between computer users who exercise and those who are sedentary,** Kassi Rose, SPT, Susan Leach, PT, PhD, NCS
10:00-11:30	GP69	**Comparison of strength, pain and physical function between computer users: exercisers vs. non-exercisers**, Tiffany Fletcher, Sue Leach, PT, PhD, NCS

10:00-11:30	GP70	**EFFECTS OF A HIGH FAT DIET AND MUSCLE CONTRACTION ON THE EXPRESSION OF THE GLUCOSE TRANSPORTER IN SKELETAL MUSCLE**, Courtney M. Stearn, L. Brittany Rice, Jonathan E. Williams, Morgan M. Pearce, Terry E. Jones
10:00-11:30	GP71	**WORKSITE INTERVENTION TO REDUCE OCCUPATIONAL SEDENTARY TIME**, Mallory Peavler, Lucas J. Carr
10:00-11:30	GP72	**MANIPULATION OF WALKING VELOCITY IN OLD ADULTS,** Alexis Sidiropoulos, Patrick Rider, Aubrey Taylor, Steve Roseno, Tibor Hortobágyi, Paul DeVita
10:00-11:30	GP73	**COMPLEX MOVEMENT AND COGNITIVE FUNCTION**, N.A. Boerio, T.F. Mahar, C.R. Diaz, C.D. Kemble, K. Kim, M.T. Mahar
10:00-11:30	GP74	**LOADED VISUOMOTOR TRAINING DOES NOT LEAD TO INCREASED STRENGTH GAINS COMPARED TO TRADITIONAL RESISTANCE TRAINING IN HEALTHY YOUNG ADULTS,** Jeff Morgan, Patrick Rider, Stanislaw Solnik, Paul DeVita, Tibor Hortobágyi
10:00-11:30	GP75	**The Effects of Quadriceps Strengthening Exercise on Quadriceps Biomechanics During Locomotion in Individuals with Knee Osteoarthritis,** Josh Leonardis, Patrick Rider, Meredith Hayek, Sean Conaty, Jens Aaboe, Marius Henriksen, Robin Christensen, Henning Bliddal, Paul DeVita
10:00-11:30	GP76	**SKELETAL MUSCLE INSULIN SENSITIVITY AND DURATION OF TYPE 2 DIABETES MELLITUS**, JM Ernst, SE Kehe, AH Clark, RD McKernie, HB Kwak, MA Reed, M Dar, WE Pofahl, GL Dohm, TP Gavin, FACSM

Break

1:30-3:00	GP77	**Efficacy of an Intervention to Reduce Sedentary Time for Improving Cardiometabolic Risk Factors,** Rebecca D. Smith, Lucas J. Carr, PhD.
1:30-3:00	GP78	**Assessing Relationships between Health Literacy, Diabetes Status, and Income,** Sarah Williamson, Kenda Lewis, BS, Holly Mahoney, BS, Joy King, BA, Emily DiNatale, BA, Lesley Lutes, PhD
1:30-3:00	GP79	**KNEE MOMENT AND FORCE PREDICTIONS USING ULTRASOUND-BASED VS. SCALED MUSCULOSKELETAL MODELS,** John Pope, Paul DeVita, Anthony S. Kulas, Patrick Rider

1:30-3:00	GP80	**Comparison of Joint Kinematics and Ground Force Data between Lean and Obese Canines**, Robert Brady, Alexis Sidiropoulos, Patrick Rider, Hunter Bennett, Paul DeVita
1:30-3:00	GP81	**DOSE-RESPONSE RELATIONS BETWEEN CHANGE IN SEDENTARY TIME AND CHANGE IN CARDIOMETABOLIC RISK FACTORS,** Kayla Cangelosi, Lucas J. Carr
1:30-3:00	GP82	**Effect of Muscle Activation on Fascicle Behavior of the Biceps Femoris Long Head**, Hunter Bennett, Matt Salzano, Marguerite Howell, Patrick Rider, Dr. DeVita, Dr. Kulas
1:30-3:00	GP83	**REGULATION OF LIPOLYSIS BY BETA-ADRENERGIC ACTIVATION AND EXERCISE IN OBESE AFRICAN-AMERICAN AND CAUCASIAN WOMEN,** Dustin K. Raymer, Kathleen Gavin, Charles Tanner, Robert C. Hickner, FACSM
1:30-3:00	GP113	**Project MENTOR: Effect of a mentor based exercise intervention on body mass index and DEXA levels for obese adolescents,** J. Andleton, M. Erickson, T. Raedeke, L. Lutes, M. McCammon

Social Room

*Social Sciences – Graduate (8:30am – 11:30am **and** 1:30pm – 4:30pm)*

8:30-10:00	GP84	**Comparison of student self-efficacy and attitudes towards web-based and face-to-face instructional methods for a food science course and lab experience**, Ashley Roseno, BS
8:30-10:00	GP85	**FoodMASTER Initiative: nutrition knowledge gains of 4th grade students after use of an integrative education program,** Carissa Ochab, RD, Virginia Carraway-Stage, MA RD LDN, Melani Duffrin, PhD RD LDN.
8:30-10:00	GP86	**Acceptance and Implementation of SBIRT protocols within Primary Care,** Marina Stanton, MS, LMFTA, Jennifer Hodgson, PhD, LMFT, Paul Toriello, RhD, CCS, LCAS, CRC, Josh Fowler, BS
8:30-10:00	GP87	**Process evaluation and cost benefit analysis of at risk youth through middle school intervention for dropout prevention,** Katherine Kovarik, Samantha Gabriele, Ben Blanton

8:30-10:00	GP88	**Ophelia Boiling! Relational Aggression among Middle School Girls: Social Work Prevention and Intervention for Teachers and Families**, Mary Beth Campbell, Rachael A. Jones, Amy M. O'Neal, Meagan Capers, Tracy Carpenter-Aeby, PhD, LCSW
8:30-10:00	GP89	**A Systematic Review of Evidence-Based Social Work Practice: Minimizing the Effects on Children who have Witnessed Domestic Violence,** Kellie Jones, Ashley Robinson, Nicole Williams, Tracy Carpenter-Aeby, PhD, LCSW
8:30-10:00	GP90	**A Qualitative Description and Comparison of the Self-Reported Strengths and Concerns of Obese Treatment-seeking Youth and Caregivers,** Sarah Radley, BA, Keeley Pratt, PhD, LMFT, Angela Lamson, PhD, LMFT, CFLE, Annette Greer, PhD, MSN, RN
8:30-10:00	GP91	**Factors Influencing Brand Loyalty to Microbreweries in North Carolina**, Alison Murray
10:00-11:30	GP92	**Mapping The Negro Motorist Green Book: A Geographic Legacy of Tourism during the Jim Crow Era**, Richard Kennedy
10:00-11:30	GP93	**Evaluating Group Dynamics in an Experiential Groups Class for MSW Students,** Jason Radosevich, Tamyra Jovel
10:00-11:30	GP94	**Program Evaluation of Life Skills Groups for Elementary Students At-Risk for Suspension, Academic Failure, or Dropout,** Lynn C. Bassett, Tonya M. LeBlanc, Philip A. Pennington, Sarah Tyson, Elana C. Zipkin
10:00-11:30	GP95	**USE OF WEATHER AND CLIMATE DATA IN TOURISM BUSINESS DECISION-MAKING: THE CASE OF BEAUFORT, NORTH CAROLINA**, Heather Blair, Scott Curtis, Patrick Long, Sarah Jessup
10:00-11:30	GP96	**Genetics and Bioethics for the Non-Medical Social Work Practitioner,** Traci Crayton, Kelley Reinsmith-Jones, Ph.D.
10:00-11:30	GP97	**An Importance-Performance Analysis (IPA) of Tourist Activities and Amenities in Cuba,** Erin Green, Nathan Hingtgen, Dr. Carol Kline
Break		
1:30-3:00	GP98	**Survival Landscapes for a Zombie Apocalypse**, Janna Caspersen, Matthew Carey

1:30-3:00	GP99	**Identifying breakdowns in North Carolina's agricultural value chain using Importance-Performance Analysis**, Shan Newton, Dr. Carol Kline
1:30-3:00	GP100	**Assessment of Campus Recreation & Wellness Student Employees and Leadership Skill Development,** Stephen Tucci, Nelson Cooper
1:30-3:00	GP101	**Hurricane Irene: North Carolina Tourism Impacts**, Haley Winslow, Alex Naar
1:30-3:00	GP102	**Control Methodology in Organic Residue Analysis Using FT-IR Spectroscopy**, D. Kyle McCandless, Dr. Laura Mazow, Dr. Anthony Kennedy, Susanne Grieve, Kim Tillapaugh
1:30-3:00	GP103	**Examination of Psychological Change After a One Week Mindfulness Meditation Intervention**, Anne Corinne Carroll, Kristen Williams, Rebekah Evans, Layton Reesor, Christyn Dolbier, PhD
1:30-3:00	GP104	**John Lawson's Hatteras "Indian Town",** Baylus Brooks
3:00-4:30	GP105	**Sustainability in Skiing: Applying an Industry Analysis to a Sustainable Mountain Playground Model,** Garrett Ziegler
3:00-4:30	GP106	**Bullying and School Violence: Trends, Prevention, and Evidence-Based Interventions in Social Work Practice**, Emily Lybrand, Tracy Carpenter-Aeby, PhD, LCSW, Vic Aeby, PhD
3:00-4:30	GP107	**Resource Mobilization and Organizational Mortality in the North Carolina Environmental Movement, 2003-2009,** Hyun Woo Kim
3:00-4:30	GP108	**Statistical analysis of Distress Toll Implemented to Measure Psychosocial and Physical Stressors within an Oncologic Population,** Carolyn Sisenstein
3:00-4:30	GP109	**How Do You Fly...Fish?**, Whit Winslow
3:00-4:30	GP110	**Jamming Attack and Detection in WLAN**, Tian Fu
3:00-4:30	GP111	**The Effect of the Mathematics of Finance on the Dynamics of a Credit Economy,** Jessica J. Bennett
3:00-4:30	GP112	**Safety Performance Evaluation of the North Carolinian Motor Carriers Compare to other Motor Carriers in the North America based on the Compliance, Safety, Accountability (CSA 2010) Measurement System,** Hossein Hosseini Tabar

Graduate Distance Education Poster

Biomedical Sciences

Online	GDP1	**Benefits of Hepatic Resection for Noncolorectal Nonneuroendocrine Liver Metastases Based on Histology**, Shannon Banks, Jason Brinkley, Timothy Fitzgerald

Human Health

Online	GDP2	**What It is: A Concept Analysis of Sexual Coercion**, LaNika Wright, Martha Alligood, PHD, RN
Online	GDP3	**Effects of Instruction Method on Vital Capacity and Maximum Sustained Phonation in Adult Female Controls**, Angela Ohlhaut, Kathleen T. Cox, Ph.D.

Social Sciences

Online	GDP6	**Examining the Relationship between Intramural Sports Participation and Sense of Community among College Students**, Chelsea A. C. Phipps
Online	GDP7	**Tourism Impacts and Second Home Development in Coastal Communities: A Sustainable Approach,** P. Long, H. Hao, W. Knollenberg, C. Landry, D. Peterson, T. Crawford

Wednesday, March 28, 2012 – Undergraduate Oral

Great Room 1

Humanities – Undergraduate (8:30am – 10:15am)

8:30-8:45	UO1	**The Agni,** Jonathan Burger
8:45-9:00	UO2	**A Kiln Named Pandora**, Jacob Herrmann
9:00-9:15	UO3	**The Qero Half Full: The Value of Water and Liquids in Ancient Andean Life**, Heather M. Bowen
9:15-9:30	UO4	**The House of Connelly**, Michael Avery, Margret Bauer
9:30-9:45	UO5	**The Constitution of a Foundation: Philosophical Education, Moral Reasoning, and Facing the Challenges of the 21st Century,** Dillon R. Godley, Dr. James L. Smith
9:45-10:00	UO6	**The Demise of the Nazi Regime as Depicted in Downfall,** William Schmidt, Christopher Nilson, Valerie Mele
10:00-10:15	UO7	**Immigration and Chicana Identity in 'Across A Hundred Mountains' (2006)**, Cassidy Cloninger

Great Room 2+3

Natural Sciences – Undergraduate (8:30am – 9:45am)

8:30-8:45	UO8	**Development of a Novel Carbon Nanotube Filter for Farmer Respiratory Protection Compliance**, Erica Reid
8:45-9:00	UO9	**Oil spill cleaning method by nanofiber sorbency**, Lauren R. Bridgers, Brooke E. Sullivan
9:00-9:15	UO10	**Exploration of Microbial Diversity in Serpentinite Habitats**, Emilee K. Quinn, Katrina I. Twing, Alyssa N. Kloysuntia, William J. Brazelton, Matthew O. Schrenk, PhD
9:15-9:30	UO11	**Does egg shell coloration influence parental care in the Eastern bluebird?**, William Davis

9:30-9:45	UO12	**Investigation of the Formation and Degradation of Urea Linkages Formed Between Aromatic Isocyanates and Aromatic Amines using Model Compounds and in-situ Kinetic NMR Spectroscopy**, Jason Atkinson

MSC Room 244

*Social Sciences – Undergraduate (8:30am – 9:45am **and** 10:00am – 11:00am)*

8:30-8:45	UO13	**An Examination of the Psychological & Neurological Mechanisms of Mindfulness Meditation Practice**, Suzanne M. Frisbee, Christyn L. Dolbier, PhD,
8:45-9:00	UO14	**Business School Forecasting for the Real World,** Jacob Davis, John Kros PhD
9:00-9:15	UO15	**A New Approach to a Given Solution**, Angelina Knies
9:15-9:30	UO16	**Understanding Creatively Gifted Students: Pre-Service Teachers' Understandings and Professors' Practices**, Maria E. Avery, Elizabeth A. Fogarty
9:30-9:45	UO17	**Effects of a Potential Mate's Presence on Athletic Performance**, Nicholas Thomas, Dr. Michael Baker
Break		
10:00-10:15	UO18	**Comparing the Health Locus of Control among Caucasian and Hmong College Students**, Doaw Xiong, BSW, Tracy Carpenter-Aeby, Ph. D, LCSW
10:15-10:30	UO19	**Scanning the B&B industry for current marketing practices: Research in progress**, Rose Bobbitt, Mary Sanderson, Alleah M. Crawford, PhD
10:30-10:45	UO20	**Can a One Week Mindfulness Meditation Intervention Have Substantive Psychological and Physiological Benefits?**, Benjamin Aydelette, Dr. Christyn Dolbier
10:45-11:00	UO21	**Pink Ribbon vs. Red Dress: Does Over-marketing Cause Misconceptions about Women's Health Risk?**, Carlyn Whitten, Maureen Thomas, Sierra Bowser

Wednesday, March 28, 2012 – Undergraduate Poster

MSC Room 221

*Biomedical Sciences – Undergraduate (8:30am – 11:30am **and** 1:30pm-3:00pm)*

8:30-10:00	UP1	**Analyses of the human parainfluenza virus type 3 RNA polymerase predomain in vivo**, M. Addington-Hall, G. Wells, A. Malur
8:30-10:00	UP2	**Relative Muscle Force Steadiness and Visual Steadiness in Young Adults**, Luke Spangler, Kathryn Reynolds, Rebecca Krupenevich, Patrick Rider, Dr. Nicholas Murray, Dr. Paul DeVita
8:30-10:00	UP3	**ABSOLUTE MUSCLE FORCE STEADINESS AND VISUAL STEADINESS IN YOUNG ADULTS**, Kathryn Reynolds, Luke Spangler, Rebecca Krupenevich, Patrick Rider, Dr. Nicholas Murray, Dr. Paul DeVita
8:30-10:00	UP4	**Differentiation of Candida dubliniensis and Candida albicans isolates collected from three clinical microbiology labs in Eastern North Carolina**, Brittany V. Whitehurst, Katie N. Casto, Mallory A. Herbold
8:30-10:00	UP5	**Impact of Crude Oil Exposure on Caenorhabditis elegans Locomotion Behavior and microRNA Expression**, Adrien Ennis, Yanqiong Zhang, Xiaoping Pan
8:30-10:00	UP6	**HTLV-1-encoded protein, HBZ, stabilizes c-Jun expression,** Oppah Kuguyo, Nicholas Polakowski, Isabelle Lemasson
8:30-10:00	UP7	**Excitotoxic dorsal horn injury induces inflammatory changes in dorsal root ganglia below the level of injury,** Stefania Blevins, Kori L. Brewer, Ph.D., Elizabeth Dugan, Ph.D, Brian Whitfield
8:30-10:00	UP8	**Chemokines and Pro-tumor Neutrophils May Contribute to the Pre-Metastatic Niche**, Jered Cope Meyers, George Howard, IV, H Keith Pittman, Zachary Phillips, Dare Moore Imes, David Milbourn, Kathryn M. Verbanac
8:30-10:00	UP9	**Borrelia burgdorferi periplasmic flagellar proteins FliP and FliQ are important for flagellar biogenesis,** K. Lees, X. Zhao, J. Liu, M. Motaleb
10:00-11:30	UP10	**AMP-Activated Protein Kinase Inhibits Transforming Growth Factor-beta Mediated Cell Cycle Progression and Proliferation of Vascular Smooth Muscle Cells**, Jackson R. Vuncannon, Joshua D. Stone, David A. Tulis
10:00-11:30	UP11	**Psf2 Mediation Through the Chk2 Checkpoint Pathway**, Samantha Mandel, Dr. Christensen

10:00-11:30 UP12 **Microbial Cell Counts: What cell counts surround us?**, Nicole M. Bermudez, Matthew Schrenk

10:00-11:30 UP13 **Elevated cardiac glutathione peroxidase activity is a strong predictor of adverse post-operative outcomes following cardiac surgery**, Timothy M. Darden, Kathleen Thayne, Taylor A. Mattox, Lalage A. Katunga, Alan P. Kypson, Evelio Rodriguez, J. Mark Williams, Curtis A. Anderson, Theodore C. Koutlas, Ethan J. Anderson

10:00-11:30 UP14 **IMMUNOPATHOGENESIS IN AUTISM: REGULATORY T CELLS AND THE EFFECTS OF DEVELOPMENTAL EXPOSURE TO PERFLUOROOCTANESULFONIC ACID (PFOS) AND PERFLUOROOCTANIC ACID (PFOA) ON THE CEREBELLUM IN C57BL/6 MICE**, I.L. Bryan, J.C. DeWitt

10:00-11:30 UP15 **Multi-walled Carbon Nanotubes Inhibit Regenerative Axon Growth of Dorsal Root Ganglia Neurons in Mice,** Dioval A. Remonde, Abdalla Raafat, Di Wu, Elena Pak, Christopher Wingard, Alexander Murashov

10:00-11:30 UP16 **The Effects of Synaptopodin 2 Overexpression in Colon Cancer Cells**, M. Campbell, S. Thalhamer, K. Shortt, M. Schmidt, J. Chalovich, J.L. Scemama

10:00-11:30 UP17 **The Effects of C60 Exposure to Pregnant Dams on Neuronal Activation and Behavioral Outcomes of Offspring**, Alvin M. Tsang, Christopher J. Wingard, Jamie C. DeWitt

10:00-11:30 UP18 **Role of Zur and ZnuABC in Maintaining Intracellular Zinc Levels in Pseudomonas aeruginosa,** Ryan M.D. Cook, Whitney A. Parrish, Matthew L. Ellison, Everett C. Pesci, Allison S. Danell

Break

1:30-3:00 UP19 **Involvement of integrin signaling in macrophages in alcoholic liver,** Amber Norris, Kun Zhang, Sherri Moore, Ian N Hines

1:30-3:00 UP20 **The effects of light environment on female threespine stickleback red throat coloration,** Christina Webster, Anais Delacruz, Dr. Jeffrey McKinnon, Lengxob Yong

1:30-3:00 UP21 **Raccoonpoxvirus Safety in Immunocompromised Mice**, Corey Boles, Lori Byers, Gwen Jones, Rachel Roper

1:30-3:00 UP22 **Protective Effects of the Soluble Guanylate Cyclase Activator BAY 60-2770 on Vascular Smooth Muscle Growth**, Amber N. Heckart, Chintamani N. Joshi, David A. Tulis

1:30-3:00	UP23	**Aging-Related Changes in Heart Function and the Role of the Dopamine D3 Receptor,** Mukund Patel, Stefan Clemens, PhD
1:30-3:00	UP24	**An evaluation of Mcm10 mutant fly lines in Drosophila melanogaster**, Wayne A. Rummings, Jr., Tim W. Christensen
1:30-3:00	UP25	**Disruptions in the glycosylation pathway alter cell surface expression of the Kv3.1 glycoprotein,** Christopher J. Bernetski, M. Kristen Hall, Ruth A. Schwalbe
1:30-3:00	UP26	**Regulation of Connexin 43 by DADS in Vascular Smooth Muscle**, Danielle N. Martin, Chintamani N. Joshi, David A. Tulis
1:30-3:00	UP27	**Transgenerational Effect of Paternal High-fat Diet and Exercise on Metabolic Profiles in Mouse offspring**, O.Williams, M.Koury, M.Jeyakumar, A.Ajmera, E.Pak, D.Walters, D. Neufer, A.K. Murashov

Human Health – Undergraduate (3:00pm – 4:30pm)

3:00-4:30	UP28	**College-Age Males and Oral Human Papillomavirus: Risk factors, Vaccination and Public Health**, Justin Sharpe, Sloane Burke, Karen Vail-Smith
3:00-4:30	UP29	**College Students' Dietary Habits and Perceived Barriers to Following a Healthy Lifestyle**, Cecilia Batchelor, Kimberly Heidal, PhD, RD
3:00-4:30	UP30	**Feasibility of LifeBalance Station® for Reducing Sedentary Time in the Workplace**, Pamela J. Muscher, Lucas J. Carr, Christoph H. Leonhard
3:00-4:30	UP31	**Measured vs. Predicted Energy Expenditure,** Derval A. Hamilton, Jonathan M. Moore, Lindsey N. Ryan, Michael M. McCammon
3:00-4:30	UP32	**Organic Foods and Students' Opinions**, Joshua Griffin
3:00-4:30	UP33	**Mask vs. mouthpiece during metabolic testing at rest and during steady-state exercise**, Catherine Dahl, Arra Azimi, Jordan Baker, Stephanie Butschky, Matt Dalgetty, Natalie Salovich, Kelly Schurtz, Jackie Varnum, Charles J Tanner
3:00-4:30	UP34	**Early Markers for Painful Diabetic Neuropathy in Rats Exposed to High Fat/ High Sucrose Diet**, Shelley Burgess, Justin La Favor, Christopher J. Wingard PhD, Sonja K. Bareiss PhD, PT
3:00-4:30	UP35	**Spinal Cord Injury Pain is Associated with Abnormal Growth of Sensory Neurons**, Angela Korleski1, Martha Gwaltney SPT, Kori L. Brewer Ph.D , Sonja K. Bareiss Ph.D, PT

3:00-4:30	UP36	**Foodborne Illness Outbreaks and the Importance of Environmental Assessments**, Victoria Sellers
3:00-4:30	UP89	**Multilingualism in Clinical Practice: A Survey of Speech-Language Pathologists,** Jacqueline Dolan, Heather Ramsdell, PhD

Balcony

Engineering – Undergraduate (10:00am – 4:30pm)

10:00-11:30	UP37	**Liquid Fluoride Thorium Reactors**, Gibson Gillespie
10:00-11:30	UP38	**Roof-Top Gardens and Wastewater Recovery**, Leandro Rodriguez, Jacques Ray, Brandon Hackney, Jay Sexton
10:00-11:30	UP39	**Passive Solar Design**, Scott Barber
10:00-11:30	UP40	**Plantar Flexion Device,** Thomas Deaton, William James, Adam Stephenson
Break		
3:00-4:30	UP41	**DSM Dyneema Warehouse Logistics- Senior Capstone Project**, R. Adam O'Connor, Jonathan C. Raynor, Leandro J. Rodriguez, Sean C. Tucker
3:00-4:30	UP42	**QUEUING SYSTEM FOR THE MANAGEMENT AND SCHEDULING OF DEFFERABLE WORK**, Edward Robertson, Joshua Wheeler, Michael Waivers, Zachary Anderson
3:00-4:30	UP43	**SELEX Protocol Design to Isolate an Aptamer that Targets and Inhibits Kinesin Motor Protein Function,** Brandon Jones, Dan Kelleher, Kelsey Long
3:00-4:30	UP44	**Smart Maintenance,** Ashley Mercado, Matthew Cress, Michael Linzer, Dr. Eugene Dixon, Dr. Hayden Griffin

Technology and Computer Science– Undergraduate (3:00pm – 4:30pm)

3:00-4:30	UP45	**Hydro Power in the Home,** Alan Mabe, Thomas Shreve, Jake Strickland, Edwin Black
3:00-4:30	UP46	**ABB Process Improvment**, Evan Kyle Pierce, Alisha Holly Chandler
3:00-4:30	UP47	**Implementation of Direct Digital Manufacturing for Military**, Ryan D Burk

Social Room

Natural Sciences – Undergraduate (8:30am – 11:30am)

8:30-10:00	UP48	**A "Ball-and-Socket" Dimer that Recognizes Anions Relevant to Cystic Fibrosis**, Danielle M. Jessen, Ber Xiong, Ashley N. Werchulok, Andrew L. Sargent, William E. Allen
8:30-10:00	UP49	**Reproductive isolation and genetic divergence in the Peruvian mimic poison frog Ranitomeya imitator**, Laura Jackson
8:30-10:00	UP50	**Metabolic Capabilities of Microbial Communities in the Serpentinite Subsurface Biosphere**, Sarah Chowdhury, William Brazelton, Matthew Schrenk
8:30-10:00	UP51	**Assessing Spatial Relationships between Sites for Natural Gas Development and Natural and Artificial Features in Pennsylvania**, Jamie Wheeler, Alex Manda, Wendy Klein, Burrell Montz
8:30-10:00	UP52	**Determining the Biodiversity and Microbial Load Associated with the Restoration of The Scourge of the Atlantic Coast, the Queen Anne's Revenge**, Cody S. Cutler, Matthew Schrenk, Shanna Daniel, Jordan Lull, Shanley Church
8:30-10:00	UP53	**On the validity of the Namib darkling beetle subspecies Onymacris unguicularis schulzeae: a molecular genetic analysis**, Rachel M. Pollard, Trip Lamb
8:30-10:00	UP54	**Investigating locomotion behaviors and gene expression in C.elegans exposed to Nicotine**, Joseph Polli
8:30-10:00	UP55	**Do male Eastern bluebirds adjust their level of nest defense in relation to the color of their mate's clutch?**, Kimberly Wade, Susan B. McRae
10:00-11:30	UP56	**The Integration of GIS and Ecology: Examining Plant Density of Packera tomentosa (Asteraceae)**, J.C. Paxton, L.D. Leverett, C.L. Jolls
10:00-11:30	UP57	**Effects of Nitrogen Addition on Salt Marsh Plants**, Sherer Etheridge, Brooke Costanza, Robert R. Christian
10:00-11:30	UP58	**Emplacement of the Gupton Pluton: A lobe of the Alleghanian Rolesville Batholith, eastern Piedmont, North Carolina,** E. Thornton, E. Horsman
10:00-11:30	UP59	**Modeling tropical disease migration as a consequence of climate change**, Ashlee Perkinson, Enrique Reyes

10:00-11:30	UP60	**Evaluating the Effects of Watershed Impervious Surface on Stream Biochemistry,** M.H. Postma, C. Humphrey, M. O'Driscoll
10:00-11:30	UP61	**Calorimetric Investigation of Copper (II) Binding to A^2 Peptides: Thermodynamics of Coordination Plasticity. Journal of Biological Inorganic Chemistry**, J. E. Dwulet, C. Sacco, R. A. Skowronsky, S. Gade, J. M. Kenney, A. M. Spuches
10:00-11:30	UP62	**Spatial and Temporal Variation of Water Quality in North Carolina's Coastal Rivers,** Evan Knight, Roger A. Rulifson, Coley Hughes, Jeffrey Dobbs
10:00-11:30	UP63	**Synthesis and Reactivity of 4,4'-Methylenebis(N-alkylaniline)s,** Rory O'Brien, Timothy J. Romac

*Social Sciences – Undergraduate (8:30am – 11:30am **and** 1:30pm – 3:00pm)*

8:30-10:00	UP64	**Benefits of Urban Agriculture**, Danny Franch
8:30-10:00	UP65	**Professional Web Design and The Effects on Business Perception**, Heather Burks
8:30-10:00	UP66	**North Carolina Science Olympiad Coaches Attitudes Towards Nutrition Science Content**, Melissa Davis
8:30-10:00	UP67	**Determining Sense of Place and Attachment Among International Students in a Study Abroad Setting**, Meagan O'Keefe
8:30-10:00	UP68	**LGBT Employees: The Effects of Race and Age on Performance Evaluations,** Alexandria Caple, Lisa Baranik, PhD
8:30-10:00	UP69	**The Impact of Perceived Inequality and Trait Aggression on Workplace Aggression**, John Granecki, Mark Bowler
8:30-10:00	UP70	**The Effects of Paternal High Fat (HF) Diet on Neurobehavioral Function in Mice,** Joshua E. Hauserman, Iola D. Conchar, Tiffany Phasukkan, Jeremy Edwards, Elena Pak, Alexander Murashov, Tuan D. Tran
10:00-11:30	UP71	**Does Survival Processing Enhance Recognition by Establishing Highly Distinctive Memory Traces?**, Samuel Yeboah
10:00-11:30	UP72	**The Relationship between Cognitive Complexity and Person Perception**, Anna M. Gaddy
10:00-11:30	UP73	**Khaled Said's Death as a Catalyst for the Egyptian Revolution**, Hannah Potter

10:00-11:30	UP74	**Parent's Perspectives of Their Child's Participation in Youth Soccer**, Melissa Teresak, Ember McKown
10:00-11:30	UP75	**Aggregation and Persistence in Economic Indices**, Cristian Potter
10:00-11:30	UP76	**Young Adult's Perspectives on the Difference Between Grandmother and Grandfather Involvement,** Elizabeth N. Drew, Jessica E. King
10:00-11:30	UP77	**Creating a Culturally-Tailored Adherence Intervention for African Americans with Type 2 Diabetes**, Heather Wiles, Alyse Bone, Taylor Rush, Christyn Dolbier
10:00-11:30	UP78	**The Effectiveness of Assistive Technology with PreK Children with Autism**, Lindsay Stump, Dr. Melissa Engleman, Dr. Linda Crane Mitchell
Break		
1:30-3:00	UP79	**Healthcare Clinic Design in Eastern North Carolina**, Alexandria Booker
1:30-3:00	UP80	**Attitudes Towards Help-Seeking For Gambling Problems Among University Students**, Daniel Fischer, Tony Cellucci, Ph.D
1:30-3:00	UP81	**Hippocampal-Based Learning Impairments in a Triple-Transgenic Mouse Model of Alzheimer's Disease Across Developmen**t, Lily M. Medina, Iola D. Conchar, Mark Mannie, Qun Lu, Tuan D. Tran
1:30-3:00	UP82	**Social Equity in Managing and Marketing Mass Tourism Gatherings in Myrtle Beach, South Carolina**, Sierra Plato, Bob Edwards
1:30-3:00	UP83	**Consumer Acceptance of a Pizza Sauce Made With a Variety of High Fiber Vegetables**, Caroline Knauss, Samantha Walters, Ashley Roseno, Melani W. Duffrin, PhD, RD, LDN
1:30-3:00	UP84	**Areas of Executive Functioning that May Impact Weight Loss in Adolescents Using a Small-Change Approach**, V. Buonopane, A. Martir, L. Lutes

Visual Art and Design – Undergraduate (1:30pm – 3:00pm)

1:30-3:00	UP85	**DOWN EAST COMMUNICATOR: A GUIDE AND SHOWCASE OF EAST CAROLINA UNIVERSITY SCHOOL OF COMMUNICATION INTERNSHIPS**, Christie J. Church, Catherine Ibanez, Ashley Adams, Dr. Todd Fraley, Kelsey Brosi, Jillian Morrow, Corinne Gretler, Amy Mangus
1:30-3:00	UP86	**The Riviera Maya Day Spa**, Lauren Watts, Susan Meggs

1:30-3:00	UP87	**Ecology, Nature, Art: Environmental Influences And Ramifications Of Twentieth And Twenty First Century Design As Relevant Today,** Lauren Heather Helms
1:30-3:00	UP88	**Going Green in Greenville**, Justin Couch, Kenzie Hanks, Chris Manning, Cory Shank

Undergraduate Distance Education Poster

Technology and Computer Science – Undergraduate

Online	UDP1	**Benefits of Green Roofing,** Camille Mauban, Riley Murphy, Paul Pritchett, Anthony Undag
Online	UDP2	**Computer Recognition of Cancer Names,** Samuel Scott, Dr. Qin Ding, Boya Xie

Social Sciences – Undergraduate

Online	UDP3	**Thinking About Words,** Leanne G. Brown
Online	UDP4	**Equity in Adventure Travel**, Erin Pinnix, Paige Schneider
Online	UDP5	**SNOOPING IN ROMANTIC RELATIONSHIPS,** Kelly Derby, David Knox, Beth Easterling

ABSTRACTS:
GRADUATE & UNDERGRADUATE

Oral, Poster, & Distance Education

Graduate Oral Presentation Abstracts	ID#
Powdercoating: The New Sculpture Surface, Graham Erisman, East Carolina University, Greenville, NC, 27858	GO1
The Rodent Series addresses my passion for the world through the eyes of an observer. The series originated from the idea of the rat race, as human beings we have a deep desire to achieve something. Using the common rodent as imagery, I am exploring a perspective of the world that is similar to the rodent, that being; a rodent is something that lives in the background, too some they are cute and furry, too others they are a nuisance. Squirrels, wood chucks and raccoons are trapped, shot, killed, yet also loved, respected and cared for. We all directly or indirectly feed these rodents. The rodents not only transform our lives by being present, they transform us. Through their behavior, which is very similar to our own at times, they enlighten and create wondrous, often humorous,entertainment for us humans, as well as at times, anger, frustration and fear. This series facilitates the multifaceted connections between fine art, anthropology,philosophy, sociology, psychology and religious practices. The rodent placed within a human-esque environment becomes a vehicle for simulating conversations.Through the humorous connotations of bridging the connection between oursociety and the animal world, I am allowing the observer to have a voice; bringing to light issues of our own behavior that goes missed or unnoticed. The series thus, allows for a continuation of exploration through form and material-ology. Within the formal characteristics of my process, I am constantly seeking new finishes and the continued exploration of traditional patinas, which directly influence the sculpture. The latest finish I have been researching for my sculpture has been the process of powder coating. This process has historically been used for industrial finishes; as such surfaces require a durable finish. The four basic types of powder coat resins are epoxy; epoxy polyester hybrid, polyurethane and polyester. Powder coating is now available in every color imaginable, since it is a chemically adhered surface, is significantly stronger than traditional paints, or porcelain enamel. Powder coating has facilitated a combination of deep surface textures and wonderful rich colors, which has created unending possibilities of luscious finishes. This powdercoating material thus allows for a perfect fit of surface texture to the unconvential rodent.	
Art as an Environmental Defense, Sydney J. Sogol, East Carolina University, Greenville, NC, 27858	GO2
We live in a constantly changing world where humans use natural resources at a rate that cannot be sustained. Deforestation and the amount of plastic trash that ends up in oceans are increasing at alarming speeds. The focus of my research will be to develop a body of work that creates commentary on environmental issues of land use, food waste, ocean pollution, and endangered/displaced animals. My investigation will explore these topics, and the negative affect the human race has on the environment, through the use of recycled/repurposed materials within the context of textile art.	

Creativity Hurts: A Look at the Effect of Depression on the Visual Arts, Katherine K. Hobbs, East Carolina University, Greenville, NC, 27858	
In Creativity Hurts, I will give a brief historical review of the association between creativity and depression followed by recent research in psychiatry and clinical psychology that address this relationship. The implications of this relationship on the creative process will be explored through an in-depth look at the work of artist Mark Rothko, who suffered from depressive disorder and who's color field paintings reflect a current understanding of depression and aesthetics. My research will inform a subsequent body of work about the correlation between depression and creativity.	GO3
Paint & Pixels, Jonathan R. Peedin, School of Art & Design, East Carolina University, Greenville, NC, 27858	
What if Rembrandt had access to a computer, would he have used it? Would old masters have used Photoshop for teaching the thinking of compositional solutions, color theory, mark making and visual problem solving? Since their materials were often rare and hard to come by would they have used a more economical method of working through ideas? Laptops and portable devices are now our primary means of communication, recording ideas, and even viewing art. How does this relatively new media affect the idea of art creation and art education? Throughout history artists have used the latest materials and inventions to advance their practice and research. A disconnect currently exists between new media practitioners and artists using traditional methods. One potential problem is that we may be carelessly discounting the old ways of thinking for the sake of speed and the appearance of being contemporary. My research and creative activity has focused on ways to utilize current digital technologies as a means to teach traditional methods and to emulate them. My research seeks to codify a very simple set of tools that can be used to arm the traditional artist with the capability of using digital media in research and practice with a traditional mindset. Benefits of this method would be fewer rare and hazardous materials used in the painter's exploration and learning. These methods also expedite more efficient thinking and problem solving in painterly practice.	GO4

Exploration, Discovery, and Travel, Dan Willett, School of Art and Design, East Carolina University, Greenville, NC, 27858	
I am a photographer, and my research is predominately in traditional darkroom process, although I have been experimenting with some different digital processes. Through my work, I am trying to understand how and why people explore new environments. What motivates them to do so? What motivates some people more than others to travel? Why they chose a particular destination? How they got there? What they did along the way? These are all questions that I am looking to acquire a better understanding of as I pursue my work. The basis for my art has been my own personal travels. I have chosen to ride a motorcycle cross-country. By myself. No schedule. No agenda. I keep a journal and collect pins along the way. To date, I have concentrated on my personal exploration, however, in the future it is my goal to investigate how other people experience personal travels. These discoveries help me develop an understanding of the different intentions people have when they are travelling to the exact same destination. This increased awareness will also help me better understand my own personal motivations. In the Spring 2012 semester I will start work on a sculptural framing project for the images to use for my exhibit. Recently, I have started exploring image-transfer techniques onto ceramics. Travelling across country on a motorcycle requires making frequent stops for meals and refreshments. I am hoping to explore the interaction of my photographs from the trips on coffee mugs, bowl, plates, etc. to try and reflect on the memories of all the meals I have eaten along the way. I also use ceramics to build reliquaries for the items that I collect when I travel and I plan to explore image transfer techniques on these as well. My presentation for Research and Creativity Week will begin with a discussion of the concepts behind my work. My RCAW presentation will occur in my first (of two) thesis semester, and following the discussion of the concepts, I will review the work I have done to date and discuss my plans for completing my thesis document and exhibit in the Fall 2012 semester.	GO5
Revelations, Lorraine Turi, East Carolina University, Greenville, NC, 27858	
My work is a photographic exploration about the migration of the worker from the field to the factory and the impact of that movement on contemporary society. It is my observation that because of that migration, industry and individuality have slowly been lost to large corporations. I consider this work to be the first in a number of phases. The first phase currently in progress begins with the realization of what the migration has done to the workforce. The aesthetics I have chosen for this work is purposely dark and devoid of bright colors. I use the field around my house as my studio. The work from this phase of exploration is divided into three parts. The first being the main images I call constructions. These images portray some of the effects of the migration by contrasting the field against the factory. The second are supporting images which are combinations of materials so worn out that there is no suggestion of their original use. I combine them with organic materials to represent genetically altered consumer products. The third groups of images are identity portraits that represent the labeling that make up social and professional identities.	GO6

Domestic Traditions for Global Awareness, Lori Ary, East Carolina University, Greenville, NC, 27858	
Modern technology and industrialization has brought an end to the need for domestic goods to be produced in the home. This freedom from domestic chores has allowed many women to venture into previously limited opportunities of education and the workforce, placing less emphasis on the preservation of domestic traditions. After a period of dormancy, however, there has been a recent resurgence of interest in these arts which has now made them treasured skills and a heritage to be protected. While many women are now using gardening, cooking, sewing, and homemaking for their own satisfaction, some women are taking these domestic traditions out of the home to bring awareness to certain issues. My research is exploring the ways that traditional domestic art forms can influence the public view on broader and more severe global issues, such as poverty, hunger, waste, and pollution. Domestic arts were once necessary to support and nurture families, but now they can be used to help support, nurture, and even educate the world.	GO7
Beyond Social Innovation: Dynamics of Collaboration in Design Practice, Keon Pettiway, East Carolina University, Greenville, NC, 27858	
There is no shortage of conversations revolving around the social innovation shift in communication design education, research and practice. First Things First Manifesto 2000 authors proposed a reversal of priorities to incite a mindset not predicated on product consumerism, but used for a new kind of production based on a social or political consciousness. In From User-Centered to Participatory Design Approaches, Elizabeth N. Sanders calls for a mindset that has the ability to prep designers for the type of work proposed by First Things First authors: Postdesign. Among other tenets, Sanders notes that Postdesign is about participatory design that involves all stakeholders in the design development process. However, in Design Integration, Sharon Poggenpohl argues that design does not have a firm framework for collaborative processes and may succumb to stronger disciplines that potentially colonize design. In Social model of design, Victor and Sylvia Margolin purport that a gap exists in research that demonstrates what design can contribute for social innovation. The purpose of this paper is shift the social design discourse to 1) critique the inadequate design training required for collaborative design and 2) review social design case studies and literature that provide insight about designs value.	GO8

Connection: Facilitating interaction using public sculpture, Michael Kenneth Dodson, East Carolina University, Greenville, NC, 27858	GO9
Connection: The investigation I am undertaking is concerned with facilitating social interaction through the creation of public sculpture. The investigation is set out in several steps. The first, and current, point in this investigation is in two parts. The first part is concerned with creating public outdoor sculpture that entices the viewer to interact with it. These first sculptures are attempts at creating work that will stop the viewer and cause them to investigate the qualities of the sculptures further; whether that interaction is simply taking a closer look, touching or sitting on the sculpture, or playing on the sculpture. The underlying desire of this work is to have people who do not usually stop and view outdoor sculpture to do so and facilitate interaction between people who would not normally interact socially. The next element of this initial investigation is to facilitate or participate in art making as a community activity in order to better understand the means to do so. The second step in this investigation is to seek out commission work from institutions, cities, and other entities that require interaction with many other people in order to complete the work (i.e.: designers, architects, city planners, and mostly the community). The intention for this work is for the wider community to become involved in the creation of public artwork in their community and subsequently possess personal stake in the sculpture that they had a hand in creating. In the final step in this investigation I wish for the sculpture or final product of this interaction to become simply a record of that event, having the community interaction be the actual piece that is created and myself only the facilitator for this social interaction.	
Mapping the Micro, Bethany Pipkin, East Carolina University, Greenville, NC, 27858	GO10
Art and Science both maintain a close relationship with observation. The scientific process is used to translate hypotheses into theories while the artistic process involves an exploration and translation of information into an aesthetic experience. My work is an investigation of the relationship between the micro and the macro using the same tools of observation utilized in the sciences, but within an artistic context. Microscopic and telescopic imagery reveal similar patterns of structure and growth. On a macro scale, galaxy clusters seem to mimic the configuration of neurons whereas microscopic cells seem to function as societies, with each structure of the cellular body fulfilling its occupation within its shared environment. Technology and mapping take a major role in the human quest to understand and navigate the relationships between what we study and observe and how we define ourselves. Through my artistic process I utilize mapping as a tool and metaphor for searching for and navigating my own relationships with both the microcosm and the macrocosm.	

Traditional Bronze Casting, Contemporary Art, Cathy Perry, East Carolina University, Greenville, NC, 27858	GO11
My research and sculptural approach deals with my memories and daily activities. I am using the lost wax method; a historically traditional technique of casting bronze. This method and the direct burn out using a kiln has allowed me to experiment using natural materials such as blossoms, twigs, seedpods, and flower buds that I work into contemporary art. Alternative methods such as ceramic shell are also applied to determine which will result in a more detailed piece. My research concentrates on the viability of casting small intricate work out of these processes also larger artwork that requires more detail The dynamics of a domestic environment and the cycles of the natural world are explored though the use of plant materials captured in bronze. Materials I use must be in a state of transition; on the verge of bloom, at full flower or going to seed. These plants flow through their natural process, remembering the forms they need to achieve to create new life. Complexities within the natural world and the sociality of human existence combine to create ties that bind me to both. This work is an exploration of humanity seen through a natural lens and functions, for me, as a vehicle for understanding change.	
Overlapping Legacies and Contemporary Companions: Cartography and Art, Kathryn Cole, East Carolina University, Greenville, NC, 27858	GO12
What is a map? How do we map a place? The fields of surveying and cartography are dedicated to the scientific documentation of land and sea. But as we all know, there is much more to a place than what is described on a map or chart. There is the political, social, historical, cultural character, subjective elements not easily measured and charted. Art and cartography have highly intertwined histories. Both have the capacity to communicate cultural information and have been used to display messages of status and power. Many of the famous renaissance artists such as Leonardo da Vinci and Albrecht Dürer turned their hand to mapmaking. Examples of these artist-made maps not only captured the structure of their geographic subject but went further to communicate something more of the culture and time. In this presentation I discuss the history of mapping and its close association with the visual arts. I also address the affect developing technology has played on this relationship in the last three hundred years and where the contemporary disciplines of art and cartography stand in relationship to one another today.	
My Diabetic Body, Mike McAteer, East Carolina University, Greenville, NC, 27858	GO13
Being a newly diagnosed type 1 diabetic, I have experienced the effects of high and low blood sugar on my body; the daily diabetic routine of checking blood glucose levels, administering insulin, being mindful of what I eat and how much I eat, counting carbohydrates, everyday being reminded of the fragility of life, coming to terms (or taste) with my mortality. The pursuit of control over my condition has influenced my pursuit of control over the processes used to make my decomposing sculptures; control over the process of decomposition is representative of controlling the passage of time (mold and growths) and the effects of diabetes on my body. My choice of materials (foam, polymer clay, resin, latex rubber, flocking, etc.) allows for control over the aesthetic value, durability, and representational qualities of the work. My work serves as a dark yet humorous metaphor for all things sugary, sweet, and loaded with impending doom.	

Researching Steel as a Jewelry Element, Leia Zumbro, School of Art and Design, East Carolina University, Greenville, NC, 27858	
Steel is an industrial material that has revealed itself to be an ideal material for jewelry making. Through my creative activities, I am researching ways to combine steel with traditional jewelry techniques and materials (i.e. silver soldering, bronze fusing, enameling and combination with copper). This research explores the possibilities of steel as a wearable material and the aesthetic and narrative possibilities in my work. Steel is an ideal material for several reasons. The most influential of them is that steel is the most recycled material on our planet. Almost all steel consists of 100% recycled metal. The utilization of recycled material in jewelry is an important avenue of research because of the popularity of mined materials such as silver and gold that create pollution and destruction. As we discover more about the detrimental habits society has formed, it is important to engage in creative thinking and practices that embrace methods that are healthier for us and our home. In addition, steel is a material that is cost effective, easily accessible and aesthetically pleasing through it's lustrous black color. It is also highly versatile through it's high temperature tolerance, strength and flexibility. The choice of patterns, repetitive designs and shapes in my metal work emulate our surroundings in the natural world. The use of an industrial material such as steel acts as a foil, which by contrast, underscores the botanical influence. Through this relationship between imagery and material, I seek to discover a visual language that translates and delves into the mystery we feel when discovering and exploring nature and the relationship we have created to it with the industrial world.	GO15
Industrial Veneration: A Look at the Death of Labor Force Respect and its Re-Appreciation in the Arts, Kevin M. Vanek, School of Art and Design, East Carolina University, Greenville, NC, 27858	
In "Industrial Veneration: A Look at the Death of Labor Force Respect and its Re-Appreciation in the Arts," I show the decline in contemporary American cultures admiration of industrial labor, along with the adaptation of industrial processes into the field of sculpture. Recognition is rarely given to everyday laborers, who construct our world and fulfill the basic functions of industry. The importance of labor and craft in modern society are taken for granted and are no longer seen as important functions to be filled in our world. To show proof of this point, I reflect upon the decline and cancelation of trade classes and vocational schools which teach the precise technical skills common place in the working mans practical tool box. This is evident with the outsourcing of our industry and the boom in higher education degree seeking youth. Referring to artists who reference and practice processes found in industry, I show that the admiration for labor is still present in contemporary and traditional art. These practices I examine are foundry casting (iron pouring specifically), mold making (sand molds) and pattern making. My own work deals with these processes as an act of emulation and reverence to the forgotten skills of our industrial past. My goal is to create objects that show this respect and appreciation towards industry and labor, along with the beauty to be seen within the machinery, material, and processes.	GO16

Value Hierarchy, Danielle James, East Carolina University, Greenville, NC, 27858	GO17
My intent lies in the deep human need of intrinsically beautiful objects as well as wearing them. I ask the question: why do humans feel the need to assign such terms to certain objects and not others? I am also aware that the answer to this question varies depending upon the period of history in which I study. The primary focus will be on contemporary issues of the beautiful object, using historic examples to make my case. Discussing the social and economic reason for certain types of adornment and value discrimination will strengthen my case for finding out what is considered beautiful. I believe that knowing these things can be beneficial to the future of adornment. The cost of material keeps rising and the value of handwork keeps sliding down with the advent of outsourcing and machine made products. My work is based on designs I have seen throughout my life that I could never afford to purchase, so value hierarchy is a very important topic to my work and myself.	
The Nature of Relationship, Tina Lazzarine, East Carolina University, Greenville, NC, 27858	GO18
The idea of becoming has been an ongoing theme in my work wherein I use natural forms to articulate the cyclic process of change that occurs in both personal and social development. Having been raised in a deeply religious household, the theory of evolution was not spoken of, yet the trials of life led me to an understanding of nature as divine vernacular. Fallen leaves and seedpod forms inspire and inform my work with a visual language that alludes to death and regeneration. Experimentation with enameled copper wire mesh and methods of scoring and folding led me to fabricate pod-like forms representing the reproductive and nurturing qualities found in both nature and the relationship of a mother to her child. The adaptation and growth that has occurred, despite struggles, within my own family has provoked a need within me to address domestic issues. By comparing botanical life such as the Sequoia, which requires fire for successful germination, with the family unit, I create a body of work that highlights the growth that happens when injury occurs.	
Wood Fire, Clay and the American Shino, Patrick Hutti, East Carolina University, Greenville, NC, 27858	GO19
This is the exploration of a ceramic glaze called the American Shino. Shino glaze originated from the Minto and Seto areas of Japan in 1568-1600. Minnesota, 1974, Warren Mackenzie s and Virgina Wirts reasearch developed what became the American Shino glaze. American Shino is dependent on soda ash as one of its main ingredients. Soda ash is responsible for the glaze s carbon trapping abilities. Carbon trapping occurs when carbon is trapped within the glazed surface. Many factors influence the range of variation and the color throughout the process. These variations add to the excitement and mystery of the surface and the process. Time and movement are celebrated through the American Shino by wood firing. Fly ash is the ash that is created from the burning of wood. Fly ash from kiln falls onto the work becoming surface evidence of its position, time, and placement within the kiln. The variations of the American shino glaze is an extension of the wheel thrown and altered processes that I utilize to make my work. The glaze works to compliment the expressive nature of my hand built and thrown forms. Glaze, clay, and the kiln combine the story of time, place, movement and balance.	

Click: a craft artist's response to emerging technology, Joshua Craig, East Carolina University, Greenville, NC, 27858	GO20
In "Click: a craft artist's response to emerging technology" I investigate how emerging technology has shaped the way that studio artists make art and ways they may in the future. From conception to production to postproduction, emerging technologies such as Photoshop, cad drawing software, 3D modeling, rapid prototyping/manufacturing methods, freeware, and cloud sourcing will have a substantial impact on the way professional craft artists live their lives and make art in the future. I will discuss the impact of these technologies on my own work and reference other artists who are using these technologies to great effect.	
Pond Life: A Landscape of Sustainability for the Table, Catherine Stasevich, East Carolina University, Greenville, NC, 27858	GO22
Carved and painted utilitarian vessels have been around for centuries, but turning a vessel into a sculptural display is a relatively recent development. The first dishes we would recognize as sculpted casseroles were crafted by Josiah Wedgwood in response to a wheat shortage during the late 1700's, which caused a ban on the use of flour to make pie crusts. These dishes were made to mimic the elaborately decorative pie crusts which had previously graced the tables of England. The animal and vegetative forms referenced the hunt or cultivation that went into gathering the foods which were used to fill the pies. In this body of work, I am appropriating this highly decorative vessel as a tool to create an idealized landscape of native North Carolinian life in a cultivated pond ecosystem. The creatures in these vessels are representative of those that are planted there by man, and those who take advantage of man's cultivated landscape as their own home and food source. I am abandoning the medieval theme of consumption in this work, and instead present a message of sustainability and preservation in an ecosystem which can benefit mankind and nature.	
Invisible Masque, Alison Flegel, East Carolina University, Greenville, NC, 27858	GO23
In Invisible Masque, I am exploring different areas in which prejudice, stereotyping or discrimination on the basis of sex is present in our culture, accepted and treated as natural. My research of feminism and gender roles has led me deeper into womens issues where I am becoming more and more intrigued about the subtle and sometimes not so subtle ways in which sexism shows up in simple acts as well as the words we use. With the help of the media, the Fine Art practice, and both state and federal laws an idea has been created for both men and women that sexism does not exist. Or even worse, sexism is recognized but usually the attitude is that there is nothing we can do to change it because it seems to be a natural part of our world. This is our cultural mask. A man makes more money than a woman to perform the same job: natural. Women are represented in MOMAs permanent collection by 3%: natural. The U.S is one of only a handful of countries that does not require paid benefits for maternity leave: natural? In my current body of work I am making a point to show that I am not outside of the culture, but part of the problem as well. I am exploring ways in which my work will be relevant to the current art world. There are many things done to battle sexism and sometimes these acts become regressive. I hope my sculpture will start a positive movement and help people to become more aware of their own actions and words in this hidden ideology of sexism.	

Give Fuel Spark and Air: Harness the Explosion, Matt Harding, School of Art and Design, East Carolina University, Greenville, NC, 27858	GO25
The internal combustion engine, the most revolutionary invention of the last millennium, has shaped human existence and the environment unlike any other. This powerful machine has irrevocably changed the environment and the way we live. Soon, however, technology will lap these simple machines, leaving the basic concept-- give fuel spark, air, and harness the explosion--by the wayside. In the face of this reality and out of respect for the environment, I feel a duty to acquire the skills and knowledge required to fabricate one from scratch materials. To this end, I have researched source material from the turn of the twentieth century, learning design, drafting, wood pattern-making, metal casting and basic metallurgy to produce raw castings. After producing a casting the metal is shaped and machined on equipment that is capable of producing tolerances within one thousandth of an inch. To harness the internal combustion, it is just as important that the materials be strong enough to withstand the blast as machined to exact dimensions. It is my goal to recover this lost art, using antiquated skills to restore respect for the machines that shape our lives. Who wins when machines make machines anyhow?	
Graffiti: The Word Has Spread, Kyle C. Rees, East Carolina University, Greenville, NC, 27858	GO26
Graffiti is a subjective word, and I have found several different definitions and criteria for what constitutes labeling something graffiti. Criterion change, then our culture has a new relationship with the graffiti aesthetic. How has something that originally had such negative connotation become accepted by our culture? I am trying to understand how and why this style has made its way from subway trains onto my pottery. My research starts with the early period of modern day graffiti in New York City and goes on to show how it has grown to become an internationally recognized genre of Art. My intent is to communicate how the aesthetic promoted by this art form has grown and become recognized because of innovative, courageous, and skilled artists. I have looked at contemporary graffiti artists who have stood out because of their personal style, technique, medium, and/or prevalence. In my creative work words and images on the surface of porcelain pots reflect the influence this style has had on my own personal aesthetic.	
Sisters: Obesity and Body Dysmorphic Disorder, A Comparative Study, Sally L. Sutton, East Carolina University, Greenville, NC, 27858	GO27
The prevalence of obesity in the United States exceeds 30% in most age and sex groups. Overall, a combined age-adjusted prevalence of overweight and obese persons is a staggering 68.0%. While taking into consideration the many surveys, trends and studies relating to obesity and body dysmorphic disorder, I will examine the personal and human aspect of obesity and body image distortion as they relate to my family. I will use a creative process of layering image, materials and technique in order to express a personal and human perspective in response to my perception of social expectations and scientific data.	

Finding Inspiration, Audrey Peck, East Carolina University, Greenville, NC, 27858 People respond emotionally and physically to recognizable elements from nature and collected objects from the detritus of life. These natural and man made elements often evoke memory, a feeling or some other unpredictable personal association in the viewer. Found material when put in relation to the body in the form of jewelry makes it a more intimate experience for the viewer and wearer. There is often an air of mystery as to what the found material is or what its purpose might have been. Further manipulation to these found materials and textures converts them into something new such as tree bark transformed into a metaphorical skin. I take inspiration from images of nature, my surroundings, and from my experiences to explore the universal and personal connections that people make with certain objects and subjects that they encounter in their lives. I explore how found objects and woodcarving, combined with narratives, evoke an emotional, psychological, and physical response in my viewers. Part of this exploration is the use of all of these elements to create a series of wearable jewelry objects.	GO28
Record of Consumption, Liz Brown, East Carolina University, Greenville, NC, 27858 In 2006 the market research firm Sandelman & Associates found that 59% of fast-food consumers in Greenville, North Carolina patronized a fast-food restaurant 12 or more times per month, making Greenville the No. 1 city in the U.S. for frequent fast-food consumption per capita. This staggering statistic makes Greenville an apt poster child for the ongoing shift in cultural perceptions of food. Using the Sandelman & Associates statistic as a guideline, I record the consumption rate of Greenville's average fast-food restaurant patron by casting food packages in porcelain. I follow the consumer's likely paths through the city, visiting every chain in Greenville and obtaining food items. Since the average consumer visits 12 times per month, 12 months per year, I am using slip-casting to recreate 144 packages and containers to resurrect a year's worth of discarded memories. Each one displays the time, date, latitude and longitude of its purchase and is shielded by a clear glossy glaze, solidifying its transition from ephemerality to permanence. Throughout history, clay was used to create durable tableware and food storage vessels, expected to contain whole, nutrient-dense foods. Modernity has seen these vessels replaced by single-use Styrofoam and cardboard packages that contain chemically enhanced, calorically dense representations of food. The average persons memory of his or her own life-altering food choices is as temporal and fleeting as the package it comes in. Therefore by recreating these objects in porcelain, I halt the process of abasement in quality and memory and synchronize the viewer's perception with what their body already knows as fact.	GO29
Irish Iconography; the past to the present, Aisling Millar, East Carolina University, Greenville, NC, 27858 Utilizing Irish iconography of the past in a non-traditional sculptural method, I expose my sense of dual identities, of an Irish immigrant on American soil. Through my sculpture, I emphasize my cultural heritage to reflect on the Irish practice of migration, cultural belonging, and self-representation. I explore the relationship between visual image and cultural symbolism by investigating the adaptation of Irish iconography from pre-history through to the present. I examine how these symbols are used both in Ireland and on a global stage. Through my work, I will continue to explore how to combine these historical biographical symbols with contemporary forms to create sculpture that bridges my cultural past with the present.	GO30

Water's Gonna Rise: Sea-Level Rise Risk Perception and Decision Making in Plymouth, North Carolina, Michelle Covi, Coastal Resources Management Program, East Carolina University, Greenville, NC, 27858, Jack Thigpen, North Carolina Sea Grant, Gloria Putnam, North Carolina Sea Grant, Jessica Whitehead, North Carolina/South Carolina Sea Grant	GO32
Coastal communities across the world are facing multiple threats from climate change. Many small cities and rural communities along low-lying coasts are already seeing impacts of sea-level rise including inundation, increased shoreline erosion and greater threat of flooding from storms. Coastal North Carolina has over 5900 square kilometers of land vulnerable to accelerated sea-level rise due to cliamte change (Poulter, et al. 2009). Although the need for policies to address sea-level rise exists in the region, effective communication and decision-making has lagged behind the scientific understanding of the risk. Some communities lack appropriately scaled information, but in many areas vulnerable to sea-level rise, adaptation planning is not being considered at the local level because of psychological, scientific, economic and political barriers. This study examines the case of sea-level rise risk perception and decision-making in Plymouth, NC. In 2010, North Carolina Sea Grant initiated a project designed to assist the community in planning for climate change. Semi-structured interviews with citizens and community leaders were conducted to identify existing knowledge and attitudes using a modified mental models (Morgan, et al. 2002) approach to identify perceived risks and barriers to adaptation. Participants identified the Roanoke River as their most important asset and flooding as their greatest threat. Barriers to community response included economic challenges, lack of an ability to conduct long-range planning, lack of community involvement or awareness. Strategies for adaptation were identified using the Vulnerability and Consequences Adaptation Planning Scenarios (VCAPS) tool (Tuler, et al. 2011)during a workshop with community decision-makers. VCAPS uses a facilitated visualization approach to help participants understand how climate stressors interact with management issues, and how vulnerabilities or impacts can be reduced through individual or managerial actions. The structured discussion process provided a social learning experience that helped the decision-makers better understand the relationship between issues and how each stakeholder fit into the management process. The project raised community awareness and has the potential to serve as a model for local sea-level rise adaptation capacity building.	
Disproportionate Disaster Impacts on Special Needs Populations: Programmatic Responses and their Implementation, Jennifer O'Neill, Bob Edwards, Marieke Van Willigen, Deptartment of Sociology, East Carolina University, Greenville, NC 27858	GO33
This is study of the 20 North Carolina CAMA counties and the implementation of programmatic disaster responses aimed at special needs populations. Special needs populations tend to suffer disproportionately in natural disaster, and this study aims to discover the various ways in which these coastal CAMA counties seek to better serve this population.	

Social Work and College Sports--Penn State and Child Abuse: What Happened? A Problem Analysis Using the Chamber Model, Donna Ramsey, Carl Cogndell, David Peterson, Ninis Regis, Heather Ross, Tracy Carpenter-Aeby, PhD, LCSW, Victor G. Aeby, MS, EdD, East Carolina University, Greenville, NC 27858	
With the recent unraveling of Penn State's University football program due to the alleged sexual abuse of children by former coach, Jerry Sandusky, many questions arise: How could this happen? Why did it take so long to report? What can be done to prevent this from happening again? As these questions emerge, the need for the integration of social work into college sports becomes essential for the well-being and safety of players, coaches, students, and the community. Such complex issues require clarification of the problems beyond the media influence. To address these questions, the Chamber Model for Social Problem Analysis will be used to deconstruct the problem, examine weaknesses in reporting policies, and identify social work interventions proven to reduce sexual abuse and other power inequalities. The purpose of this study is to highlight the importance of community awareness of sexual abuse, to identify prevention strategies for the community, particularly the university, and perpetuate the urgency in strengthening policies and protocols for reporting. By demanding accountability and integrity within college sports, to include significant legal consequences, we are not forgetting the victims. It is believed that with appropriate understanding of what contributed to the problem at Penn State, other college campuses and respective communities will be able to prevent such pandemic social issues in the future.	GO34
Adults with Dyslexia and Invisible Disability: The Impact of Concealment/Disclosure on Self-Esteem, S.B. Sauber, L.W. Carawan, B.A. Nalavany, School of Social Work, College of Human Ecology, East Carolina University, Greenville, NC 27858	
Dyslexia is a specific and the most common of learning disabilities. Dyslexia is characterized by difficulties in acquiring and processing language; it is typically manifested by a host of struggles than can include reading, spelling, and writing (Merriam-Webster, 2012). In addition, there is a small but growing body of research on the social and emotional aspects of living with dyslexia. The extant research suggests that adults with dyslexia often are the subject of negative perceptions, stereotypes, misunderstandings, and discrimination (Denhart, 2008). Given the invisible stigma associated with dyslexia the present study examines the dynamics and effects associated with disclosing dyslexia to others. Self-disclosure involves revealing information about a personal experience, event, trait, value, or plan to another individual (Derlega & Grzelak, 1979). The act of revealing personal information implies that an individual trusts their confidant with this information (Derlega, Metts, Petronio, & Margulis, 1993). The present study involves three steps. First, a literature review, based on Systematic Research Synthesis methodology (Rothman, Damron-Rodriquez, & Shenassa, 1994), was conducted on dyslexia and self-disclosure. Literature on general disabilities and disclosure was also consulted to broaden the knowledge base. Findings were consolidated and produced several hypotheses based upon Ragin's (2008) theory of disclosure of invisible disability. An important hypothesis that we wish to present at the Research and Creative Achievement Week is the possibility that concealment of dyslexia, or the more hidden one keeps their dyslexia, lowers an individual's self-esteem. Second, ongoing analyses will explore hypotheses about the dynamics and effects of disclosing dyslexia using 224 adults with self-identified dyslexia (average age = 49.1 years, males = 64.7%) who participated in a web-based survey. Lastly, the present study attempts to contribute to the gap in existing research and subsequently inform practice and policy.	GO35

Going on the Account: Examining Golden Age Pirates as a Distinct Culture Through Artifact Patterning, Courtney Page, East Carolina University, Greenville, NC, 27858	GO36
The image of a pirate is well ingrained in the minds of the public. Yet, many of the things that create that image do not preserve in the harsh underwater environment and are not good indicators of a pirate. Piracy is an act and as a physical activity, is difficult to detect in the archaeological record. This paper will present a model reflecting the patterns of artifacts found on pirate and non-pirate shipwrecks and consider whether piracy during the Golden Age represents a distinct maritime culture that can be identified archaeologically.	
A Comparative Analysis of Paleopathology and Mortuary Practice at West Site (31CK22) in Currituck County, North Carolina, Lauren Souther, East Carolina University, Greenville, NC, 27858	GO37
Archaeologists of prehistoric North Carolina have focused on exploring Late Woodland biological adaptations to the region's unique coastal microenvironments. Recent excavations at the West site (31CK22) have produced new skeletal data (N=5) and evidence for varied modes for disposing of the dead. The data on these individuals' health and disease are considered in their broader regional context to underscore these populations' unique adaptations to their coastal environment. We then integrate biological and material cultural data to identify underlying biological or demographic issues for differences in burial programs and patterning in other aspects of the mortuary ritual.	
Ethical Dilemmas in Providing End-of-Life Care, Jing Xu, Department of Anthropology, East Carolina University, Greenville, NC 27858	GO38
This presentation is based on observations and interviews conducted during an internship with the palliative care program at Pitt County Memorial Hospital to examine the ethical challenges faced by end-of-life care providers, patients and families when they face life-threatening illnesses. Some of these issues include conflicts between physicians, patients and families over the appropriate course of treatment; potential violations of patient autonomy and integrity; and the dilemmas caused by a lack of end-of-life care resources. This presentation also discusses how end-of-life care providers cope with these challenges and the solutions they devise to handle them.	

Generational Struggles and Identity Conflict Among Vietnamese Immigrants: Finding a Middle Ground, Bach Pham, East Carolina University, Greenville, NC, 27858	GO39
Many post-war Vietnamese who immigrated to the United States at a young age have recently transitioned into parenthood. With this new position, these Vietnamese have begun to find themselves in the unexpected arrangement of becoming cultural brokers in their own homes, mediating relationships between older Vietnamese immigrants and Americans while also attempting to find a cultural balance for their children. This complicated new relationship has in turn immediately influenced traditional Confucian notions of filial piety - or one's respect and devotion towards elders - creating dynamic new reactions and realizations for this particular group due to the Western influences and experiences. This study aims to understand current perceptions of filial piety among a specific set of Vietnamese immigrants in the United States the 1.5 generation. Born and raised in Vietnam, yet assimilated in American culture through education and experience, the 1.5 generation faces great questions in terms of the maintenance filial piety for both the older and younger generations within their very own household. Drawing from interviews and surveys conducted with Vietnamese immigrants in the Carolinas, this paper explores the inner conflict faced by these individuals who are entrusted with the task of maintaining some semblance of traditional Vietnamese identity within a contemporary Western context.	
Main House, Slave Quarter, or Dependency?: Identifying the Structure in the Vault Field at Foscue Plantation, Amanda S. Keeny, East Carolina University, Greenville, NC, 27858	GO40
Foscue Plantation is a nineteenth-century naval stores plantation in Jones County, North Carolina. From 2007 to 2011, archaeological excavations were conducted about 1000 yards east of the main house where the burial vault used by the Foscue family is located, and where a chimney fall was discovered in 2007. These excavations were geared toward determining whether the structure represented by the chimney fall was the location of the late eighteenth- to early nineteenth-century original plantation house, a slave quarter, or a dependency of the house. The working hypothesis had been that the structure was the original plantation house; however, recent documentary research rules out this interpretation. Current excavations are re-examining the building as a possible slave or overseer's residence.	

SLAM (Science, Language Arts, & Math) DUNK (Dynamically Unleashing Newfangled Knowledge) - Striving for the Best Instruction Possible, Sabrina T. Smith-Epley, ECU Principal Fellows Program - Class 19, East Carolina University, Greenville, NC, 27858	
SLAM DUNK is a project that was devised to assist teachers at a suburban elementary school in Johnston County. Elementary school teachers are charged with teaching all subjects Reading, Writing, Spelling, Mathematics, Social Studies, and Science. Middle school and high school teachers specialize in one or two areas of expertise. To aid this particular population of teachers, I want to research best instructional practices using technology, procure community experts to present their expertise in classrooms, and secure funding to acquire resources needed to enhance instruction. To begin the process, I met with individual grade levels to introduce the program, assess needs, and ask for any suggestions they might have about available community experts. I provided them with copies of their current Language Arts, Mathematics, and Science curricula, as well as the new Common Core Standards in Math and Language Arts and the Essential Standards in Science. I chose to concentrate my efforts in the realms of Science, Language Arts, and Math due to the emphasis from the state level on accountability in these areas. The school's School Improvement Plan also includes goals to increase proficiency in Science, Language Arts, and Math. The teachers are overloaded with new initiatives, new standards to decipher, paperwork, reduced assistance from support personnel, and reduced funding, in addition to the normal responsibilities required to perform their jobs. My objective is to invest the time and effort to do the things the teachers would like to spend some of their time doing to enhance classroom instruction. As a teacher, I spent countless hours researching anything from strategies to work with ADD/ADHD students to novel study resources. Time to simply plan instruction is currently limited to between 80-120 minutes per week due to required meetings and obligations that arise. Through SLAM DUNK, I want to help fill this frustrating void.	GO41
Individual Behavioral Characteristics and Their Effects on Weather Hazard Mitigation and Insurance Purchase, Chris M. Sparks, Craig E. Landry, East Carolina University, Greenville, NC, 27858	
We want to gain a better understanding of individual decision making with respect to natural hazard risk. We analyze survey data from coastal areas in five states, which includes information on expectations of storm frequency and wind damage, past experience with flood events, perceived reliability of an insurance payout, expectations of disaster assistance, income and wealth, and an experimentally-derived measure of individual risk preference. With this data we examine flood insurance and weather hazard mitigation decisions. We test whether decision making varies spatially, with differences in perceptions of risk, with prior exposure to flood/weather damage, and with expectations of government assistance and/or insurance payout.	GO42

Discovering Tradition and Innovation in the Adagio from Brahms's String Quartet No. 2, Op. 111, Joanna Pepple, Fletcher School of Music, East Carolina University, Greenville, NC, 27858	
As a romantic composer thriving just before the fin de siècle, Johannes Brahms (1833-1897) wrote music that serves as a rich and historical resource, reflecting past traditions and musical styles as well as looking forward and providing direction for stylistic trends in the twentieth century. The Adagio from his String Quintet No. 2 in G major, Op. 111, demonstrates both Brahms's admiration of past masters of the craft and the progressive nature of his individual voice. Written near the end of his life in 1890, the second string quintet represents the composer's later style and development. Brahms's Adagio is the second of four movements that comprise the entire quintet. Cast in the formal design of theme and variations, the Adagio continues the long historical practice of writing a melody or harmonic pattern and developing it through a set of measured variations. Brahms was no stranger to the genre of theme and variations, as many of his previous pieces or movements within larger works had been composed in such a framework. The Opus 111 Adagio, however, stands apart as one of Brahms's later achievements in the theme and variation genre. He provides an underlying thread of the theme throughout the work, which is shared among the five individual parts. Furthermore, his distinctive use of counterpoint, rhythm, and harmony are particularly notable in perceiving his approach to compositional practice in his last works. A study of the Brahms Opus 111 Adagio produces a fascinating impression of the possibilities of development and innovation in the theme and variations genre. The work includes a theme, three variations, and a coda. Each variation assumes a unique role and character, yet not without a unifying element that reconciles the entire movement. In turn, this study and its findings reveal both Brahms's mature compositional processes and his inventive techniques that would later carry into the twentieth century.	GO43
Whiteness and the Rhetorical Challenge in an Online College Classroom, Mary-Lynn Chambers, East Carolina University, Greenville, NC, 27858	
The research question for the initial stages of my research is directed towards Elizabeth City State University (ECSU). I am curious to know if there is a whiteness element that is a part of the design of the online classes at ECSU, and if there is, then is there a potential rhetorical challenge for a specific segment of the student population. My research has been focused on the African American (AA) student population whose dominant dialect is African American Vernacular English (AAVE) and whether they are disadvantaged when their online instructor at ECSU is not actively addressing a potential hegemonic dynamic incorporated within whiteness in an online class. The first step in finding an answer to my research question involved an analysis of literature related to the subject of African American learning and communication styles. Based on the literature review, certain markers were identified as indicators of African American styles in cognition and communication. The markers that seem most relevant to my research question are call-response, tonal semantics, (Smitherman 1977), and nonverbal cues (Hecht, Jackson II, and Rebeau 2003). I also conducted a literature review on whiteness and the role of whiteness in the design of Blackboard (Blackwell, 2010; Picower, 2009; Knyard, 2007),	GO44

along with a survey of literature regarding communication in an online educational environment (Anderson, 2006; Ehmann, 2004). As a part of my research, a trial survey was given to 62 of my English students at ECSU. The participants were organized into six categories, and the data was analyzed within these categories. The results from this initial analysis indicated that the group labeled "African American/ Dominant dialect is African American Vernacular English/ Hesitant" demonstrated the strongest response in the areas regarding the need for call-response, tonal semantics, and non-verbal cues within their communication experience. This initial survey has provided insight into a potential hegemonic whiteness dynamic in the online environment of Blackboard at ECSU. Discussion regarding further research will also be incorporated into the presentation along with preliminary suggestions for online instructors creating pedagogy.	
"Is It Happening To You?" A Health Campaign against Domestic Violence, Allison Frazier, School of Communication, East Carolina University, Greenville, NC 27858	GO45
Reports of domestic violence have increased steadily in the past decade. The Center for Disease Control and Prevention reported that an estimated 5.3 million domestic violence incidents occur annually against females ages 18 and older (CDC 2003, Executive Summary). The National Violence against women study examined 8,000 women ages 18 and up across the United States and the District of Columbia. The data showed that roughly 25% of those females were raped or physically assaulted, and 41.5% of them were injured during their most recent assault (Tjaden & Thoennes, 2000). This morose statistic compels me to believe that there needs to be a campaign targeted towards the college-aged women to make them more aware of the prevalence of domestic violence and help them be proactive in evaluating their romantic relationships with their partner. Based on the research literature regarding the psychological factors that are associated with females in the DV relation and the research and theoryassociated with the social influence techniques, the author designed a new health campaign. The purpose is to not only educate college aged women about domestic violence, but also to provide preventative techniques and tips to terminate potentially harmful romantic relationships. This campaign employs a slogan titled "Is It Happening To You?" which attracts the attention of the audience. The campaign will distribute fliers and brochures, which include this message and the images of females in various social contexts, and statistics about domestic violence. The female college students target audience of this campaign) will be prompted to go to the website, where they are informed of the preventative tactics that they could use in their respective romantic relationships. The theoretical foundations for this campaign and the details of campaign feasibility are also discussed. References: CDC: National Center for Injury Prevention and Control. (2003). Costs of Intimate Partner Violence Against Women in the United States. Atlanta, GA. Centers for Disease Control and Prevention. Tjaden, P. & Thoennes, N. (2000). Extent, nature and consequences of intimate partner violence: findings from the national violence against women survey. U.S. Department of Justice Office of Justice Programs: National Institute of Justice. 62.	

Being Open While Securing The Social Web, John Vail, East Carolina University, Greenville, NC, 27858	GO46
Being open and transparent is a requirement people are demanding; not only in government, nonprofits and organizations, but also in businesses. The social technology revolution is here, and companies, institutions and organizations will be overtaken by those that have figured out how to leverage social networks, technology, and the people utilizing them. The social web brings unique vulnerabilities and challenges, so an organization must weigh the benefit against the risk and have a clear understanding of the implications of being open. Once the organization has weighed the risks and benefits, it can then use the information it has discovered in the process to develop an open strategy.	
A Novel Method for Web Feeds Information Extraction and Ranking, Majid Darabi, Department of Computer Science, East Carolina University, Greenville, NC 27858	GO47
Web feeds have great impact on easy accessing to published information on the Internet. By subscribing to favorite websites the users can receive thousands of feeds everyday. Web feeds contain short summary of the stories with links to the actual web contents. To find a specific feeds, traditional keyword searching might not work well, because feeds don't contain all the information. Keyword expansion is one method can be used in information retrieval to extract and find many related documents. In this research we propose keyword expansion method based on the Library of Congress Subject Heading. Using the keywords, our method tries to find all the related subjects including the keywords inside the feed and using weighted formula to sort them based on relevancy of the feeds. To demonstrate the effectiveness of this method we have implemented a web based feed aggregator that receives feeds from various arbitrary websites. We then used 50 different searching keywords to retrieve and rank the feeds accordingly. Our method performed well generating 50 tuples each consisting a searching keyword, related subjects, number of occurrences of each subject with its keywords, and twenty ranked feeds that were used as input to RankSVM (one of the ranking methods) to generate the coefficients. The final well-tuned formula has been used effectively for searching feeds content.	
New Communication Systems for Individuals with Severe/Profound Intellectual Disabilities Using Brain-Computer Interface, Hossein Adeli, Pooya Rahimian, East Carolina University, Greenville, NC, 27858	GO48
In this project we are exploring the usability of brain computer interface (BCI) methods in designing a methodology to interpret the mental state of individuals with individuals with severe intellectual disabilities. These individuals are mostly not symbolic and struggle to communicate with their environment. They usually use alternative and augmentative form of communications to express their needs but mostly it is the job of their caregivers/parents to interpret what they need or what they want to do and there are usually disagreement between different observer's interpretations. We are working on Electroencephalography based methods (we use EEG headsets that have also become commercially available recently) of Brain Computer interfaces to see if we can find out clues under the surface of behavior by trying to figure out the brain activity patterns of intentional and unintentional actions and attempts of communications.	

Cloud Performance Testing, Puneet Sharma, East Carolina University, Greenville, NC, 27858	GO49
Cloud computing is a service provided by different companies to their users and to other smaller companies to utilize resources and products over the network so that users don't have to buy their own resources. To achieve a high level reliability, cloud application should be thoroughly tested. Cloud testing is a new area and to identify the most effective cloud testing approaches is an important theoretical and practical task. The goal of our project is to analyze the various performance testing approaches in cloud platforms like Google App Engine, Amazon EC2 and free hosting cloud. To do this a website was created and deployed on different clouds and then tested with the help of various testing tools. The performance of each of the clouds is measured based on time it takes to upload and download the webpage onto the cloud. Level at which cloud operates during times of high traffic is also analyzed. We use Load Storm tool to generate large number of virtual users at same time period .With the help of this tool our website is bombarded with the users. At the same time with the help of Web Performance Monitoring tool provided by Compuware Gomez upload and download time for the webpage onto the server is measured to check the performance of the clouds under the load.	
Effectiveness of Pair-wise Testing for Software with Boolean Inputs, William Balance, East Carolina University, Greenville, NC, 27858	GO50
Pair-wise testing is a software testing technique, which generates test cases that consist of all combinations of pairs of input variable values. We investigated the effectiveness of pair-wise testing for one practically important case testing logical expressions in software. Pair-wise effectiveness is experimentally evaluated in general terms and separately for specific types of faults. Two freely available software tools are used for pair-wise test set generation. Fault Evaluator, a software tool co-developed by the authors, is used for fault simulation and effectiveness evaluation. The experimental results are contrasted with data from other researchers, and the effectiveness of the pair-wise approach is compared with random testing. Quantitative analysis of pair-wise effectiveness depending on the size of expressions is also provided. Based on an evaluation of more than 20,000 faults of five different types, the weighted average value of effectiveness for all faults is evaluated as 28% and the average value between the types of faults as 51%. Our experiments show that pair-wise testing has an advantage over random testing for all types of faults. In particular, pair-wise testing is especially useful for expressions with 8-10 Boolean variables where its effectiveness can reach 70% or more.	

Deriving Test Cases from System-Environment Relationship Models, Brittany N. White, Department of Computer Science, East Carolina University, Greenville, North Carolina, 27858	
Following the 1-10-100 Rule and its various affirmations, incorporating software quality assurance and control as early as possible has become recognized as an essential task in the Software Development Life Cycle (SDLC). The 1-10-100 Rule maintains that the cost to fix a defect increases exponentially the later it is identified and corrected in the SDLC. Hence the incorporation of various modeling and static testing methods and techniques has become popular to increase confidence in the quality of software. One of such behavioral models used for gathering software requirements is the Use Case Diagram of the Object Management Group (OMG) Unified Modeling Language (UML) specification. The OMG UML Testing Profile 2.0 details how to create test cases from use case diagrams. This technique, however, limits testing to software functional requirements (neglecting system non-functional requirements, such as usability and performance), but also to the latter stage of the Requirements phase in the SDLC. To assure total quality assurance, it is important testing is incorporated in the SDLC as early as possible, which implies between the Conception and Early-Requirement phases. During this timeframe the needs of the system are identified, that is, the real business needs of the stakeholders. This task is most difficult considering the archetypal gap in communication between the development team and the users/customers and the mistaken notion the software system is a mere tool, not an agent in their organizational environment. Eric Yu's proposed i* framework may be adapted to model the system-environment relationship and analyze the associated business processes to produce functional and non-functional requirements. The i* framework involves the Strategic Dependency (SD) Model that captures the intended structure of processes and the Strategic Rationale (SR) Model which describes the underlying reasoning for these processes. This framework, however, does not offer a procedure for deriving test cases based on its strategic models, which will assure total quality assurance and control throughout the SDLC. In this research, a technique for deriving such test cases was formed establishing traceability to this earlier point in the SDLC. This technique was demonstrated using a real-world example for which SD and SR models were created using the OpenOME tool.	GO51
Augmentative and Alternative Communication (AAC) Intervention system using Human Computer Interface for Individuals with Severe/Profound Intellectual Disabilities, Pooya Rahimian, Hossein Adeli, East Carolina University, Greenville, NC, 27858	
In this project we propose a framework that uses modern human computer interaction (HCI) methods in designing more automatic communication interventions for individuals with severe to profound intellectual disabilities. Recently, many sophisticated human computer interaction have become commercially available mainly for the purpose of game devices. Two examples are Microsoft Kinect and Nintendo vii. What we are working on is to automatize the process of communication intervention using these devices so that there would not always be a need for a specialist to interact with the disabled individuals and also the process that would be more controlled and cheaper for the caretakers to use. Using these systems we can detect the individual's hand movement and gestures and reinforce the more desired behavior by rewarding them for example with their favorite music. We can also teach them the concepts by having the applications react to the individual's movements and vocalizations. And by using these methods one can collect many useful data from the disabled individuals and use them to interpret their behavior.	GO52

Černý's Conjecture concerning Synchronizing Automata, Miciah Dashiel Butler Masters, East Carolina University, Greenville, NC 27858	GO53
The finite state automaton (FSA) is an abstract model of computation. An FSA comprises a finite set of possible states, an alphabet, and a transition function. At any instant, an FSA can be in exactly one of its states. Given the current state and some input (a symbol from the alphabet), the FSA moves into another state (possibly the same) as dictated by the transition function. Finite-state automata have been well studied and are important in computer science from both theoretical and practical points of view. Few open problems remain in automata theory; one such problem is the Černý conjecture concerning synchronizing automata. An FSA is called "synchronizing" if there exists some input sequence that causes the automaton to transition to some fixed state, irrespective of the state in which it was before that input sequence was given. The Černý conjecture states that given a synchronizing automaton with n states, the shortest synchronizing input sequence of that automaton is no longer than (n-1)^2 symbols. Automata that reach the bound are known, and no automaton that exceeds the bound is known, but the bound has defied general proof, despite attempts spanning decades by many researchers employing a multitude of approaches. In this talk, I will present the Černý conjecture, list important partial results, and describe various approaches for proving (or disproving) the conjecture.	
The Promotion of Research and Collaborative Technology Through the ADEAP System, Christopher R. Westbrook, East Carolina University, Greenville, NC, 27858	GO54
Collaboration, within all fields of study, is an important component towards further enriching the current knowledge base of that field and extending it for future research. In computer science, developers have an opportunity to promote this concept of mutual cooperation through the development of online resources utilizing web-based technologies. The primary goal of the project is to provide an online medium that facilitates faculty and their collaborators in the development, use and improvement of digital technology. The twofold mission is 1) to provide the infrastructure for faculty in computer sciences and engineering to improve the existing software technology and develop new technology, and 2) to allow end users, such as faculty in various fields of study, to use the existing technology and provide feedback to researchers on the effectiveness of the methods. Actualization of the system is accomplished through the creation of an Archival, Data Extraction, Assessment and Preservation (ADEAP) infrastructure used to analyze large datasets of historical documents, primarily hand written documents. The application supports research in handprint and handwritten (HP/HW) document recognition and on a broader level, the system facilitates the researching and betterment of a wide variety of algorithms and data mining topics. Furthermore, in accordance with the idea of enhancing knowledge, ADEAP is developed using Aspect-Oriented Software Development (AOSD), an emerging software development technology that strives to identify and modularize the crosscutting concerns across a software system into manageable modules.	

Irredundant Ramsey Numbers, Ann Clifton, East Carolina University, Greenville, NC, 27858	GO55
The irredundant Ramsey number s(m,n) is the smallest N such that in every red-blue coloring of the edges of K_N, either the blue graph contains an m-element irredundant set or the red graph contains an n-element irredundant set. We give an overview of results on irredundant Ramsey numbers.	
Experimental Investigation Of t-way Testing, Ranjan Bhambroo, Oleksii Starov, East Carolina University, Greenville, NC 27858	GO56
Many software systems, especially safety-critical control systems, use complex logical expressions. These expressions should be carefully tested to ensure the correct functionality of systems. The goal of our experiments is to evaluate effectiveness of the t-way testing methodology in detecting the different types of faults that can be present in the logical expressions. T-way testing is a generalized testing approach when every combination of values of t input parameters is covered at least by one test case. The t-way test cases (where t = 2 to 6) are generated using the ACTS (Advanced combinatorial testing system) tool provided by NIST (National Institute of Standards and Technology). We developed a new Boolean Expression Generator tool for random automatic generation of a specified number of expressions. We generate faulty expressions using our previous tool Fault Evaluator and then evaluate effectiveness for five different types of faults. The following results are presented: Effectiveness of t-way testing as an average for 2000 logical expressions. Comparison between the effectiveness of t-way testing and random testing. Effectiveness of t-way testing methodology for different sizes of logical expressions. Practical recommendation for choosing the most effective testing approach.	
Fish oil diet increased B cell lipid raft size and molecular order, associated with immunosuppressive effects, Benjamin Drew Rockett, Heather Teague, Mitchel Harris, Saame Raza Shaikh, Department of Biochemistry and Molecular Biology, Brody School of Medicine and East Carolina Diabetes and Obesity Institute, East Carolina University, 600 Moye Blvd, Greenville, NC 27834	GO57
Fish oil has tremendous potential for the treatment of many inflammatory diseases due to the inherent immunosuppressive properties it possesses. However, a major hurdle in utilizing this potential in the clinic is the lack of understanding in how fish oil exerts its immunosuppressive effects. One emerging mechanism involves the major bioactive components of fish oil, the n-3 polyunsaturated fatty acids (PUFAs) docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), incorporating into the plasma membrane thereby disrupting the lateral organization of lipid raft domains. Lipid rafts compartmentalize critical proteins involved in cell signaling, and disruption of these domains could lead to immunosuppression. This mechanism, however, has not been thoroughly investigated in B cells which are of major importance for antigen presentation. To address these limitations, we tested the hypothesis that feeding mice a dose of n-3 PUFAs modeling human consumption would disrupt B cell lipid raft domains leading to decreased T cell activation. To do so we first used quantitative microscopy and biochemical methods to determine how B cell lipid rafts were being disrupted. TIRF microscopy revealed that a low fat fish oil diet significantly increased the size of B cell lipid raft domains. Generalized polarization microscopy measurements revealed the fish oil diet also increased	

molecular order upon formation of lipid rafts. Additional in vitro treatments showed that DHA, but not EPA treatment increased molecular order. Biochemical measurements revealed raft-like membrane fractions had increased levels of DHA in phosphatidylcholines but not phosphatidylethanolamines. Finally we verified that the fish oil diet was immunosuppressive. We measured decreased IL-2 secretion from T cells activated by diet modified B cells. All together, this study supports the mechanism that n-3 PUFAs can modify lipid raft domains potentially leading to immunosuppression. Furthermore, the data expand the focus into an additional cell type which could ultimately help shape dietary recommendations of fish oil for potential treatment of chronic inflammatory disorders.	
Irr is the main iron responsive transcriptional regulator in Brucella abortus, David A. Martinson, R.M. Roop II Department of Microbiology and Immunology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Members of the genus Brucella belong to the alpha-proteobacteria group of Gram negative bacteria. As an intracellular pathogen, B. abortus must overcome iron sequestration in the host cell by utilizing highly efficient iron transport systems. These systems must be regulated, however, as excess intracellular iron is toxic to the bacterial cells. Most of the alpha-proteobacteria rely on a transcriptional regulator known as the iron response regulator (Irr) to control the expression of their iron metabolism genes. Irr serves as an activator of genes involved in iron acquisition and represses the transcription of genes encoding products that require high levels of iron for their function (e.g. heme biosynthesis genes). An isogenic B. abortus irr mutant produces significantly less siderophore molecules when grown under iron limiting conditions compared to the wild type strain. Intracellular iron levels are also lower in an irr mutant than that in the wild type strain. We are currently utilizing Real-time RT PCR and microarray analysis to determine which specific genes are mis-regulated in an irr mutant. Electrophoretic mobility shift assays are being used to determine the ability of Irr to directly regulate these genes by binding to their promoter regions. The ability of Irr to respond to intracellular iron levels is unique, in that when intracellular iron levels are high, Irr is degraded and can no longer function as a transcriptional regulator. An internal HXH heme binding motif that is highly conserved among the alpha-proteobacteria is required for iron dependent degradation of Irr in B. abortus. We are presently exploring the mechanism behind the HXH dependent iron responsive degradation of Irr in B. abortus in an effort to better understand how Irr coordinates the expression of iron metabolism genes.	GO58
Injury-induced miR-431 promotes axon growth in murine dorsal root ganglion neurons, Di Wu, Elena Pak and Alexander Murashov, Department of Physiology, East Carolina University, Greenville, NC 27834	
microRNAs (miRNAs) are small, non-coding RNAs that function as important post-transcriptional regulators in several developmental and physiological processes. Dysregulation of miRNAs have been implicated in many neurological disorders, such as Alzheimer's disease and Parkinson's disease. Compelling evidences also linked miRNA pathway to the regulation of neurodevelopment, neurogenesis, synaptic plasticity, and neural repairs. The investigation of miRNAs expression and function has important implications for understanding molecular mechanism and developing potential therapeutic strategies for neurological diseases. Our previous work showed that peripheral nerve axons in vivo and in vitro contain functional miRNA machinery that would respond to peripheral nerve injury. In addition, we demonstrated	GO59

that the deletion of Dicer, a key enzyme responsible for generation of miRNAs, would delay regenerative axon growth in vivo and in vitro. These studies have indicated that miRNAs are likely to be important mediators of neuronal plasticity during peripheral nerve regeneration. In current studies, we revealed a group of injury-regulated miRNAs in dorsal root ganglion (DRG) neurons after conditioning sciatic nerve lesion by microRNA array analyses. Among those miRNAs, miR-431 was validated to be highly induced in DRG neurons following sciatic nerve crush with real-time qPCR. In dissociated DRG neurons, the gain and loss of function analyses for miR-431 demonstrated that overexpression of miR-431 promoted neurite outgrowth. Potential gene targets for miR-431 were predicted by on-line bioinformatical tools. The reverse correlation between the target gene Kremen1 and miRNA 431 was further validated through RT-qPCR at mRNA level and Western blot at protein level. The direct interaction between miR-431 and Kremen1 mRNA was shown by cross linked immunoprecipitation. Our observations support our hypothesis of miRNAs' involvement in peripheral nerve regeneration. The current data show that miR-431 could be a promising candidate for the future miRNA based therapies to the endogenous neuroregenerative capacity.	
Increases in glutathione reductase activity following short-term exercise decrease infarct size in isolated rat hearts, Chad R. Frasier, Hetal D. Patel, Luke M. Stewart, Ruben C. Sloan, Brian Hayes, David A. Brown, East Carolina University, Greenville, NC 27858	GO60
Previous data from our lab has shown that exercise training improves the hearts ability to withstand an oxidative burden and this is directly associated with an increase in glutathione reductase (GR) activity. This study was performed to directly examine the importance of this increased GR activity on the cardioprotective phenotype of exercise. Female Sprague-Dawley rats were randomly assigned to either the sedentary handling control (Sed) or a short-term exercise (Ex) group that was placed on a treadmill at speeds 15/30/15 meters per minute for 15/30/15 minutes respectively for 10 consecutive days. Isolated hearts were exposed to global ischemia for 25 minutes, followed by 2 hours of reperfusion. As expected our Ex group had a significantly lower infarct size than the Sed group (52 ± 2% and 41 ± 3% for Sed and Ex respectively; $P<0.05$). This was abolished if 150 μM of the GR inhibitor carmustine (BCNU) was added to the perfusate (57 ± 1%; $P<0.05$ vs. Ex). Ex animals also exhibited a protection from arrhythmias (Arrhythmia score during first 30 minutes of reperfusion 3.7 ± 0.3 and 3.0 ± 0 for Sed and Ex respectively; $P<0.05$) and this was blunted in the Ex group receiving BCNU (4.8 ± 0.2; $P<0.05$ vs. Ex). This study shows for the first time that exercise-induced protection from infarction is diminished if GR is inhibited. Furthermore, these findings also strengthen our previous work by further showing that an increase in GR activity is necessary for the decrease in arrhythmias with Ex. This study was supported by American Heart Association Predoctoral Fellowship 11PRE7590086.	

The HTLV-1 Basic Leucine Zipper Factor (HBZ) inhibits the HAT activity of the cellular coactivators p300/CBP, D. G. Wright, T. Wurm, N. Polakowski, I. Lemasson, East Carolina University, Greenville, NC 27858	
Human T-cell Leukemia Virus Type 1 (HTLV-1) is a retrovirus that causes Adult T-cell Leukemia (ATL). It has been shown that the viral protein Tax is required for development of leukemia; however, 60% of cells from ATL patients have no Tax expression. This suggests that other molecular mechanisms are involved in the maintenance of the leukemia. For this reason, HTLV-1 basic leucine zipper factor (HBZ) has received recent focus as HBZ is expressed in all infected patients and in patients suffering from ATL. HBZ is a protein transcribed from the negative sense strand of the HTLV-1 proviral genome. We previously reported that HBZ interacts with the cellular coactivator p300 and more specifically with the KIX and histone acetyltransferase (HAT) domains. The HAT domain transfers an acetyl group from acetyl-CoA to lysine residues located on histone tails. This post-transcriptional modification is usually linked to active transcription. We found that HBZ interaction with p300-HAT domain represses its activity. In vitro HAT assays show that HBZ directly inhibits acetylation of histones H3 and H4 and that its bZIP domain is involved in mediating this repression. Interestingly, we found a reduction of acetylated K18, a lysine specifically acetylated by p300, in HTLV-1 infected cells compared to non-infected cells. Furthermore, HBZ represses the acetylation of non-histone p300 substrates such as the transcription factors p65 and p53. We found that inhibition of p65 acetylation correlates with a reduction of its transcriptional activity. Therefore, inhibition of p300-HAT activity by HBZ could play a role in ATL maintenance.	GO61
Erectile dysfunction precedes coronary artery endothelial dysfunction in response to a western diet: Influence of endothelial nitric oxide synthase uncoupling and prevention by exercise training, Justin D. La Favor1, Ethan J. Anderson2, Miranda P. Chaaban1, Robert C. Hickner1,3, Christopher J. Wingard3, 1 Department of Kinesiology, 2 Department of Pharmacology and Toxicology, 3 Department of Physiology, East Carolina University, Greenville, NC 27858	
Epidemiological evidence suggests that men experiencing cardiac events may have preexisting erectile dysfunction (ED). Endothelial nitric oxide synthase (eNOS) is a key enzyme which produces the vasodilator nitric oxide (NO) within the vasculature. When eNOS becomes uncoupled, NO production is hindered and oxidative stress is increased. Male Sprague-Dawley rats (n = 5/group) were fed a control diet or a western diet (WD) for 4, 8, or 12 weeks and remained sedentary, while one group was fed the WD and exercise trained throughout 12 weeks. Erectile function was evaluated by calculating the area under the curve (AUC) of intracavernosal pressure / mean arterial pressure in response to electrical field stimulation of the major pelvic ganglion, and again following intracavernosal injection of 10 uM sepiapterin (SA). Coronary artery segments were mounted on a wire myograph, pre-constricted with serotonin and endothelial function was evaluated by cumulative doses of acetylcholine (ACh) (0.001 10 uM), and repeated in one segment following incubation in 10 uM SA. Erectile function was attenuated at 8 and 12 weeks (C: 286 ± 52, 4w: 232 ± 35, 8w: 123 ± 49, 12w: 160 ± 59 (AUC); p = 0.004). SA had no effect on erectile function at C or 4w, but showed improvement of 83% at 8w (225 ± 99, p = 0.13) and 32% at 12w (211 ± 80, p = 0.24). The western diet increased the coronary ACh EC50 at 12w (C: 0.20 ± 0.18, 4w: 0.25 ± 0.15, 8w: 0.50 ± 0.32, 12w: 0.84 ± 0.55 uM; p = 0.046). SA had no effect on C, 4w or 8w, but improved the EC50 38% at 12w (1.37 ± 2.06 vs 0.85 ± 0.77 uM). Exercise training throughout the 12 week WD improved erectile	GO62

function 43% (228 ± 70, p=0.13) and decreased coronary ACh EC50 64% (0.31 ± 0.27, p=0.09) compared to the 12 week WD-sedentary group. SA had no effect on erectile or coronary function in the exercise trained rats. ED was manifest prior to coronary dysfunction in response to a western diet, both of which were prevented by exercise training. There is a trend for improved erectile and coronary function in the dysfunctional state with SA, suggesting that eNOS uncoupling is a common contributor to dysfunction in these vascular beds.	
Lead and lag speaker positions during shadow speech inhibits stuttering, Daniel Hudock, M.S., Joseph Kalinowski, Ph.D., Department of Communication Sciences and Disorders, College of Allied Health Sciences, East Carolina Univeristy, Greenville, NC 27858	GO63
Stuttering is overtly characterized by syllable repetition, phoneme prolongation and postural fixations. Interestingly, by presenting second speech signals during ones ongoing speech production it immediately and dramatically inhibit disruptive speech behaviors. For example, choral speech, often thought to be the gold standard for stuttering reduction, inhibits stuttering from 90 - 100%. Shadow speech is a permutation of choral speech that occurs as a second speaker lags closely behind a lead speaker. This procedure reduces stuttering from 80 - 100%. Historically, the person who stutters (PWS) is designated in the lag speaker position, although this temporal positioning has yet to be examined. The current study examined temporal alignment of speaker positions during shadow speech as compared to baseline and choral speech conditions. Participants read prepared texts during baseline, choral, lead and lag speaker conditions. During experimental conditions a fluent speaker maintained predesignated temporal proximities to participants. Stuttering was reduced approximately 85% during both lead and lag speaker positions and 95% during choral speech conditions. These findings further refute the claims that reduction of stuttering frequency during perception of second speech signals may be due to decreased cognitive load, reduced speech rate or implementation of external rhythm generators. Reduction of stuttering during both lead and lag speaker positions suggests a possible central inhibitory mechanism for stuttering reduction. These findings support the gestural model of stuttering inhibition. The model suggests that stuttering is caused by a central neural block and that the system attempts to compensate for this block by producing overt stuttering behaviors. Second, this central block can be inhibited during the perception of second speech signals or actively producing voluntary stuttering. Finally these propositions are supported by the motor theory of speech perception and recent mirror neuron literature.	

Apigenin Inhibits Two-stage Chemical Carcinogenesis and COX-2 Signaling in SKH-1 Mouse Epidermis, Alex J Kiraly, MS, Rukiyah T. Van Dross, PhD, Department of Pharmacology and Toxicology, East Carolina University, Greenville, NC, 27858

GO64

Background: The most common type of cancer in the USA is non-melanoma skin cancer (NMSC), with an estimated two million new cases diagnosed each year. Numerous malignancies including NMSC, colon, breast, and prostate cancer overexpress cyclooxygenase-2 (COX-2). COX-2 catalyzes the synthesis of prostaglandins including prostaglandin E2 (PGE2) which activates E-type prostaglandin (EP) receptors and promotes tumor development when overexpressed. Pharmacological inhibition or genetic deletion of COX-2 significantly decreases skin carcinogenesis mediated by the two-stage chemical carcinogenesis model using 7, 12-dimethylbenz[a]anthracene (DMBA) and 12-O-tetradecanoylphorbol-13-acetate (TPA) or by UVB-light. Apigenin, a non-mutagenic bioflavonoid, is present in various foods including apples, parsley, and chamomile tea. Previous work in our lab and several supporting studies have shown that apigenin blocks TPA- and UV-light induced COX-2 expression in vitro and apigenin also inhibits the formation of skin carcinogenesis.

Hypothesis: Apigenin decreases tumor formation induced by chemical carcinogens through inhibition of COX-2 and COX-2 signaling.

Methods: Skin carcinogenesis was induced in animals using the two-stage chemical carcinogenesis model. Female SKH-1 mice were exposed to a single topical dose of DMBA (a tumor initiating agent) followed by biweekly applications for 25 weeks of TPA (a tumor promoting agent). Animals were treated one hour prior to TPA exposure with apigenin or vehicle. At the end of the study, the number of tumors and the size of each tumor was determined. Tumors and surrounding epidermal tissue were then harvested, classified, and subjected to immunohistochemical analysis.

Results: Apigenin caused a concentration-dependent decrease in tumor multiplicity and incidence in animals exposed to DMBA/TPA. In addition, TPA-mediated induction of COX-2 and downstream COX-2 signaling was decreased in animals treated with apigenin.

Conclusion: Collectively, our findings demonstrate that apigenin suppresses chemically-induced tumor formation and COX-2 signaling in the epidermis. Inhibition of the COX-2 signaling pathway by apigenin may be responsible for its antitumor activity thus supporting the development of apigenin or apigenin-derivatives as chemopreventive agents for NMSC.

The bhuTUV and bhuO gene products play vital roles in the ability of Brucella abortus to use heme as an iron source and are regulated in an iron-responsive manner by RirA and Irr, respectively, Jenifer Ojeda, RM Roop II, Department of Microbiology and Immunology, East Carolina University, Greenville, NC 27858	GO65
Brucella abortus is a Gram negative bacterium that causes the zoonotic disease brucellosis. Antibiotic treatment for brucellosis in humans is prolonged and sometimes followed by relapses. Currently, the United States employs prevention of the illness in humans through cattle vaccinations, eliminating the bacterium in its natural host. Unfortunately, these vaccine strains cause the disease in humans, and Brucella research ultimately aims to identify new vaccine targets as well as alternative treatment options. B. abortus resides in the phagosomal compartment of the host macrophage where essential nutrients such as iron are limited. Most bacteria need iron, and within this macrophage niche, heme is a likely source of iron due to the breakdown of red blood cells by the host macrophage. Heme transporters in Gram negative bacteria are highly conserved, and include components for outer membrane, periplasmic, and cytoplasmic membrane transport. While BhuA has been characterized as the outer membrane heme transporter of B. abortus, the periplasmic and cytoplasmic components have only recently been identified. Here we report that BhuT, U, and V (BhuTUV) are these missing components for heme transport and that theyare required in order for B. abortus to transport heme as an iron source. Utilization of heme as an iron source requires the breakdown of heme into ferrous iron, carbon monoxide, and biliverdin by a heme oxygenase. BhuO has been identified as a heme oxygenase in B. abortus, and although there seems to be more than one heme oxygenase in Brucella, this study shows that BhuO is needed for the use of heme as an iron source under iron starvation conditions in vitro. Further, both bhuTUV and bhuO are regulated in an iron-responsive manner. The iron responsive regulator Irr directly represses bhuO, which shares an operon with rirA. Then the rhizobial iron regulator RirA in turn has a repressive effect on the bhuTUV operon. Together, these regulators help to maintain iron homeostasis within the bacterial cell, protecting it from Fenton chemistry.	
Oxygen Induced Resistance to Tert-butyl Hydroperoxide is mediated by DPS in Bacteroides fragilis, Michael Betteken, Edson Rocha, C.J. Smith, East Carolina University, Greenville, NC 27858	GO66
Bacteroides fragilis, an obligate anaerobe, is a member of the indigenous intestinal microflora but is also one of the most commonly isolated organisms from anaerobic infections in humans. Infections from B. fragilis can result in complications such as abdominal abscesses, perforated and gangrenous appendicitis, skin and soft tissue infections, endocarditis and bacteremia. In order to cause infection, B. fragilis must adhere, resist oxidative stress, and express a variety of virulence factors. Increased oxygen tension at the site of infection presents a large challenge for the survival of the anaerobic B. fragilis. This challenge is addressed through the coordination of several oxidative stress response genes such as KatB, DPS, AhpC, and an extensive thioredoxin system resulting in increased aerotolerance and resistance to peroxides such as hydrogen peroxide, cumen hydroperoxide, and tert-butyl hydroperoxide. B. fragilis resistance to tert-butyl hydroperoxide was characterized in this report. Under anaerobic conditions, disk inhibition assays utilizing tert-butyl hydroperoxide (55mM) demonstrated 55mm zones of inhibition. However, assays with plates incubated in air for three hours prior to anaerobic incubation were completely resistant to tert-butyl hydroperoxide. Studies showed that DPS mediated this increased resistance to tert-butyl hydroperoxide after aerobic incubation. OxyR is a known	

activator of DPS transcription; however, an oxyR deletion mutant still demonstrated complete resistance to tert-butyl peroxide whereas an oxyR and dps double deletion mutant demonstrated extreme sensitivity even after aerobic incubation. These results suggest that an oxygen induced alternative transcriptional activator of dps is present in B. fragilis which mediates this resistance.	
PPP1R42 is a Putative Regulartory Subunit of Protein Phosphatase-1 in Developing Male Germ Cells, Rong Wang, Nicole DeVaul, Ann O. Sperry, East Carolina University, Greenville, NC 27858	GO67
Most male infertility cases are idopathic and only 10-20% of cases are successfully treated. To design appropriate treatments for male infertility, molecular mechanisms underlying spermatogenesis must be better understood. Spermiogenesis, the third phase of spermatogenesis, involves transformation of germ cells from round, non-polar spermatids into elongated spermatozoa. This transformation involves dramatic reorganization of the microtubule cytoskeleton with formation of unique microtubule structures including the manchette and flagellum. The manchette forms around the elongating spermatid nucleus and serves as a scaffold for proteins involved in transport as well as assisting in sperm head shaping. We have previously identified PPP1R42 as a potential regulatory subunit of protein phosphatase-1 (PP1) in the testis. PPP1R42 is associated with the manchette in midstage spermatids and then translocates to the centrosome at the base of the flagella in late stage spermatids. In addition to its localization at the centrosome, PPP1R42 is expressed in ciliated tissues suggestive of a role for this protein in flagellar biogenesis. Co-immunoprecipitation experiments demonstrate that PPP1R42 exists in a complex with PP1 in the testis and that this complex displays phosphatase activity. The PPP1R42/PP1 complex and its associated phosphatase activity is developmentally regulated reaching a peak at 21 dpp when round spermatids appear in the seminiferous epithelia. In addition, these studies show that PPP1R24 interacts with the testis-specific isoform of PP1, PP1^{3}2. The objective of the current study is to determine whether PPP1R42 interacts with all isoforms of PP1 or whether its interaction is isoform specific using heterologous expression in cultured cells. Preliminary results suggest that PP1R42 interacts with PP1^{3}1 in this system.	

Pulmonary exposure to multi-walled carbon nanotubes and C60 fullerenes activate indomethacin sensitive coronary responses to ET-1, L. Thompson1, E. Mann1, A. Vidanapathirana1, B. Harrison3, L. Han4, A. Lewin4, S. Sumner4, T. Fennell4, J. Brown2, and C. Wingard1, 1 Department of Physiology, 2 Department of Pharmacology & Toxicology, East Carolina University, Greenville, NC 27858; 3 Wake Forest University Institute of Regenerative Medicine, Winston-Salem, NC; 4 Discovery Sciences, RTI International, Research Triangle Park, NC.	
The impact of nanomaterials on physiological systems is critical to understand since their widespread use is increasing risks for exposure. Two of the more commonly used nanomaterials include multi-walled carbon nanotubes (MWCNT) and C60 fullerenes (C60). We hypothesized that pulmonary exposure to MWCNT or C60 will induce indomethacin (Indo) sensitive coronary responses to endothelin-1 (ET-1). We exposed male Sprague-Dawley rats to 100 µg of MWCNT or 93.33 µg of C60, or vehicles via intratracheal aspiration. Hearts were excised 24 hr post installation and segments of the left anterior descending (LAD) coronary artery were isolated and mounted on a wire myograph. After equilibration, LAD segments were subjected to cumulative doses of ET-1 ranging from 0.1 nM - 1 µM with or without 10 µM Indomethacin (Indo). Results demonstrate that Indo produces notable reductions in the magnitude of ET-1 constriction in MWCNT and C60 coronaries (32.96% and 33.14% respectively) when compared to untreated segments. Vehicle groups displayed no change in ET-1 response when incubated with 10 µM Indo (0.68% MWCNT vehicle or 1.22% C60 vehicle). We conclude that coronary responsiveness following pulmonary MWCNT or C60 exposure may be changed in a manner that could contribute to vascular dysfunction and susceptibility to cardiac injury. The mechanisms by which Indo sensitivity is induced in our model needs to be further elucidated in order to understand the extent of vascular injury. This work is supported by NIH R01 ES016246 (CJW) and U19 ES019525 (JMB/AL/TF/SS/CJW).	GO68
Identification of the cytotoxic prostaglandin metabolite produced in Arachidonoyl Ethanolamide-treated Tumorigenic Keratinocytes, Drisheka Thati, Allison Danell, Rukiyah T. Van Dross, East Carolina University, Greenville, NC 27858	
Intro: Arachidonoyl ethanolamide (AEA) induces apoptosis in mouse tumorigenic keratinocytes (JWF-2 cells). Our previous data show that AEA is metabolized by COX-2 to pro-apoptotic J-series prostaglandins. COX-2 is an enzyme that is abundant in tumor cells but not in the normal epithelial cells surrounding the tumor. Thus, the pro-apoptotic J-series prostaglandins should be selectively synthesized in AEA-exposed tumor cells with elevated COX-2 expression. As such, AEA could be developed as a topical agent to treat non-melanoma skin cancer. The main goal of this project is to identify the specific J-series prostaglandins that are produced as a result of the metabolism of AEA by COX-2 using mass spectrometry. Exogenous J-series prostaglandins were added to fresh cell culture medium, the prostaglandins extracted using a C-18 column and samples eluted with acetonitrile. Concentrated samples were then subjected to Liquid Chromatography/Electrospray Ionization /Mass Spectrometry (LC-ESI-MS) in negative mode for identification of J-series prostaglandin isoforms. Our data show good recovery of extracted species and acceptable resolution of these chemically similar standards. On-going experiments aim to analyze J-series prostaglandins in AEA-exposed JWF2 cells. Because we anticipate that J-series prostaglandins produced in tumor cells will be conjugated to glutathione, we will confirm the efficiency of our current extraction protocol by conducting ELISA to monitor each elution fraction from the C-18 column (ELISA analysis can detect J-series family	GO69

prostaglandins but cannot distinguish between the individual J-series isoforms). Identification of the specific J-series prostaglandin(s) synthesized in tumor cells that overexpress COX-2 may help us to determine the mechanism by which AEA induces apoptosis.	
Examination of Neurobehavioral Impairments in a Triple-Transgenic Mouse Model of Alzheimer's Disease Across Development, Iola D. Conchar1, Lily M. Medina1, Mark Mannie2, Qun Lu3 and Tuan D. Tran1,4, 1 Department of Psychology, 2 Microbiology, Brody School of Medicine; 3 Anatomy and Cell Biology, Brody School of Medicine; 4 Multidiscplinary Studies Program in Neuroscience, East Carolina University, Greenville, NC 27858	GO70
Alzheimer's disease (AD) is characterized by severe cognitive dysfunctions, including memory loss and difficulty with spatial awareness, severely hindering everyday performance for those it affects. AD is the primary cause of dementia and contributes to 60-70% of cases (Barker et al., 2002). About 5.3 million Americans (roughly 12.5%) over 65 are afflicted with AD (Holtzman et al., 2011). Although AD generally plagues the elderly, brain degeneration and cognitive dysfunction can occur 10-20 years before dementia onset. An alarming number of individuals are affected by AD worldwide (~30 million) and by extension, the burden of this disease is encumbered by patients' families, caregivers, and society at large, prompting tremendous efforts by researchers and clinicians to translate their findings into developing efficacious therapies. AD is thought to be a disorder involving multiple genetic abnormalities and cellular pathways (Holtzman et al., 2011), and current studies using genetic methods may lead to new insights into its pathogenesis. Indeed, present studies using triple-transgenic (3xTg-AD) mice expressing APP-Swe, PS1-M146V and tauP301L mutations are helping to this end. In this study, we will examine whether 3xTg-AD mice exhibit neurobehavioral deficits across the lifespan, thus modeling disease progression in humans. At 3, 6, 9, and 12-months of age C57BL/6J and 3xTg-AD mice will be exposed to 10 days of water escape training using the place version of the Morris maze (7 acquisition; 3 probe). Afterwards, they will be trained to the "trace" version of eyeblink classical conditioning (ECC) for 6 consecutive days. Learning in both tasks is mediated by an intact hippocampus, a primary target of AD pathology. Because the 3xTg-AD mice bear all three hallmark features of AD seen in humans, we hypothesized that they will exhibit impairments in acquiring both tasks successfully, particularly as they age. After ECC is complete, their hippocampi will be examined for cell loss in key populations that interact to mediate learning and memory processes. It is hoped that data gathered from these assessments will provide greater insight on the differential brain deficits and cognitive impairments resulting from AD, thus opening possibilities for developing experimental therapeutics that minimize its pathogenesis. Funding: Wooten Foundation grant to MM.	

Phenotypic Transition: Evolution of female coloration in threespine sticklebacks via ecological divergence in behavioral and hormonal mechanisms, Lengxob Yong, East Carolina University, Greenville, NC 27858	
A fundamental goal in evolutionary biology is to uncover how biodiversity arises and is maintained in nature. Of the many forms of morphological variation, animal color patterns are one of the most diverse. Conspicuous traits are thought to be expressed predominantly in males as a result of sexual selection; however, evidence of similar masculinized coloration in females has been accumulating, but is perplexing, and the mechanisms driving their evolution remained unresolved. In threespine sticklebacks (Gasterosteus aculeateus), such male-typical traits have arisen rapidly from an existing ancestral dimorphic state, yielding an exceptional model for elucidating the proximate and evolutionary mechanisms underlying this sexual transition. Such masculinization may result from divergence in behavioral and hormonal profiles in which adaptation to a sedentary lifestyle in the derived females may have selected for female aggression in the context of social selection, and subsequently influenced red throat expression via male androgen hormones. To investigate the hypothesis that female red-throats evolved due to divergent behavioral and hormonal mechanisms, I tested for differences in levels of the fish androgen, 11-ketotestosterone (11KT), and aggression between derived red-throated and ancestral marine females. In this comparative approach, stream females were predicted to have higher levels of 11KT and be more aggressive than marine female sticklebacks. Behavioral experiments were conducted where females from the red-throated and ancestral population were tested for aggressive and dominant behavior during a dyadic social encounter. Differences in levels of 11KT were also measured using enzyme-immunoassay. My data confirm that stream red females are more aggressive/dominant and have higher levels of 11KT than the ancestral types, suggesting that color transition is under divergent endocrine control due to different ecological adaptation, and selection for aggression-mediated androgen signals may have facilitated female red throats. Results obtained provide a foundational comparative model to understand the evolution of masculinized traits in females and reveal how ecologically induced differences in behavior and physiology can potentially shape long-term evolutionary changes in morphological variation.	GO71
Are interactions between spiny dogfish (Squalus acanthias) and striped bass (Morone saxatilis) mediated by prey availability?, Charles W. Bangley, Roger A. Rulifson, Coastal Resource Management, Institute for Coastal Science and Policy, East Carolina University, Greenville, NC 27858	
Spiny dogfish and striped bass are high-level predators in the Northwest Atlantic ecosystem that have recently recovered from overfishing, and both species overwinter in North Carolina waters. Striped bass and spiny dogfish abundance, salinity, temperature, and depth data were taken from winter trawl surveys conducted in North Carolina waters from 1996-1998 and 2006-2010. Diet data were collected from striped bass in 2006-2007 and from spiny dogfish in 2006-2007 and 2010. Spatial and dietary overlaps were determined between the two species and the importance of striped bass in the diet of spiny dogfish was assessed. Spatial overlap was consistently high and abundance was more strongly correlated with environmental factors than the abundance of the other predator. Dietary overlap was less than 40% between striped bass and dogfish sampled in 2006-2007 but was over 84% between striped bass and spiny dogfish sampled in 2010. Atlantic menhaden (Brevoortia tyrannus) and bay anchovy (Anchoa mitchilli) were the most important overlapping prey species. Spiny dogfish in North Carolina waters may	GO72

have consumed 0.91% of the striped bass stock during the winter. These data suggest that spiny dogfish are occasional predators of striped bass and there is potential for competition between the two predators, but these interactions are insufficient to affect the abundance and distribution of either species. However, the stability of these interactions may depend on the availability of their shared prey.	
Shell Microchemistry of Juvenile Mercenaria mercenaria: Spatiotemporal Patterns and Implications for Modeling Larval Dispersal, Andrew M. Cathey1, Nathan R. Miller2, and David G. Kimmel3, 1 Department of Biology, East Carolina University; 2 Department of Geological Sciences, The University of Texas at Austin; 3 Department of Biology/Institute for Coastal Science and Policy, East Carolina University, Greenville, NC 27858	GO73
The incorporation of trace elements into biogenic carbonate has been used to investigate the larval dispersal of bivalves. We investigate the applicability of this technique to the hard clam Mercenaria mercenaria within an estuarine system near Cape Lookout North Carolina, USA. We assessed the spatial distinction (~12-40km) and temporal stability (spring vs. fall) of elemental concentrations within juvenile carbonate using inductively coupled plasma mass spectrometry (ICP-MS). Twelve elements were present in all samples Ca, Mn, Al, Ti, Co, Cu, Ba, Mg, Zn, Pb, Ni, and Sr. Discriminant function analyses (DFA) using Mn, Al, Ti, Co, Cu, Ba, Mg, Zn, Pb, Ni, and Sr to Ca ratios as independent variables correctly assigned juvenile hard clams to their site of collection with 100% success from fall and spring sampling events. Mn:Ca proved to be the most effective discriminator explaining 91.2% and 71.9% of our among group variance, respectively. The elemental concentrations of juvenile shell differed between seasons. A combined DFA approach using juvenile clams from both sampling events obtains a classification success of 81.9%. Mn:Ca explained the bulk of the among group variance (89.9%) and was consistently different among water masses during each season. Our results are promising in that we demonstrate for the first time the existence of small-scale spatial differences (~12km) in the elemental chemistry of juvenile bivalve shell exclusively within an estuarine system. If these signals can be validated for the larval form the potential should similarly exist to trace the dispersal trajectory of hard clams.	

High-Resolution Measurements of Shoreline Change, Albemarle-Pamlico Estuarine System, North Carolina, USA, Devon Olivola Eulie, J.P. Walsh, D. Reide Corbett, Department of Geological Sciences, Institute for Coastal Science and Policy, Coastal Resources Management Program, East Carolina University, Greenville, NC 27858	
Previous studies of shoreline change have relied on satellite and plane-based aerial photography which can be costly, or of limited availability, and is often of restricted resolution. These factors limit the usefulness of such images for frequent, high-accuracy, shoreline-change measurements. Alternatively, easily deployed balloon-aerial photography and high-accuracy GPS systems can provide high spatial and temporal resolution images at a relatively low cost. This study utilized an Aerostat balloon-aerial photography system along with a real-time kinematic GPS (RTK-GPS) to observe sub-annual changes in shoreline position in the Albemarle-Pamlico Estuarine System, NC. The accuracy and resolution of Aerostat images were also compared to commonly available orthophotographs and the RTK-GPS surveys. The results demonstrate that this method is capable of providing high-accuracy shoreline positions over short timescales (annual to sub-annual); however, the combination of methods provided the researchers with the most accurate shoreline positions and the potential to examine the drivers behind short-term shoreline change.	GO74
Evidence and Implications of Horizontal Gene Transfer in Batrachochytrium dendrobatidis, Tiffany Kosch, Guiling Sun, Zefeng Yang, Kyle Summers, Jinling Huang, East Carolina University, Greenville, NC 27858	
Chytridiomycosis is an amphibian disease caused by the fungal pathogen Batrachochytrium dendrobatidis (Bd). This disease has been identified as one of the main causal agents of worldwide amphibian declines and extinctions, and as the worst infectious disease ever recorded among vertebrates by the Amphibian Conservation Action Plan. Multiple hypotheses have been proposed to explain the geographic and evolutionary origin of Bd, with most agreeing that this pathogen had a single origin and was subsequently dispersed by the global trade of amphibians. Another interesting thing about Bd is that it belongs to a lineage of fungi previously unknown to parasitize verterbrates. Here I will discuss evidence of horizontal gene transfer (HGT) of several known virulence effector genes from oomycete pathogens and bacteria to Bd, which likely contributed to the sudden appearance of virulence in this organism as well as the possible implications of such events on global amphibian conservation and human disease.	GO75

Sex Ratio Changes In Spiny Dogfish (Squalus acanthias) Fishery-Dependent Surveys In the Cape Cod Area: Fishery Management Aspects, Andrea Dell'Apa, Jennifer Cudney-Burch, Roger A. Rulifson, Institute for Coastal Science and Policy, East Carolina University, Flanagan 250, Greenville, NC 27858	
The international exploitation of the sexually dimorphic spiny dogfish (Squalus acanthias) is driven by the European market, which prefers large females. This sex-selective fishery led to over-exploitation of the US Atlantic stock, forcing the adoption of a Fishery Management Plan (FMP) to rebuild it. The species biological characteristics (long gestation period, slow growth rate) and the targeting of adult females raise concern about the conservation status of dogfish worldwide, leading to the discussion of inserting the species in the CITES's list for regulating the trade. In case of listing, a fishery must provide for its sustainability in order for the stock to be commercialized. The sustainability of the US Atlantic dogfish stock is measured based on the biomass of adult females. Given the decrease in adult females reported for this stock over the last decade, alternative management strategies to enhance the fishery sustainability are needed. One possibility currently unexplored would be the development of a male-only directed fishery. The aim of this research is to test for significance in the male: female ratio changes in commercial surveys conducted in the Cape Cod, MA area, where local fishers observe higher abundance of males early in the day and higher presence of females as the day progresses. Results suggest the possibility for a male-only directed longline fishery within 10 miles off the coast of the Cape Cod Peninsula, where higher presence of schools of males occur in shallower water early in the day and at different fishing seasons. These results also support the employment of standardized research effort in the study area to monitor fine-scale behavior patterns of males through day and season in order to characterize male dogfish movements and to assess whether a male-only directed fishery in the area is viable.	GO76
Local and regional aspects of habitat quality jointly affect the biodiversity of ephemeral ponds, Robert A. Deans, David R. Chalcraft, Department of Biology and North Carolina Center for Biodiversity, East Carolina University, Greenville, NC 27858	
The biodiversity of local communities is likely affected by both local habitat quality and by the quality of the landscape surrounding the locality. In pond environments, habitat quality may be affected by the kind of leaf litter present because leaf species differ in the kind of habitat structure they provide and the rate at which they release nutrients into the water. Landscape quality could affect diversity as well; some landscapes provide a richer pool of potential colonists. In addition, the plant community surrounding ponds could alter the influence of habitat selection: animals may prefer to colonize ponds that have litter which matches that kind of litter typically produced by plants in the surrounding landscape. We conducted a split-plot randomized block experiment to examine how both landscape and local scale properties, and their interaction, affect biodiversity within temporary pond communities in eastern NC. We manipulated both the kind of landscape in which artificial ponds were located (open-canopy grassland, pine forest, and hardwood forest) and the leaf species (sedge, pine, or maple) present in artificial ponds. Ponds were open to colonization by amphibians and aquatic insects during the summer of 2010. We surveyed organisms in the ponds on a monthly basis and did a complete census of each pond at summer's end. Litter type only affected biodiversity in July, with more species in sedge treatments than pine or maple. The kind of plant community (landscape) had consistent, strong effects on biodiversity: ponds in open-canopy landscapes supported more species and different kinds of species than ponds in forested systems. Although	GO77

not statistically significant, we found evidence to suggest biodiversity was enhanced to a greater extent in open canopy ponds when litter from open canopy environments was present but that biodiversity in closed canopy environments was affected less by the kind of litter present. Our results highlight the importance of the terrestrial matrix surrounding ponds on biodiversity within the ponds. In addition to providing insight into the question of why some locations are more diverse than others, our work provides insight into how human activity that changes habitat type alters the biodiversity of pond communities, and it could aid conservation efforts aimed at maintaining the unique biodiversity of temporary ponds.	
Seed mass variation and cryptic seed heteromorphism in Packera tomentosa (Asteraceae), L.D. Leverett, Department of Biology, East Carolina University, Greenville, NC 27858	GO78
Seed requirements dictate when and where plant offspring can establish. Because seed mass influences germination, the production of seeds with highly variable mass can stimulate differential behavior in offspring. Seed heteromorphism in plants occurs when two or more seed types with different forms and/or behaviors are produced. Both of these seed strategies may increase success in unpredictable environments. I investigated seed mass variation and heteromorphism in Packera tomentosa (Asteraceae), a clonal plant species found in disturbed habitats in the southeastern coastal plain of the U.S. In May 2011, seeds from a population of P. tomentosa at West Research Campus (WRC) were collected and massed individually. Seed mass variation was examined among- and within-plants. Amplified fragment length polymorphism (AFLP) profiles were used to discern genetic individuals. To test for seed heteromorphism, mass and germination were compared between central and peripheral seeds from disc and ray florets, respectively. I determined germinability and speed of germination for both seed types. I then investigated the germination response of central and peripheral seeds to varying watering frequencies, aging, and vernalization. Seed mass influenced germination and was highly variable among- and within-plants. While central and peripheral seeds did not exhibit different morphologies, they differed in mass characteristics and germination. Central seeds were 11% heavier with 80% larger embryos than were peripheral seeds. Peripheral seeds allocated 17% more of total mass to the fruit coat than did central seeds. In most of the germination studies central seeds showed higher, faster germination than peripheral seeds. The differences in germination I observed between seed types may be related to fruit coat thickness. Germination speed increased in central seeds following aging, perhaps due to after-ripening. Peripheral seeds germinated faster in response to vernalization, suggesting they exhibit dormancy at dispersal. In P. tomentosa, variation in germination behavior due to seed mass variation and seed heteromorphism spreads the risks associated with germination among many offspring phenotypes. This likely promotes establishment and persistence in the disturbed habitats where P. tomentosa is successful.	

Estimating straying rates of spawning blueback herring returning to Albemarle Sound, North Carolina tributaries, Daniel H. Zapf1, Roger A. Rulifson1,2, 1 Department of Biology, 2 Institute for Coastal Science and Policy, Department of Biology, East Carolina University, Greenville, NC 27858	
River herring is a collective term used to describe alewife Alosa pseudoharengus and blueback herring A. aestivalis. Consistent with populations along the east coast of North America, river herring populations in North Carolina have experienced drastic declines. Identifying stock structure and rates of natal homing can aid fisheries managers in implementing fishing regulations and in protecting and restoring habitat. Adult river herring were collected in the Chowan, and Perquimans Rivers in April and May 2010, and the Scuppernong River in 2009. Two methods based on multi-elemental signatures of Mg, Mn, Sr, and Ba in otoliths were used to estimate stock structure and natal homing. The first method used only elemental signatures in the otoliths of adult fish captured in each river to classify fish to their river of capture. Adult blueback herring classified to their river of capture with between 60 and 100% accuracy depending on the number of year classes considered in analysis. The second method utilized ground truthed elemental signatures in the otoliths of juvenile river herring collected in nine tributaries of the Albemarle Sound in the summer of 2010. This method estimated low percentages of blueback herring home to natal tributaries and the spawning run in all rivers was made up of fish from a number of sources. Overall, straying rates varied between rivers ranging from ~50-100%. In particular low percentages of blueback herring were predicted to originate from the Perquimans and Scuppernong Rivers suggesting these locations may offer poor river herring nursery habitat.	GO79
Evidence of River Herring Recovery in Chowan River, North Carolina, Anne Dowling, Matthew Butler, Anthony Overton, Biology Department, East Carolina University, Greenville, NC 27858	
In order for river herring and other fish populations to survive, their larvae must have adequate nursery habitats for early life development. Over the last few decades, river herring populations have declined severely, and current research suggests that altered and degraded nursery habitat is one of several contributing factors responsible for the decline. To identify and prioritize river herring nursery habitats, we sampled for larval river herring in Chowan River, a river historically known for some of the highest river herring catches per unit effort. During the spawning season in spring 2011, we used a pushnet to sample 9 sites based on historical sampling sites. There is a lack of literature comparing historical findings and present abundances of larval river herring. In 1981 O'Rear did a similar study and found the highest mean abundances of river herring larvae at Catherine's Creek and Wiccacon Creek sites (0.34 + 0.59 larvae/ m and 0.31 + 0.44 larvae/m, respectively). Our preliminary results from 2011 suggested that these two sites still had the highest mean abundances of river herring larvae relative to the other sites. We documented an increase in mean larval abundance with 3.78 + 5.09 larvae/m in Catherine's Creek and 2.89 + 48.69 larvae/m at Wiccacon Creek (Note: high standard deviations were due to rare sampling events when 0 to 1,000+ larvae were collected). Our preliminary analyses found that in 1981 and 2011 the same creeks within Chowan River system are contributing the highest abundances of larval river herring. We also found an increase in larval abundance, despite major declines in the adult river herring population. We are continuing analysis of our samples to determine spatiotemporal differences in mortality and	GO80

growth rates, and to assess resource use and dietary overlap by larval Alosa pseudoharengus and A. aestivalis.	
Characterizing Environmental and Physicochemical Conditions in Nursery Areas of River Herring in Chowan River, NC, Matthew Butler, Anthony Overton, Annie Dowling, Department of Biology, East Carolina University, Greenville, NC 27858	GO81
Anadromous fishes such as blueback herring Alosa aestivalis and Alewife a. pseudoharengus, use sounds, rivers, and tributaries during spawning. Collectively known as river herring, these two ecologically important species spawn in Chowan River, North Carolina. River herring have been important commercially since the early 1900's, however, the population was overfished and declined to the point of moratorium by the state of North Carolina in 2007. Other factors attributed to the population decline include dams and other impediments, reduced water quality, habitat destruction, and possibly poor nutritional health. The early stages of river herring eggs and larvae are extremely susceptible to subtle changes in environmental factors and water chemistry variables. These subtle changes can lead to increased natural mortality. We used physicochemical factors (water chemistry and water quality) to characterize the nursery area used by larval river herring in Chowan River, NC. We related these physicochemical factors to spatial and temporal patterns of larval abundance. Physicochemical profiles and larval abundance were determined from nine sites including tributaries and main stem reaches of Chowan River. Samples were collected weekly from March to May 2011. The physicochemical profile of one tributary, Rockyhock Creek, and the South Chowan River site differed significantly from the other seven sampling areas. At these two sites, there were higher mean salinities of 0.141 and 0.1960 ppt respectively. This is expected because of the proximity to Albemarle Sound, but there were also higher values of chlorophyll-±, chloride, nitrate, and nitrite concentrations at these sites. Evaluating water quality and water chemistry relationships using nutritional health and abundance as a marker can characterize suitable nursery habitat that managers can use for future larval river herring stocking programs.	
Calibrated gillnets for use in population estimates, Garry L. Wright, Roger A. Rulifson, East Carolina University, Greenville, NC, 27858	GO82
Gillnets are currently used for commercial fishing and biological sampling, but not incorporated into population surveys by the National Marine Fisheries Service (NMFS) because they have not been calibrated and their efficiencies are unknown. Our study provides estimates of the percentage and number of fish caught by a gillnet within a known area depending on density of fish in that area. We used an enclosure of 2,500 yd2 to determine the percentage of fish caught within a 10-minute set. The average percentage of dogfish caught each set was 7.72 % with a 95% confidence interval of 5.09% to 10.35%, indicating that gillnets catch less than one-tenth of the available fish in waters surrounding the net. In a second experiment, a vertically elongated gillnet was used to determine the vertical distribution of dog fish in the water column. The gillnet was 33 ft tall and divided into 3 panels (0-7 ft, 7-17 ft, and 17-33 ft). A substantial portion of the dogfish aggregation was located up in the water column above the current height of NMFS trawl nets currently being used for surveys. The bottom panel (0-7 ft) caught 46.4% of the total catch, the middle panel (7-17 ft) caught 31.8%, and the top panel caught 21.8%. This means that more than half of dogfish aggregations off our coast may be missed in NMFS trawl surveys, thus underestimating the number of dogfish in the current Atlantic coastal stock. We encourage use of calibrated gillnets to provide additional information to fisheries agencies.	

Reproductive ecology and population genetics of the king rail, Rallus elegans, at MacKay Island National Wildlife Refuge, NC, Carol L. Brackett, Susan B. McRae, Department of Biology, East Carolina University, Greenville, NC 27858	
The king rail, Rallus elegans, is a freshwater marsh bird that inhabits freshwater and brackish wetlands of the southeastern U.S. It is listed as a threatened species in 12 states and considered a species of conservation concern. Little is known about the reproductive ecology and population structure of king rails. My project is investigating these important aspects of king rail ecology at MacKay Island National Wildlife Refuge (NWR), which is one of few refuges along the Atlantic Coastal Flyway that actively manages for waterfowl and hosts a sizeable king rail population. Nests are monitored daily and basic reproductive data is collected during the breeding season by recording clutch initiation dates, clutch size, nest densities, predation rates, and hatching success. Conspecific brood parasitism (CBP) occurs in many species of rails, but has not been documented in king rails. Incidences of CBP will be detected by monitoring egg laying sequences for anomalies and determining maternity using genetic analysis. Experimental introduction of model eggs is used to determine if king rails have evolved behavioral responses to CBP. Adult rails are captured during the summer and winter, banded, and a small blood sample collected. Each adult is given a unique color band combination to identify movements of individuals based on resightings. Banded adults with their broods are monitored to determine post-hatching mortality rates of chicks. A panel of microsatellite markers is being developed for genetic analysis of population structure. Microsatellite allele distributions will be compared between adults sampled in the summer and winter to determine if the breeding population is resident, or alternatively whether king rails that hatched elsewhere overwinter at MacKay Island NWR. Comparison of allele distributions between breeding males and females will indicate whether one sex is more likely to disperse from their natal site. Vital rates of reproduction and assessment of the movements and distribution of king rails at MacKay Island will be used to guide more effective local and regional conservation efforts. My results will also extend our understanding of king rail habitat use based on adaptive models for the species and contribute the development of additional field techniques for studying marsh birds.	GO83

Graduate Poster Abstracts	ID#
Discovering a novel role of claudin-7 in regulating cell proliferation and maintaining cell-matrix interactions in human lung cancer cells, Zhe Lu, Yan-Hua Chen, Department of Anatomy and Cell Biology, Brody School of Medicine, East Carolina University, Greenville, NC 27834	GP1
Claudins are a family of tight junction (TJ) integral membrane proteins with at least 24 members in mammals. Reduced or altered expression of claudins has been reported in various human cancer tissues; however, their roles in cancers are largely unknown. Claudin-7 is a unique TJ protein in that it is not only localized at the apical TJs of epithelial cells, but also has a strong expression at the basolateral membrane. To study the function of claudin-7, we suppressed claudin-7 expression by lentivirus shRNA technology in a human lung adenocarcinoma cell line HCC827. Our study showed that claudin-7 knockdown (KD) cells displayed higher growth rate and cell cycle progression rate than the control cells. The expression levels of phospho-MAPK, survivin, and phospho-BCL-2, which are cell survival and anti-apoptotic regulators, were all significantly upregulated in claudin-7 KD cells compared to that of control cells. Real-time RT-PCR revealed that the transcription of several collagens, such as type V alpha1, type XV alpha1, and type XVI alpha1, was dramatically decreased in claudin-7 KD cells compared to that of the control cells. In addition, integrin beta1, which serves as a collagen receptor, was also downregulated in claudin-7 KD cells. Immunofluorescence and co-immunoprecipitation revealed the co-localization of integrin beta1 with claudin-7. Depletion of Claudin-7 significantly reduced integrin beta1 expression and claudin-7 KD cells were unable to attach to the uncoated glass coverslips while the control cells adhered well and grew normally. The cell-matrix association defect can be rescued by transfecting integrin beta1 into claudin-7 KD cells. Thus, our data suggest that suppression of claudin-7 weakened the cell-matrix interactions through integrin beta1.Transfecting claudin-7 back to KD cells slowed down cell proliferation, upreguated integrin beta1 expression level, and rescued the cell-matrix association defect. When control and claudin-7 knockdown cells were inoculated into nude mice, claudin-7 knockdown cells produced significantly larger tumors than the control cells. Thus, our current study highlights a novel non-TJ function of claudin-7 in regulating cell proliferation and maintaining epithelial cell-matrix interactions.	

Vascular PI3K-Akt Signaling contributes to Peripheral NMDAR-mediated Pressor Response in conscious rats, Marie A. McGee, Abdel Abdel-Rahman, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Evidence has implicated the PI3K-Akt-NOS signaling pathway in neuronal responses mediated via NMDAR activation. However, the involvement of this pathway in the peripheral NMDAR-mediated pressor response is unknown. Recently, it has been demonstrated that PI3K-Akt-dependent phosphorylation of endothelial nitric oxide synthase (eNOS) at serine 1177 can lead to superoxide generation, linking eNOS-dependent reactive oxygen species (ROS) generation to vasoconstriction. In this study, we tested the hypothesis that vascular PI3K-Akt-NOS signaling contributes to NO and ROS generation and the subsequent pressor response mediated by peripheral NMDAR activation. Hemodynamic studies were conducted in conscious male Sprague Dawley rats that were pretreated with the selective inhibitor of: (i) eNOS, N5-(1-iminoethyl)-l-ornithine (L-NIO), (ii) neuronal NOS (nNOS), Nw-propyl-l-arginine (NPLA) or (iii) the upstream PI3K-Akt inhibitor, Wortmannin. L-NIO produced no change while NPLA pretreatment significantly attenuated the NMDA-mediated pressor response. These findings are the first to implicate nNOS-derived NO in the peripheral NMDAR signaling. Wortmannin pretreatment significantly ($p<0.05$) suppressed the dose (125, 250 and 1000 μg/kg) dependent NMDA mediated pressor response. Molecular and biochemical studies were conducted to substantiate these interesting pharmacological findings. Vascular nitrate and reactive oxygen species levels were significantly increased following peripheral NMDAR activation; interestingly, these increases were significantly abrogated following wortmannin pretreatment. Collectively, these novel findings suggest that the PI3k-Akt-nNOS signaling pathway serves as an underlying cellular mechanism for the peripheral NMDAR-mediated pressor response in conscious rats [NIH grant AA07839].	GP2
Androgen signaling promotes Tmeff2 translation in prostate cancer cells through the phosphorylation of eIF2α, Ryan Overcash, Maria Ruiz-Echevarria, Departments of Biochemistry & Molecular Biology and Internal Medicine, East Carolina University, Greenville, NC 27858	
Expression of the Transmembrane Protein with EGF-like and Two Follistatin Domains (TMEFF2) is restricted to the brain and the prostate under normal conditions; however it is frequently upregulated in prostate tumors and is believed to play a role in the disease. Although there has been substantial progress in determining the potential function of Tmeff2 in prostate cancer, the mechanisms that lead to its overexpression remain unclear. In this study we investigated the regulatory mechanisms governing Tmeff2 regulation at the post-transcriptional level, and uncovered a link between androgen signaling and global translational control through the phosphorylation of the translation initiation factor eIF2α. Here we show that upstream Open Reading Frames (uORFs) in the Tmeff2 transcript leader region mediate an increase in the translation of a reporter in response to androgen treatment in 22RV1 and LNCaP prostate cancer cells. A post-transcriptional increase in endogenous Tmeff2 expression was also observed when these cells were treated with androgens. We show that this androgen-stimulated increase in Tmeff2 expression is dependent on the Androgen Receptor (AR) as there is no such increase in the AR-null PC3 cells. The phosphorylation of eIF2α is known to decrease global translation; however it can selectively increase the translation of certain transcripts which contain uORFs, many of which play important roles in	GP3

cell growth and differentiation. We therefore hypothesized that the increase in Tmeff2 translation may be mediated through eIF2α. Consistent with this hypothesis, we show that androgen treatment promotes the phosphorylation of eIF2α in prostate cancer cells when the cells contain a functional Androgen Receptor. Polyribosome fractionation analysis was used to determine that Tmeff2 translation is selectively increased under conditions where eIF2α is phosphorylated. We were therefore able to conclude that Tmeff2 is regulated by androgens through a translational mechanism involving its uORFs and the modulation of eIF2α activity. This may represent a mechanism of how Tmeff2 is upregulated in prostate tumorigenesis.	
AMP-Activated Protein Kinase Inhibits Vascular Smooth Muscle Cell Migration via Stabilization of Actin Cytoskeleton and Focal Adhesions, Joshua D. Stone, Avinash Narine, MD, MPH, Jackson R. Vuncannon, Jonathan C. Fox, Patti R. Shaver, David A. Tulis, PhD, FAHA, East Carolina University, Greenville, NC 27858	GP4
Abluminal vascular smooth muscle cell (VSMC) migration is an early functional underpinning of vasculoproliferative disorders. Upon activation, the dynamic nature of the actin cytoskeleton with rapid extracellular matrix and focal adhesion turnover provides the structural basis necessary for cell motility. Since these processes are highly energy-dependant our early data focused on the metabolic sensor AMP-activated protein kinase (AMPK) and found that activation of AMPK with the AMP-mimetic AICAR significantly inhibited VSMC migration in rodent primary VSMCs. In the current study we tested the hypothesis that AMPK inhibits VSMC migration by inhibiting cytoskeletal reorganization and enhancing cytoskeletal/extracellular matrix contact thru focal adhesion stability. Here we show that AICAR significantly increased AMPK-specific phosphorylation of the actin anti-capping protein vasodilator-stimulated phosphoprotein (VASP) at Thr278. This phosphorylation resulted in significant inhibition of directed actin polymerization evidenced by increased G:F actin ratio over 24 hours. Additionally, AMPK activation inhibited matrix metalloproteinase-2 and -9 activity in conditioned media compared to controls. Finally, AMPK activation abrogated PDGF-stimulated phosphorylation of focal adhesion kinase (FAK) at Ser397, a necessary event for kinase activity and focal adhesion turnover. Taken further, AMPK-mediated inhibition of FAK activity resulted in focal adhesion stability reported by increased focal adhesion-specific paxillin staining. Taken together, these data support the hypothesis that AMPK has capacity to promote focal adhesion stability and inhibit cytoskeletal sorting necessary for VSMC migration and provide mechanistic basis for targeted therapies for early reduction of vasculoproliferative disorders.	

Extracellular Processing of Aggregate and its Effect on CD44 Mediated Internalization of Hyaluronan, Ben Danielson, Warren Knudson, Department of Anatomy and Cell Biology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	GP5
CD44 is the primary cell surface receptor in chondrocytes for hyaluronan. This single pass transmembrane protein is a conduit for communication between cells and the surrounding extracellular matrix. The extracellular domain of CD44 binds to hyaluronan, and in doing so, retains hyaluronan as well as other matrix macromolecules bound to hyaluronan such as the large proteoglycan termed aggrecan. CD44 is also responsible for internalizing hyaluronan for its eventual degradation within low pH vesicles in the cell. The mechanism that allows for the internalization of hyaluronan by CD44 is poorly understood. Previous studies have shown that hyaluronan, decorated with several intact aggrecan proteoglycans, cannot be internalized. However, when the proteoglycans are partially degraded, the hyaluronan together with residual bound aggrecan peptides, are now readily taken up by the chondrocytes. In vivo, aggrecan is processed by enzymes termed aggrecanases, which include members of the MMP and ADAMTS family. How much proteolytic processing occurs before the hyaluronan is internalized by CD44 remains unknown. Interestingly however, investigators have found that the turnover half-life of aggrecan and hyaluronan are nearly identical suggesting that the two processing mechanisms are coordinated. We hypothesize that there is a size threshold of aggrecan that is permissive for hyaluronan internalization. The presence of hyaluronan-bound aggrecan monomers above the threshold, prevents all hyaluronan internalization whereas, aggrecan below the threshold size will permit the internalization of hyaluronan. The goal of this research is to determine the validity of this hypothesis namely, that a threshold size of aggrecan exists that allows for internalization and moreover, how much processing of aggrecan must occur to reach that size. At this stage of the project, aggrecan is being isolated from extracts of bovine articular cartilage and recombined with hyaluronan of known size. Controlled, limited degradation of the purified aggrecan will be performed followed by techniques to quantify changes in aggrecan monomer size. Various methods to label the complexes are also being evaluated.	
Fusion protein pretreatment inhibits Experimental Autoimmune Myocarditis, Shaun Reece, Robert Lust Ph.D., Mark Mannie Ph.D., Michael Van Scott Ph.D., Department of Physiology, Department of Microbiology and Immunology, East Carolina University, Greenville, NC 27858	GP6
Myocarditis is defined as inflammation of the myocardium of the heart. Currently there are multiple viral, bacterial, and fungal pathogens that can result in myocarditis. In the process of clearing an infection, the immune system can generate auto-reactive T cells and auto reactive antibodies against cardiac epitopes. If cardiac inflammation persists, these T cells and antibodies can lead to necrosis and subsequent fibrosis. The heart is a very resilient organ capable of sustaining severe damage while still maintaining sufficient cardiac output in a rested state. Because of this resiliency, many individuals with myocarditis are asymptomatic until extensive cardiac damage and remodeling has occurred. Current pharmacotherapy for myocarditis involves managing cardiac output as well as reducing inflammation. However, no therapies currently exist to prevent myocarditis or to selectively manage auto-reactive immune cells. The current study sought to determine if pre-treatment with a fusion protein could prevent or attenuate myocardial inflammation in a rat model of experimental autoimmune	

myocarditis (EAM). The fusion protein consisted of GMCSF covalently bound to Myosin 1052-1076 (a cryptic cardiac specific epitope of the heavy myosin chain). Both domains of the fusion protein were validated in specific bioassays before use in pretreatment protocols. EAM induction was achieved by use of the Myosin 1052-1076 peptide in a Complete Freund's Adjuvant (CFA) emulsion. Pretreatment with GMCSF-Myo once a week for 3 weeks prior to EAM induction significantly reduced the presence of leukocyte infiltration in heart tissue. Echocardiography data showed no decrease in cardiac performance at day 19 to 20 post EAM induction. However significant fluid was observed around the heart during echocardiography. This accumulation of fluid was correlated with high levels of cellular infiltration. Additionally, a longitudinal study of EAM showed that fluid around the heart was followed by thickening of myocardium and dilation of left ventricle (reduced ejection fraction). The disease resolved with a recovery of cardiac output. These experiments show promise for the use of fusion proteins as specific inhibitors of autoimmune diseases. Future studies aim to determine the mechanism of action as well as the full therapeutic window for treatment of autoimmune myocarditis.	
The Route of Administration of Fullerene (C60) Influences the Vasoconstrictor Response of the Uterine Artery of Pregnant Sprague Dawley Rats, A.K. Vidanapathiran1, L.C. Thompson1, E.E. Mann1, S. Sumner3, Li, Han3, A.H. Lewin3, T.R. Fennell3, J.M. Brown2, and C.J. Wingard1 , 1 Department of Physiology, 2 Department of Pharmacology & Toxicology, East Carolina University, Greenville, NC 27858 and 3 Discovery Sciences, RTI International, Research Triangle Park, Raleigh NC 27709	GP7
Fullerenes (C60) used in different industrial and biomedical applications are reported to have both pro-inflammatory and anti-oxidant properties which may confound normal vascular reactivity. Inhaled C60 particles are known to translocate through the alveolar-capillary barrier and enter the circulatory system while, intravenous administration was shown to distribute C60 into both maternal and fetal tissues. Pregnancy is a physiological state in which significant vascular response changes occur, but the impact of carbon nanoparticle exposure has not been extensively investigated. We hypothesized that administration of C60 during pregnancy can negatively influence the vascular reactivity of the main uterine artery. Pregnant Sprague Dawley rats, between gestation days 17 and 19, were exposed to a single dose of C60 (93.3µg/kg) suspended in polyvinylpyrorrolidone (PVP) in saline via intratracheal instillation (IT) or intravenous administration (IV). The rats were sacrificed 24 hours post exposure and contractile response of the main uterine artery segments were tested by wire myography using phenylephrine, acetylcholine and endothelin 1. The artery segments were also incubated with indomethacin to test whether the changes in responses were driven by cycloxygenase signaling. The cumulative dose-response curves, calculated EC50, and Hill slope values for the C60, naïve and PVP control groups was generated. In general, C60 exposure resulted in an increase in the constrictor response by either IT or IV and was not attenuated by indomethacin. The dose dependent stress response curves for phenylephrine and endothelin 1 differed with the route of exposure. We suggest that exposure to C60 by either IT or IV during the late stages of pregnancy may contribute to the alteration of maternal vascular reactivity and negatively influence both maternal and fetal physiology. This work is supported by NIH R01 ES016246 (CJW) and U19 ES019525SS (JMB/AL/TF/SS/CJW).	

N-3 Polyunsaturated fatty acids as regulators of antigen presentation, Heather Teague, Ron Ross, Mitchel Harris, Benjamin Rockett, Drake C. Mitchell and Saame Raza Shaikh, East Carolina University, Greenville, NC 27858	
N-3 polyunsaturated fatty acids (PUFAs), specifically docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) found in fish oil (FO), exert immunosuppressive effects. One identified mechanism includes localization of n-3 PUFAs within plasma membranes altering biophysical organization, which leads to changes in cell signaling and gene expression. Although a significant amount of literature focuses on n-3 PUFA's effects on T cells and macrophages, few studies have determined if these mechanistic changes are emulated in antigen presenting cells (APC), which present antigen to cognate T cells. We wanted to determine if n-3 PUFAs incorporate into lipid rafts in APCs and how this effects cell function. In this study, we focused on changes in membrane order induced by DHA in an EL4 lymphoma cell line followed by the functional consequences of membrane lipid alteration in antigen presenting B cells subsequent to FO treatment. We first characterized a novel DHA-Bodipy probe for membrane studies in cells and model membranes. Subsequently, fluorescent lifetime, anisotropy and rotational correlation measurements in model membranes revealed an increase in molecular order of DHA-Bodipy indicating DHA is adaptive to the raft environment. We then tested the effects of dietary supplementation with FO in C57BL/6 mice on B cells. A significant increase in the size of lipid rafts in B cells was measured in FO treated mice compared to controls. We also investigated how alterations of lipid rafts in B cells impacted antigen presentation to T cells, following 3 weeks of FO supplementation. Data revealed a decrease in T cell activation, evident by decreased IL2 secretion when naive T cells were activated by FO treated B cells. We are continuing to further elucidate the complex properties of n-3 PUFAs by studying the effects of altered membrane lipids on protein diffusion and downstream signaling events. Overall, our data show FO does target antigen presenting cell membrane organization and function in a manner similar to that observed with other cell types.	GP8

Altered Expression Of Glycogen Synthase Kinase3² In The Dorsal Column Of The Spinal Cord Is Associated With Neuropathic Pain Following Spinal Cord Injury, Molly Pleasants SPT1, Kori L. Brewer, Ph.D.2, Shelley Burgess1, Sonja K. Bareiss PT, Ph.D.1, 1 Department of Physical Therapy, 2 Emergency Medicine, East Carolina University, Greenville, NC 27858	GP9
Neuropathic pain is common sequelae following spinal cord injury (SCI) that is associated with structural remodeling within the dorsal horn of the spinal cord. Glycogen synthase kinase-3² (GSK-3²) plays a critical role in regulating neuronal growth and survival when phosphorylated and inactivated (GSK-3²P). Recent evidence suggests that GSK-3² activity is altered after SCI. We used an established animal pain model, inducing excitotoxic spinal cord injury by QUIS injection into the deep dorsal horn of the spinal cord. Spinal cord tissue was fixed in paraformaldehyde and cryosectioned. Tissue was double immuno-labeled with GSK-3²P and markers for nociceptive as well as mechanoreceptive neurons. Images were captured and analyzed for co-localization and changes in fluorescent intensity of GSK-3²P using Image Pro and Image J software. Immunoflourescent staining showed that GSK-3²P colocalized with nociceptive markers in the superficial dorsal horn. We also demonstrated that following SCI there were changes in GSK-3² activity and increased nociceptive expression in the superficial dorsal horn of the spinal cord. Our findings support that GSK-3² may mediate dorsal horn remodeling in nociceptive regions of the spinal cord, potentially contributing to neuropathic pain following SCI.	
The dual roles of TMEFF2 in tumorigenesis, Xiaofei Chen 1, Dong Seok Cha 2, Myon Hee Lee 2, Maria Ruiz-Echevarria 2, 1 Department of Biochemistry and Molecular Biology, 2 Department of Internal Medicine, East Carolina University, Greenville, NC 27858	GP10
The transmembrane protein with EGF-like and two follistatin-like domains 2 (TMEFF2) is selectively expressed in human prostate and brain, and overexpressed in prostate cancer, suggesting a role in this disease. It has several biologically important features: The EGF-like and two follistatin-like domains are within the extracellular portion of the protein, namely the ectodomain, which can be cleaved from the membrane in an ADAM17/gamma-secretase-dependent fashion. In the cytoplasmic tail there is a potential G-protein activating motif. Our previous results indicate that full-length TMEFF2 functions as a tumor suppressor. It inhibits cell monolayer and anchorage-independent growth, cellular invasion and migration, and increases cellular sensitivity to apoptosis. In contrast, the ectodomain of TMEFF2 promotes cell growth, suggesting a dual mode of action for TMEFF2. We are interested in uncovering the molecular mechanism underlying the dual mode of TMEFF2 action. For that purpose, we used two TMEFF2 constructs: TMEFF2-”GA which lacks the G-protein activating motif and TMEFF2-Ecto which corresponds to the extracellular region of the protein. Here we show that deletion of the G-protein activating motif reverses the tumor suppressor phenotype of full-length TMEFF2. Overexpression of TMEFF2-”GA promotes cell monolayer and anchorage-independent growth, cellular migration and invasion in HEK293T cells, suggesting that the G-protein activating motif is required for the tumor suppressor activity of TMEFF2. However, deletion of this motif only partially attenuates the inhibitory effect of full-length TMEFF2 on cellular migration in RWPE1 cells. Using fluorescent microscopy, we found that full-length TMEFF2 and TMEFF2-”GA reduce EGF-induced filopodia formation in RWPE1 cells to different extents.To investigate the molecular mechanism leading to the growth-promoting effect of TMEFF2 ectodomain, we utilized the C. elegans model system. Here we show that	

induced TMEFF2-Ecto expression in C. elegans can activate extracellular signal-regulated kinases 1/2, which is in line with the positive role of TMEFF2 ectodomain in cell proliferation and other research using human cell lines. In conclusion, while full-length TMEFF2 functions as a tumor suppressor, its ectodomain has growth-promoting effect. The role of TMEFF2 in prostate tumorigenesis may be a combined effect.	
Effects of a high fat diet and exercise on fatty acid oxidation and mitochondrial content in lean and obese individuals, Gina Battaglia, Zheng D, Houmard JA, East Carolina University, Greenville, NC 27858	GP11
We have observed that obese individuals have a dampened response in terms of increasing lipid oxidation gene expression in response to a high-fat diet. Short-term exercise has been shown to increase skeletal muscle lipid oxidation in obese individuals, although whether it can improve high-fat diet-induced lipid oxidation is unclear. PURPOSE: To compare skeletal muscle lipid oxidation and mitochondrial protein content in response to a 3-day high-fat diet and 10 consecutive days of aerobic exercise training in sedentary lean and obese individuals. METHODS: Twelve lean (age 21.8±1.1y; BMI 22.6±0.7 kg/m2) and 10 obese (age 22.4±0.8y; BMI 33.7±0.7 kg/m2) males consumed an isocaloric high-fat (70% of total calories) diet for 3 days. Ten consecutive days of aerobic exercise (1h/day, 70% VO2peak) on a cycle ergometer was performed, and the diet was repeated during days 8-10 of the exercise training. Fasting muscle biopsies were taken before and after each high-fat diet and fatty acid oxidation (FAO) measured with end-labeled [1-14C] palmitate. Various indices of mitochondrial content were determined with western blots and enzyme activity assays, respectively. RESULTS: Lean subjects increased lipid oxidation over baseline (mean ±SEM 27.3±7.4%, p=0.03), and significantly more than their obese counterparts in response to a 3-day high-fat diet (1.0±7.9%). A significant high-fat diet plus exercise on lipid oxidation was observed, with lean individuals increasing by 64.0±32.8% and obese individuals increasing by 70.4±34.8% compared to baseline. Citrate synthase (CS) and beta-hydroxyacyl coenzyme A dehydrogenase (B-HAD) activities followed a similar pattern as FAO, with a tendency for the lean, but not obese to increase enzyme activities after the sedentary high-fat diet and for both groups to increase following the high-fat diet plus exercise. Protein content of oxidative phosphorylation (OXPHOS) enzymes was not different between lean and obese individuals and did not change with a high-fat diet or exercise training. CONCLUSION: Short-term exercise training rescued the lipid oxidation response to a high-fat diet in obese individuals. Mitochondrial enzyme activities may respond to exercise before changes in OXPHOS protein content. Further research should investigate possible mechanisms responsible for this improvement in high-fat diet-induced lipid oxidation.	

A Novel Role for the Central Atypical Cannabinoid Receptor GPR18 in Modulating Cardiovascular Function, Anusha Penumarti, Abdel Abdel-Rahman, Department of Pharmacology and Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
The abnormal cannabidiol (Abn CBD) receptor GPR18 mediates peripheral vasodilatation. N-arachidonoyl glycine (NAGly) is the endogenous ligand of GPR18. Despite NAGlys abundance in the CNS and GPR18 mediated peripheral vasodilation, there are no studies on the role of central GPR18 in blood pressure control. Therefore, we investigated if GPR18 is: (i) present in the brainstem cardiovascular regulatory nuclei, particularly in presympathetic tyrosine hydroxylase (TH) expressing neurons; (ii) co-expressed with Cannabinoid 1 receptors (CB1R) in those neurons and, (iii) the impact of GPR18 activation and blockade on blood pressure (BP) and heart rate. Our immunofluorescence studies demonstrated GPR18 expression in the rostral ventro-lateral medulla (RVLM). GPR18 is co-localized with TH expressing neurons as well as with CB1R in RVLM neurons. Intra-RVLM microinjection in conscious male Sprague Dawley rats demonstrated dose-dependent reduction in BP following GPR18 activation with Abn CBD. By contrast, intra-RVLM blockade of GPR18 with the antagonist O-1918 caused increase in BP and abrogated the Abn CBD-evoked reduction in BP. The present studies are the first to demonstrate the expression of GPR18 in the RVLM and to suggest a role for this receptor in modulating central cardiovascular functions. Ongoing studies will elucidate the molecular mechanism(s) of the central GPR18-mediated hypotensive response. The findings might yield insight into the development of novel therapeutics for the management of hypertension.	GP12
A dissection of Mcm10's functions in D. melanogaster, Michael C. Reubens, Casi Strickland, and Tim W. Christensen, Department of Biology, East Carolina University, Greenville, NC 27858	
Highly efficient DNA replication is essential for the accurate transmission of genetic material from cells to their progeny; likewise, the maintenance of epigenetic chromatin states is essential for the faithful reproduction of the transcriptional state of the cell. Improper regulation, and coordination, of these essential processes can result in genomic instability, which can manifest in disease or potentially the death of the organism. It is becoming more apparent that these two processes are linked through interactions between DNA replication proteins and chromatin associated proteins. Recently our lab demonstrated that Mcm10 not only plays a role in DNA replication, but also has a role in heterochromatic silencing and chromosome condensation; thus the D. melanogaster homolog Mcm10 provides an excellent subject to study the connections of these two essential processes. Interaction studies in yeast, as well as phenotypic and genetic analyses in Drosophila, imply that the conserved C-terminus is important for the many interactions carried out by this promiscuous protein. Therefore, our investigation of Mcm10 in Drosophila has continued using a collection of three truncation alleles and over 20 missense mutations generated via a Tilling screen; as well as four deletion alleles resulting from imprecise P-element excisions. This collection of mutants will allow for an in-depth dissection of this conserved protein's functions through the analysis of mitotic chromosome phenotypes; EdU incorporation analysis; and evaluation of chromatin dynamics using PEV analysis, polytene chromosomes, and ovarian tissues. Genetic analyses such as complementation testing, unlinked non-complementation screens, and yeast two-hybrid analysis will also allow for the evaluation of changes in interactions resulting from these mutations as well. Throughout this	GP13

study, we intend to elucidate the domains of the protein responsible for its biological functions, in hopes of better understanding Mcm10's roles in these essential biological processes, as well as replication and chromatin biology in general.	
Utilization of alternative mRNA forms of CED-4/Apaf-1 during germ cell apoptosis, J. Kaitlin Morrison, Vince Contreras, Enhui Hao, Brett Keiper, East Carolina University, Greenville, NC 27858	
Germ cell apoptosis is the process by which superfluous oocyte progenetor cells are eliminated by committing themselves to die via signaling through the cell death (ced) signaling pathway. In the C. elegans gonad a large number of cells are fated for death before reaching maturity. These cells are believed to act as nurse cells providing cytoplasmic components needed by their sibling cells that reach maturity. Our previous studies suggest that protein synthesis regulation via the C. elegans translation factor eIF4G (ifg-1) may contribute to this apoptotic selection during germ cell development. RNAi knockdown of the longer ifg-1 isoform (p170) while in the presence of the shorter isoform (p130) induced extensive germline apoptosis and upregulation of CED-4 in the dying oocytes. These apoptotic events not only required signaling through the apoptosome protein CED-4, but also relied on the apoptotic effector caspase ,CED-3. These studies demonstrated that IFG-1 p170 was a natural substrate for CED-3 creating a p130-like cleavage product. The creation of this p130-like cleavage product subsequently led to an increase in proportion of IFG-1 p130 in comparison to p170, which as seen in the RNAi studies contributed to the upregulation of apoptosis. Our project now focuses on the translation of the ced-4 mRNA that results from the increase in the proportion of IFG-1 p130. Two previously known splice variants of ced-4, ced-4L and ced-4S differ in the splicing of exon 4 and have opposing apoptotic activities. Our studies concentrate on characterizing other mRNA variants of ced-4 and the efficiency of their translation. Alternative forms of the message have been confirmed using both RTPCR and RNase Protection mapping. The distribution of the message variants and their translational efficiency was assayed in three strains of worms: wildtype worms, a temperature sensitive strain for ifg-1 function and a temperature sensitive strain for CED-9 (Bcl-2) function. Overall, our findings finding suggest a possible mechanistic link between translational control by IFG-1 and the expression of CED-4 triggering germ cell apoptosis.	GP14

The Effect of Chronic Morphine Treatment on the Abundance of Cell Signaling Proteins in the Guinea Pig Longitudinal Muscle-Myenteric Plexus, Ben Thompson, Peng Li, Kathleen Thayne, Jackie Masterson, David A. Taylor, Department of Pharmacology and Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Chronic exposure to morphine produces heterologous tolerance in the longitudinal muscle/myenteric plexus (LM/MP) of the guinea pig. A decrease in the ±3 subunit of the sodium pump was suggested as one mechanism since it develops over a time course similar to the reduced function. However, a large number of cell signaling proteins have also been proposed as contributors to the adaptation process. We examined the abundance of several different proteins using quantitative western blot analysis in homogenates of LM/MP after chronic morphine exposure. We found no change in the abundance of the mu opioid receptor protein either 4 or 7 days after pellet implantation when the loss of function occurs and becomes maximal. We also found no change in the abundance of the ±1 subunit isoform of the sodium pump, PKCμ, beta actin or GAPDH at any time period from 1-14 days after exposure. In contrast, we observed an increase in the abundance of calcineurin, GRK2, and Gi±2 and a decrease in the abundance of PKC³ and the alpha3 subunit isoform at 7 days after implantation. The lack of correlation of changes in protein abundance with functional changes suggests that the heterologous tolerance that develops after chronic morphine treatment may involve multiple cellular mechanisms including the modulation of cell excitability and normal physiology which result from changes in the abundance of proteins in several signaling pathways.	GP15
Mitochondrial glutathione depletion reveals a novel role for pyruvate dehydrogenase as a key H2O2 emitting source, Kelsey H. Fisher-Wellman1,2, Laura A. A. Gilliam1,2, Chien-Te Lin1,2, Brook L. Cathey1,2 and P. Darrell Neufer1,2,4, East Carolina Diabetes and Obesity, Institute1, Departments of Kinesiology2 and Physiology4, East Carolina University, Greenville, NC 27858	
Pyruvate dehydrogenase (PDH) is one of the seven potential sites for O2-" generation within mammalian mitochondria; however its role in contributing to H2O2 emission in vivo has historically been viewed as negligible. To determine if pyruvate-stimulated H2O2 emission is sensitive to an oxidative shift in redox environment, saponin permeabilized fibers were prepared from red gastrocnemius muscle of rats in the presence of varying concentrations of the glutathione (GSH) depleting agent 1-chloro-2,4-dinitrobenzene (CDNB). Compared to GSH-replete fibers, an exponential increase in pyruvate-stimulated H2O2 emission was observed following a 25% depletion in GSH (Ctrl 1.08 ± 0.11, CDNB 61.36 ± 12.34; pmoles/min/mg, mean ± SE), with peak rates of emission reaching 265.65 ± 19.68 in maximally (98%) depleted fibers. This striking sensitivity to GSH depletion was specific to PDH as GSH depletion had minimal effect on H2O2 emission in fibers energized with glutamate, ±-ketoglutarate, or succinate alone. Pyruvate-stimulated H2O2 emission in GSH-depleted fibers was significantly lower in the presence of the PDH kinase inhibitor dichloroacetic acid (- DCA 273.90 ± 22.14, + DCA 51.76 ± 4.55; P<0.001), implying that pyruvate-stimulated O2-" is sensitive to PDH phosphorylation status. These data suggest PDH may be a significant source of H2O2 production when the mitochondrial redox environment is in a more oxidized state. RO1 DK073488	GP16

Modulating Oscillatory Neurons in the Suprachiasmatic Nucleus (SCN) with Transcranial Magnetic Stimulation, Bineyam Kassahun, Martin Bier, Jian Ding, Department of Physics and Department of Physiology, East Carolina University, Greenville, NC 27858	
Alteration of circadian rhythm and sleep is a common disorder associated with many neurological diseases, such as neuroAIDS and Alzheimer's disease, etc. Our previous studies suggest that this unique behavioral alteration is due to impairment of the light entrainment process. Prior attempts with melatonin and light therapy provided little benefit. In an effort to find noninvasive methods of modulating oscillatory neurons in the suprachiasmatic nucleus (SCN), the central circadian clock, we investigated the use of non-invasive magnetic stimulation modality. In TMS, electrical pulses are sent through coils near the brain. The ensuing changing magnetic fields cause electric fields currents in the brain. The induced electrical field depolarizes neurons and generates an action potential. Previous experiments conducted on animal models have used magnetic flux with high intensities, 1.0 Telsa or above, to induce neuronal changes in the brain. The lack of magnetic stimulation units designed for small animal use has prevented researchers to adjust the stimulation parameters, such as the intensity, to fit the much smaller mouse brain. In addition, incorporating such devises for studying a mouse brain becomes problematic because of the brain-coil relationship. In an effort to use properly adjusted stimulation parameters and to create a more precise localization of the magnetic fields, we have designed and fabricated a miniature TMS devise suitable for studying neurological changes in mouse brain. Our devise was designed to deliver a magnetic flux of 0.1 Telsa. We were able to measure changes in neuronal activity in response to TMS both in vivo and in vitro, with c-fos expression and multi-electrode array recording, respectively. The immunohistochemistry analysis showed that the miniature TMS devise with a magnetic flux of 0.1 telsa was able to activate brain regions in the suprachiasmatic nucleus (SCN), paraventricular nucleus (PVN), and the supra optic nucleus of the hypothalamus.	GP17

The Impact of Bisphenol-A (BPA) Exposure on Neuro-Development and Subsequent Visuospacial Learning and Memory, Jason Franklin, JC DeWitt, Department of Pharmacology and Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Exposure to exogenous agents during neurodevelopmental stages may be associated with the onset of neurological disorders. The emerging contaminant bisphenol A (BPA) is a widely used ingredient in the production of plastics and resins utilized in food and beverage packaging. This chemical pollutant has become ubiquitous in our environment and studies have shown that it may have a deleterious impact on developing organ systems in utero. Our hypothesis is that prenatal exposure to BPA will alter the neurological development of C57BL/6 mice, which will affect their performance on the Barnes Maze, a task to assess visuospacial learning and memory. C57BL/6 female mice were orally exposed to 5, 25, or 50 mg/kg of BPA or a corn oil vehicle beginning at pairing with males and continuing through weaning of pups. Performance on the Barnes maze was initiated at postnatal day 21 in male and female offspring. Initial errors in finding the escape hole, total errors, time to initially reach the escape hole, and time to escape were measured. Preliminary data indicate that BPA may impact this task as the time to reach the escape hole decreased with increasing doses of BPA, although this trend was not statistically significant. Additional evaluations of these data are ongoing; studies to repeat these behavioral results and to look at morphological changes in arborization of the hippocampus also are in progress.	GP18
Cytokine-OVA(323-339) fusion proteins as a means to modulate allergic responses to ovalbumin in mouse models of asthma, Stefanie Burleson1, Michael R. Van Scott1, Mark D. Mannie2, 1 Department of Physiology, 2 Department of Microbiology and Immunology, The Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Background: Allergic asthma is a Th2-dominant, immune-mediated chronic disease marked by reversible airway obstruction, hyperresponsiveness, and inflammation to a variety of normally innocuous stimuli. Most therapies temporarily minimize discomfort and manage symptoms, but no curative therapy is currently available. Previous studies indicate that cytokine-antigen fusion proteins can be used to target antigen to specific immune cells to augment the effectiveness of immunotherapy in animal models of asthma and other immune-mediated disease models. When used as the cytokine domain in a fusion protein, GM-CSF has the potential to induce antigen-specific immunological tolerance. Here, we test the hypothesis that cytokine-allergen fusion proteins will retain their cytokine activity, as well as influence clonal expansion of allergen-specific T-cells. Methods: GMCSF-OVA construct DNA containing the GM-CSF cytokine as the N-terminal domain and the OVA peptide 323-339 as the C-terminal domain was generated via standard PCR techniques. The GMCSF-OVA fusion protein was expressed in the 293F human embryonic kidney cell line, and the respective cytokine activity was assessed in cytokine-specific bioassays. The antigenic activity of fusion proteins were validated by culture of the TCR transgenic OT-II.2 T cells with splenic APC. Results: The GMCSF-OVA fusion protein had optimal GM-CSF activity as measured by proliferation of mouse bone marrow cells. The fusion protein OVA 323-339 antigenic domain	GP19

resulted in OVA-specific T-cell clonal expansion. Conclusions: Biologically active GMCSF-OVA fusion proteins were successfully derived and will be tested in vivo to determine if these cytokine fusion proteins induce antigen-specific tolerance and attenuate development of asthma-like disease.	
Contributions of Thiol Redox State and Mitochondrial Calcium to Augmented Mitochondrial Permeability Transition in the Diabetic Heart, Fatiha Moukdar2,3, Ruben C. Sloan1,3, Chad R. Frasier2,3, Phillip A. Bostian2, Hetal D. Patel2,3, Robert M. Lust2,3, and David A. Brown2,3; 1 Department of Kinesiology, 2 Department of Physiology, 3 East Carolina Diabetes and Obesity Institute, Brody School of Medicine, East Carolina University, Greenville NC 27858	
Mitochondria from diabetic hearts are sensitized to mitochondrial permeability transition pore (PTP) opening, which may be responsible for the increased propensity for cardiac injury in diabetic hearts. The purpose of this study was to determine if changes in mitochondrial redox-state contribute to augmented PTP in diabetic heart mitochondria and if a compound targeted at mitochondrial ROS delayed the PTP. Rats were either treated with streptozotocin to induce diabetes or vehicle buffer to serve as non-diabetic controls. Studies were performed on isolated mitochondria prepared from whole left ventricle. Diabetic mitochondria displayed significantly greater sensitivity to PTP opening than non-diabetic counterparts ($P<0.05$), which was reversed with the thiol-reducing agent dithiothreitol (2mM). The thiol-oxidant diamide increased calcium sensitivity in control, but not diabetic mitochondria, suggesting that a basal oxidative shift in the cellular redox state was present in diabetes. Indeed, redox state assays using a combination of thiol labeling, immunoprecipitation and SDS-PAGE show that a component of the PTP (nucleotide transporter, ANT) is significantly oxidized in diabetic hearts compared to non-diabetic counterparts ($P<0.05$). Furthermore, diabetic animals treated with the mitochondria-targeted anti-oxidant MTP-131 showed improved resistance to PTP opening, and this translated to infarct size reduction in isolated hearts exposed to ischemia/reperfusion. These findings suggest that the augmented susceptibility to injury in diabetic heart mitochondria is mediated by redox-dependent shifts in PTP opening, and that novel mitochondria-targeted anti-oxidant compound may be a suitable therapy to attenuate injury in diabetic hearts.	GP20
Exploration of potential mechanisms of perfluorooctanoic acid-induced developmental cardiotoxicity in an avian model, Qixiao Jiang 1, Robert Lust 2, Jamie C DeWitt 1, 1 Department of Pharmacology and Toxicology, 2 Department of Physiology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Perfluorooctanoic acid (PFOA) is a widespread and persistent environmental contaminant that induces developmental toxicity in laboratory models. We assessed PFOA s effect on heart development in a chicken model and observed thinning of the right ventricular wall, including total thickness and thickness of a dense layer of myosin staining. We also noted alteration of multiple morphological and functional parameters measured by echocardiography. One signaling pathway involved in heart development is the bone morphogenic protein (BMP)-Smad pathway. This pathway may be modulated by an endogenous target of PFOA, the peroxisome proliferator activated receptor alpha (PPARa). We hypothesized that activation of PPARa by PFOA would disrupt inflammatory cytokines and BMP-Smad pathways and contribute to developmental cardiotoxicity. However, quantitative real time PCR in four-day-	GP21

old chicken embryos treated with 0, 0.5, 1 or 2 mg/kg PFOA prior to incubation did not reveal changes to these markers. To further investigate the role of PPARa, we also treated fertile chicken eggs with 0, 5 or 25 mg/kg WY 14,643, a known PPARa agonist. Western blot analysis was used to measure pSmad1/5, second messengers of the BMP-Smad pathway, to determine if PPARa agonsim by WY 14,643 induced effects similar to PFOA. pSmad1/5 was slightly but significantly decreased in the cytoplasm of D4 embryos exposed to PFOA (29.1% in 1 mg/kg and 27.8% in 2 mg/kg, $P<0.05$) and slightly but significantly increased in the nucleus of D4 embryos exposed to WY 14,643 (18.5% in 5 mg/kg and 29.6% in 25 mg/kg, $P<0.05$). The differential response between PFOA and WY suggests that the cardiotoxic effect induced by PFOA is not simply mediated by PPARa agonism or that the BMP-Smad pathway is not altered by PPARa agonism to result in the cardiotoxic effects that we observed. Additional work with morphological and functional parameters of WY-treated animals is planned to further elucidate the mechanism of PFOA-induced developmental cardiotoxicity in chicken embryos.	
Benchtop time domain-NMR Lipoprotein Studies, Michelle Robinson, Nate Kingsbury, Katie Tyson, Emily Svoboda, Dr. David Cistola, Brody School of Medicine, Interdisciplinary Program of Biological Sciences: Biochemistry, Allied Health Sciences, East Carolina University, Greenville, NC 27858	GP22
Traditionally, elevated levels of total cholesterol, LDL-cholesterol and non-HDL cholesterol are strongly associated with an increased risk of cardiovascular disease (CVD), whereas decreased HDL-cholesterol levels have a strong inverse relationship with CVD (1,2,3). Curiously, while reduction of total cholesterol, particularly LDL-cholesterol, reduces the risk of CVD, at least 50% of patients who suffer from a heart attack have baseline LDL-cholesterol (4,5). Benchtop time domain-nuclear magnetic resonance (TD-NMR) has potential to provide an in depth qualitative analysis of the lipoprotein lipid core in whole human serum. TD-NMR relaxation experiments are capable of resolving the internal motions based on chain length, saturation and micro-viscosity (6,7). In these studies we will utilize the information about lipoproteins obtained through benchtop TD-NMR to monitor the effects that compositional changes of the lipid core (due to lipoprotein remodeling) have on the NMR relaxation times, and hence mobility dynamics. NMR relaxation times, in particular T2V, have been correlated with lipid mixtures of varying triglyceride and cholesteryl-ester ratios which mimic the lipoprotein lipid core. As the cholesteryl-ester content increased, the T2V values decreased indicating a less mobile environment. Fractionated lipoproteins were used to establish particle specific T2V assignments. The specific relaxation times are indicative of lipoprotein lipid core composition and mobility. De-identified human serum samples were analyzed using TD-NMR. We were able to resolve lipoprotein particles in whole human serum, and assignments were made according to the data obtained through fractionated lipoprotein and lipid mixture studies. T2V differences displayed from patient to patient can be attributed to lipoprotein abnormalities or metabolic remodeling. An extensive literature search indicates that this approach has never been used for this type of analysis to our knowledge. Examination of the lipoprotein lipid core with benchtop TD-NMR may provide a better understanding of disease risks, and lead to the recognition the of CVD events earlier and more effectively.	

ZCL278, a Small Molecule Targeting Rho GTPase Subclass Cdc42 Disrupts Golgi Organization and Suppresses Cell Motility, Amy Friesland, Yan-Hua Chen, Qun Lu, Department of Anatomy and Cell Biology, The Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Cdc42, a member of the Rho family of small GTPases, is critical for a diverse array of cellular processes including cytoskeletal organization, membrane trafficking, and cell cycle control. In humans, aberrant Cdc42-mediated signaling has been implicated in a variety of diseases including cancer and neurological disorders. Unlike Rho GTPase family members RhoA and Rac1, a more complete understanding of Cdc42 has lagged behind due to the absence of specific small molecule modulators. We have therefore employed computer-assisted virtual high-throughput in silico screening and identified compounds that were able to fit into the surface groove of Cdc42 that is critical for guanine nucleotide exchange factor (GEF) and activation of the GTPase. We demonstrate by imaging methods and biochemical assays that ZCL278 is a selective small-molecule that can inhibit the formation of the GTP-bound (active) Cdc42. ZCL278 disrupts Cdc42-mediated microspike formation and GM130-docked Golgi structures. Additionally, ZCL278 reduces peri-nuclear accumulation of active Cdc42, which could not be accomplished by a specific Rac1 inhibitor, NSC23766. Using ZCL278 as a tool, we confirm the importance of Cdc42 function to both growth cone dynamics and neuronal branching in primary neurons as well as for actin-based motility and migration in metastatic prostate cancer cells. Therefore, through the identification of ZCL278, we have now gained a powerful tool for further elucidating the functions of Cdc42 in human diseases. Supported by NIH NCI-CA111891.	GP23
Dopamine's modulatory actions in the spinal cord depend on the location of the reflex circuitry and are mediated via gap junctions, Tracy Johnson, Stefan Clemens, PhD, Brody School of Medicine, Department of Physiology, East Carolina University, Greenville, NC 27858	
Dopamine (DA) fibers are present in the entire segmentally organized spinal cord. However, DA's modulatory actions in these different spinal areas are poorly understood and research has focused on lumbar segments L3-L5 and their role in locomotion or reflex modulation. In contrast, DA's actions in those spinal cord segments that house the autonomic nervous system (ANS, T1-L2 and, in mouse, L6-S2) have not been addressed. We provide evidence that DA modulation of the spinal reflex circuitry has different modulatory effects in ANS-containing segments when compared to L3-L5 segments, and that these actions are mediated by D1- and D2-like receptors, respectively.Spinal cords of male and female mice (C57BL/6, postnatal days 5-14) were dissected out and suction electrodes were attached to dorsal and matching ventral roots of thoracic, lumbar, or sacral segments. Dorsal roots were stimulated with constant-current pulses (150-500 µA, 50-500 µs, intervals of 30-60s), and reflex responses at the ventral roots were recorded, amplified, and digitized for later analysis. Bath-application of low DA led to a decrease in the amplitude of the monosynaptic stretch reflex (MSR) in L3-L5 segments ($n=8$, $p<0.013$), but was facilitated in the ANS-segments ($n=22$, $p<0.01$). Similarly, the D2-receptor agonist quinpirole decreased MSR amplitudes in L3-L5 segments ($n=5$, $p<0.008$), but not ANS-segments ($n=7$, $p<0.2$). The difference between these groups was significant ($p<0.04$). Blocking D2 receptor pathways with raclopride had opposite effects and led to an increase of the MSR in L3-L5 segments ($n=12$, $p<0.001$) and a decrease in ANS-segments ($n=12$, $p<0.001$). Further, application of the D1-receptor agonist SKF 38393 facilitated the MSR	GP24

response in L3-L5 (n=11, p<0.001), but decreased it or had no effect in ANS segments (n=5, p=0.1).As gap junctions play an important role in the interneuronal communication in both the ANS and between motoneurons, we decided to test if they might also be involved in the location-specific modulation under DA. Application of both carbenoxolone and quinine reversed the reflex DA-modulation of responses in ANS-containing spinal segments, but had no effect in L3-L5 segments (n=7).Thus our data suggest that DA modulates the spinal reflex circuitry in a site-specific manner, dependent on the presence or absence of the ANS, and mediated by gap junctions.	
The Effects of a 6 month Exercise Program on Abdominal Adiposity in Roux-en-Y Gastric Bypass Patients, Jennifer Worley, Joseph Houmard, Charles Tanner, Gabriel Dubis, Human Performance Laboratory, Department of Kinesiology, East Carolina University, Greenville, NC 27858	GP25
Obesity has been a constantly growing health concern for both the world and the United States since the early 1980s. Roux-en-Y gastric bypass surgery is one of the most commonly used surgical techniques to help allow obese patients to lose weight. Roux-en-Y induces large amounts of weight loss in the first year following surgery, but the amount of abdominal adiposity is still large. Exercise has been shown to promote changes in abdominal adiposity. This study examined the effects of a 6 month exercise program (2-3 days/week, 15-25 min/session, moderate intensity progressing to 4-5 days/week, 30-45 min/session, moderate intensity) on abdominal body composition in patients that had undergone Roux-en-Y gastric bypass 1-3 months prior. Twenty-five gastric bypass patients with BMI 37.7 ± 1.246 kg/m2 were randomly assigned to a 6 month exercise program (E ; n=11) or control group (NE ; n=14) and measures of central body composition for the trunk, android, and gynoid regions were taken using a dual energy x-ray absorptiometry (DEXA) machine. Weight loss over the 6 months for both groups was significant (Epre = 109.9±4.3kg, Epost = 86.2±3.9kg, NEpre = 101.3±5.5kg, NEpost = 82.7±3.9kg $p < 0.001$). All three regions showed significant decreases in adiposity in both groups (E: Trunkpre-post = 11245.7±1176.8 g, Androidpre-post = 2380±301.3g, Gynoidpre-post = 3612.4±499.5g; NE: Trunkpre-post = 9140.4±945.4g, Androidpre-post = 1883.6±256.7g, Gynoidpre-post = 2977.2±542.9g; $p < 0.001$ for all), with no interaction due to exercise ($p = 0.1714$, 0.2203 and 0.4097, respectively). There was no significant change in the amount of lean tissue in all three regions over the 6 months in either group (E: Trunkpre-post = 498.4±1162 g, Androidpre-post = 226.4±201.5g, Gynoidpre-post = 665.1±263.2g; NE: Trunkpre-post = -13.2±722.9g, Androidpre-post = -25.6±92.1g, Gynoidpre-post = 665.1±263.2g; $p = 0.7148$, 0.3286 and 0.0103, respectively). We conclude that the 6 month exercise program resulted in no statistically significant changes in abdominal adiposity. We speculate that any effect of exercise was likely overshadowed by the massive weight loss following Roux-en-Y gastric bypass.	

Popliteal Artery Blood Flow Variability in Relation to Mean Arterial Pressure and Vascular Conductance in Women, Sarah Kehe, TP Gavin, FACSM, East Carolina University, Greenville, NC 27858	
We have observed inherent minute by minute individual variation in resting popliteal artery blood flow. Given that blood flow is regulated by arterial blood pressure and vascular conductance (1/resistance), we questioned if the variability in resting popliteal artery blood flow was related to the variability in blood pressure and conductance. METHODS: Resting, supine popliteal artery vessel diameter (cm) and time averaged blood velocity (TAV; m/s) were measured at 1-min intervals for 10 min using Doppler Ultrasound in young females (N=6). Popliteal artery blood flow (PABF; ml/min) was calculated from artery diameter and TAV. Brachial artery systolic and diastolic blood pressures were measured simultaneously with PABF, mean arterial pressure (MAP) was estimated, and Conductance was calculated from MAP and PABF. Mean and standard deviation (SD) were calculated from the 10 x 1-min measures. SD was used as a measure of variability and the coefficient of variation (CV) was used to standardize variability between variables. ANOVA and linear regression were used. RESULTS: Mean of individuals studied were PABF of 61.4 (27.1) ml/min, MAP of 80.7 (3.5) mm Hg, and Conductance of 0.77 (0.36) ml/min/mm Hg. There was a significant relationship between individual mean PABF and Conductance ($r = 0.997$; $p < 0.01$), but not MAP ($r = -0.395$; $p = 0.44$). There was a significant relationship between individual PABF SD and Conductance SD ($r = 0.990$; $p < 0.001$), but not MAP SD ($r = -0.680$; $p = 0.14$). The CV for PABF (0.27+0.11) and Conductance (0.27+0.11) were significantly greater than the CV for MAP (0.03+0.01). CONCLUSION: The variability in popliteal artery blood flow is related to the variability in vascular conductance and not blood pressure.	GP26
Activation of the proton sensing GPR4 receptor in B16F10 melanoma cell lines decreases cell migration and regulates cytoskeletal structures, Calvin R. Justus, Nancy R. Leffler, Li V. Yang, Department of Internal Medicine, Division of Hematology/Oncology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Due to the Warburg effect cancer cells have an increase uptake of glucose. The switch from the main source of ATP production which is oxidative phosphorylation in normal cells to glycolysis in tumor cells results in lactic acid production, which, together with other proton sources, causes a characteristic low pH in the tumor microenvironment. A family of proton-sensing G protein-coupled receptors, including GPR4, OGR1, TDAG8, and G2A, has recently been discovered. In this study we investigated the role of the GPR4 receptor using time-lapse wound closure assays at the pH levels of 6.4 and 7.4. The results demonstrated that the increased expression levels of GPR4 inhibit cell migration. These experiments were followed by actin and beta tubulin staining to characterize the cytoskeleton changes of the GPR4-overexpressing (B16/GPR4) or vector control (B16/Vector) cells. The GPR4 cells show a decrease in the ability to retract the tail of the forward moving cell as well as decreased capacity to spontaneously polarize and migrate. GPR4 cells also demonstrate a decrease in normal lamellipodial formation suggesting a reduction in Rac GTPase levels. Microfilaments in the GPR4 cells show clear differences when compared to Vector cells, such as stress fiber formation and change in their arrangement. In GPR4 cells there is an increase in the number of filopodia and branch like extensions that protrude from the cell's surface. This hints at the involvement of Cdc42 in the molecular pathway of the activated GPR4 receptor as it plays a role in the formation of filopodia. Previously it has been confirmed through Rho GTPase	GP27

pulldown assays that the levels of GTP-bound RhoA have been increased in the GPR4 cells when exposed to pH 6.4 indicating that the Rac GTPase levels could be repressed. Microarray analysis has revealed a 8-fold increase in the expression levels of the p21 activated kinase, Pak3, in B16/GPR4 cells. Recently Pak3 has been shown to inhibit Rac1/2 mediated lamellipodia formation as well as act downstream of Cdc42. These findings indicate that the Rho family GTPases such as Cdc42 and Rac, along with the p21-activated kinase Pak3, could be potentially altered when the GPR4 receptor is activated.	
Psf2: A Role In Chromosome Condensation, Jeffrey Chmielewski, Laura Henderson, Tim Christensen, Department of Biology, East Carolina University, Greenville, NC 27858	GP28
In D. melanogaster, the CMG complex is a group of proteins that function as the DNA helicase during replication. The CMG complex is composed of cdc45, MCM2-7, and the GINS complex. The GINS complex is a heterotetrameric complex composed of the protein subunits Psf1, Psf2, Psf3, and Sld5. Recent research in human dermal fibroblasts shows GINS is essential for the initiation and elongation stages of chromosomal replication. Working with a null mutation, I have designed a series of experiments aimed at elucidating the function of Psf2 in vivo. Using phosphoH3 immunostaining and M-phase indices, I have shown that heterozygous mutants exhibit a significant M-phase delay. EdU incorporation assays in third in-star larval brains shows no significant difference in the number of cells in S-phase. However, when compared to wild type, the pattern of EdU incorporation indicates cells take longer to replicate euchromatin; possibly resulting in the improper packaging of euchromatin as heterochromatin. To corroborate the data seen in the pattern of EdU incorporation, we designed a novel technique to establish the packing ratio of salivary gland polytene chromosomes. Using this novel technique, we are able to show that heterozygous mutants exhibit a significant increase in packing ratio compared to WT. Additionally, in the later stages of egg chamber development, nurse cell nuclei display overly condense polytene chromosomes during the psuedo M-phase at the end of endocycle 5. We have evidence that indicates these instances of overly condensed chromosomes results in apoptotic egg chambers, seen later in development. We have also taken a genetic approach to further substantiate our cytological characterizations. Heterozygous Psf2 flies show a significant decrease in viability with complete homozygous lethality. Position effect variegation analysis show Psf2 enhances variegation an indication that chromosomes are overly condensed. This data, when combined, suggests Psf2 has a role during replication that ultimately determines how DNA is packaged.	

Effect of amidated gastrin and glycine-extended gastrin on Hox A1 gene expression in HT29 cells, Daniel R. White, Jean-Luc Scemama, Department of Biology, East Carolina University, Greenville, NC 27858	GP29
Gastrin is a gastrointestinal peptide hormone synthesized in G cells and secreted in the antrum of the stomach. Though its primary role is to stimulate the secretion of gastric acid by parietal cells, it is also involved in the maintenance of cellular identity and proliferation of gastrointestinal tissue in the stomach, pancreas, and duodenum. Recently, aberrant expression of gastrin has been associated with increased rates of gastric cancer, and more specifically colon cancer. While some of the effects are due to the mature form of the peptide, G17-NH2, its incompletely processed precursors have been shown to have oncogenic functions as well. In this investigation, we focus on glycine-extended gastrin 17 (G17-Gly), one of the most characterized precursors, and how its role in cellular proliferation compares to G17-NH2. Both forms can induce cell proliferation, however, the mechanisms by which these peptides act are not well defined. In the present study we want to analyze the effect of both gastrin forms on HoxA1 gene expressions, a homeodomain containing transcription factor known to be important in cell growth and differentiation. We have shown that G17-NH2 (154%) and G17-Gly (132%) increase proliferation in the human colon adenocarcinoma cell line, HT29. Quantitative real time polymerase chain reaction (qRT-PCR) and western blot will be used to measure the effect these peptides have on HoxA1 mRNA and protein levels. While the cellular receptor for G17-Gly has not been identified, G17-NH2 is known to act through the cholecystokinin B (CCKB) receptor to stimulate the mitogen activated protein kinase (MAPK) signal pathway. CCKB receptor antagonists and MAPK pathway inhibitors will be used to further characterize the regulation of HoxA1 by gastrin peptides. This year, over one million people will be diagnosed with colon cancer, and it is the second leading cause of cancer related deaths. Since gastrin and its precursors are detected in over 80% of colon cancer tissues, it is important that we have a better understanding of how these peptides function.	
Hox gene differential expression during the differentiation of human colon cancer cell line HT29, Lucy D. Conaty, Margit Schmidt, Jean-Luc Scemama, East Carolina University, Greenville, NC 27858	GP30
Hox genes encode evolutionarily conserved transcription factors known to regulate cellular fate during embryonic development and are responsible for maintaining differentiation of tissue. Hox gene misexpression has been observed in carcinogenesis; and therefore, these transcription factors represent an interesting target for combined cancer therapy. Due to their ability to differentiate in culture, colon cancer cell lines represent an intriguing model for studying the role of Hox genes in oncogenesis. Currently, our laboratory has characterized the pattern of expression for all of the 39 Hox genes in a human colon adenocarcinoma cell line HT29. HT29 cells present the advantage to undergo differentiation when gradually introduced to a medium containing galactose (an initial medium containing glucose inhibits differentiation). These cells are also able to produce structural and functional features of differentiated cells upon stimulation. After further investigation, it has been shown that B8, C8 and C9 are up regulated in colorectal cancers. My proposed research is to further investigate Hox gene expression in HT29 cells by focusing on paralog groups 8 and 9. My hypothesis is that differentiated cells will have an increased level of expression of genes in paralog groups 8 and 9 when compared to undifferentiated cells. Additionally, when silenced, cells lacking expression of paralog group 8 and 9 genes will have a marked decrease in ability to	

differentiate and produce tight junctions and apical brush borders. Real-time quantitative PCR on Hox genes paralog groups 8 and 9: A9, B8, B9, C8, C9, D8 and D9 has been performed. The level of expression of these genes was standardized to a housekeeping gene known as RPLPO, a human acidic ribosomal protein. Further research to target specific genes will be performed, preferably with the highest fold of induced expression in differentiated cells. This gene will be targeted for silencing by transfection of siRNA. Upon silencing of the gene of interest, cell growth and proliferation and morphology will be assessed. I hope my results provide initial answers to the understanding of the function of Hox genes during colon carcinogenesis and provide possible targets for combined cancer therapy.	
The Effect of a Plant Arflexor Strength Training Program on Gait Biomechanics in Healthy Old Adults, Rachel Tatarski, Robert Brady, Katie Yamamoto, Benjamin Anderson, Zachary Domire,Patrick Rider, Paul DeVita, Department of Kinesiology, The College of Health and Human Performance, East Carolina University, Greenville, NC 27858	GP31
Locomotion is an important and inherent part of daily life enabling a person to move from one place to another. Most activities of daily living depend on an individual's ability to move effectively such as when climbing stairs, walking or rising from a seated position. All of these activities require the use of lower extremity muscles such as the quadriceps, hamstrings and plantarflexors. Proper function of these components is important in maintaining an independent lifestyle, especially since it is well documented that functional capacity declines with age. Physiological changes with aging including the loss of lean muscle mass, strength and power, are manifested in walking. Compared to young adults, old adults exhibit poor gait patterns such as decreased range of motion and shorter stride lengths which increases their risk of falling. Old adults exhibit decreased power of the plantarflexors and increased power of the hip extensors. This distal to proximal shift in function could be attributed to weakness of the plantarflexors, so strengthening the plantarflexors may help reverse the negative physiological effects of aging and help preserve functional capacity in old adults. The purpose of this study is to determine the effect of plantarflexor strength training on gait biomechanics during level walking at self-selected, safe-maximum and a standardized speed of 1.5 meters per second in healthy old adults. We will recruit 40 healthy adults between the ages of 65 and 85 who will be randomly assigned to the strength training group or the stretching control group. All volunteers will undergo an initial gait assessment and maximal strength testing of the plantarflexors. Those in the strength training group will perform strengthening exercises for the gastrocnemius and soleus muscles three times per week for twelve weeks. Those in the stretching control group will perform stretches for the gastrocnemius and soleus muscles three times per week for twelve weeks. All volunteers will undergo gait assessments and maximal strength testing midway through the training and at the end of the twelve week training period. We will compare the data from the pre-, mid- and post-testing to determine any gait changes and strength changes in the plantarflexors. Findings from this study may help improve exercise regimens designed for old adults and reduce the risk of falling.	
Using Transformations to Analyze Data With Statistical Software, James L. Byrd III, Dr. Jason S. Brinkley, Department of Biostatistics, East Carolina University, Greenville, NC 27858	GP32
When analyzing data, oftentimes it is hoped that a linear trend will emerge between important numeric variables. This relationship can be obscured at times by associations that are in fact nonlinear. With a little extra effort, these variables can be transformed in a way using 1 to 1	

transformations to hopefully then observe a linear relationship or stronger correlation. This poster highlights common transformations that are widely available in statistical software with both real and simulated data.	
Mesothelin: A Path to Pancreatic Cancer Treatment?, Andrew Freistaedter, Gwendolyn Jones, Emmanuel Zervos, Rachel L. Roper, Department of Microbiology & Immunology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	GP33
Pancreatic cancer is the fourth leading cause of cancer-related deaths in the United States. Pancreatic tumors over-express the protein mesothelin, and therefore, it is used as a tumor target antigen for vaccine development. Our current research uses an improved Modified Vaccinia Ankara (MVA A35R) poxvirus that we developed to present mesothelin to the murine immune system to treat pancreatic tumors. Wild-type (normal) and A35R MVA viruses were constructed to express mouse mesothelin to create an anti-cancer vaccine. PCR, flow cytometry, and Western Blot confirmed virus construction, purity, and protein expression. Our hypothesis was that the A35R virus would be more efficient at stimulating the immune system and better protect against tumors caused by the Panc02 pancreatic adenocarcinoma cell line. MVA was found to both kill and replicate in Panc02 cells, showing it is an oncolytic virus. However, multiple schemes of infection/vaccination and boosts were used without any significant protection from tumor challenge in mice. Assays to determine immune response against mesothelin suggested that mice vaccinated with the mesothelin expressing vaccine virus did not generate a strong immune response to mesothelin as expected, however the mice had robust immunity to the poxvirus. Together these results suggest that native mesothelin may not be a good vaccine target antigen for cancer treatment, possibly because immune cells responding to this self-protein are deleted during development of the immune system as a protection against autoimmunity. Strategies for improving anti-mesothelin immunity are being explored.	
Role and function of synaptopodin-2 Isoform B in HT29 cells, Sarah Thalhamer, K. Shortt, M. Campbell, M. Schmidt, J. Chalovich, JL Scemama, Department of Biology, East Carolina University, Greenville, NC 27858	GP34
Synaptopodin-2, also known as myopodin and fesselin, is a member of the synaptopodin family. Under physiological conditions, synaptopodin-2 is a largely unfolded protein, which gives it the characteristics of a hub protein capable of having multiple binding partners including several cytoskeleton proteins, such as actin and actin associated proteins. Previous research has shown that synapotopodin-2 promotes rapid polymerization of actin (Chalovich and Schroeter, 2010). Since actin polymerization rates have such a crucial role in the reorganization of the cell cytoskeleton, it suggests that synaptopodin-2 may play a role in normal cell cycle progression. Synaptopodin-2 has been suggested to act as a tumor suppressor gene in prostate and bladder cancer where its loss of expression by deletion or hypermethylation leads to an increases rate of invasiveness (Lin et al., 2001 and Cebrian et al., 2008). The correlation between synaptopodin-2 expression and its effects on invasiveness in colon cancer cells is being studied using the HT29 colorectal adenocarcinoma cell line. Four isoforms of synaptopodin-2 have been described and are generated by alternative splicing from a single gene located on chromosome 4q26. Unfortunately, little is known on the function of synaptopodin-2 and its individual isoforms. We have shown that synaptopodin-2 splice variant A and B are expressed in HT29 cells. We have also shown that synaptopodin-2 isoform B	

localized in the nucleus of these cells. To analyze further the function of the different isoforms, we have designed primer pairs to amplify the complete open reading frame of each splice variant so that the entire coding region could be inserted into an inducible expression vector. These vectors will be used to establish stably transformed cell line capable of overexpressing each isoforms. Wild-type cells will be compared to cells over expressing the individual isoforms through immunofluorescence and western-blot analysis.	
Variations in velopharyngeal mechanism between the upright and supine position using MRI in young children, Lakshmi Kollara Sunil, BSc, Jamie Perry, PhD, East Carolina University, Greenville, NC 27858	GP35
The structures that constitute the velopharyngeal area play an important role in complex mechanisms such as speech production, swallowing, and breathing. It mainly includes the velum, the lateral pharyngeal walls, and the posterior pharyngeal walls. Velopharyngeal closure is accomplished through the combined action of several velopharyngeal muscles, the most important of them being the paired levator veli palatine muscle. Speech is a dynamic process produced in the upright position. Most studies related to the velopharyngeal structures in motion have been in the supine position. It is important to know if data from the supine position (i.e., MRI data) can be related to natural speech, which occurs in the upright position. It would be an incomplete judgment, to predict the functional status of the velopharyngeal mechanism based solely on its structural characteristics. Review of the literature reveal upright versus supine studies have been done for the most part on positional variations and influence of gravity in patients with obstructive sleep apnea (OSA), with respect to their oropharyngeal and velopharyngeal areas. We found that no studies have used MRI to compare the dimensional changes of the velopharyngeal musculature between upright and supine positions in children. In cleft palate research, assessment of children is the main aim because secondary surgery (if applicable) is typically done before 7 years. The protocol used is modeled after a similar, previously published study in adult females by Perry (2010). This will ensure standardization and comparison of results obtained in the adult and child population valid. MRI data will be obtained using a 0.6-T open-type multi-position MRI scanner. Subjects will be selected on the basis of our predetermined inclusion criteria. We hope to answer the question of whether data acquired in the supine position can actually be applied to an upright position activity in children. We also aim to demonstrate the application of an upright open type MRI for assessing velopharyngeal structures in young children during sustained vowel production. Our methods may prove to be a useful clinical diagnostic tool in the area of cleft palate before and after secondary surgery (e.g., pharyngeal flap or sphincterpharyngoplasty).	

Ca2+ binding to Human Cardiac Troponin C, Rachel A. Skowronsky, Anne M. Spuches, PHD, Department of Chemistry, East Carolina University, Greenville, NC 27858	GP36
Cardiomyopathy is a class of heart disease characterized by a weakening of the heart muscle (myocardium). The weakening of the myocardium impairs the muscles ability to contract resulting in shortness of breath, arrhythmias, and death. Two types of cardiomyopathies familial hypertrophic cardiomyopathy (FHC) and dilated cardiomyopathy (DCM) affect people of all ages and have been linked to mutations in the protein Troponin C (TnC). Troponin C functions as a calcium sensor which initiates contraction of the myocardium. One treatment for cardiomyopathies is the use of calcium sensitizing drugs. These drugs increase the sensitivity of TnC for calcium enhancing contractility of the heart muscle. Use of calcium sensitizing drugs can cause severe side effects and therefore has not been approved in the United States. Understanding the thermodynamic driving forces that enable TnC to act as a calcium sensor is crucial for future drug design. Isothermal titration calorimetry (ITC) can be used to obtain the thermodynamic parameters: binding constant (K), enthalpy (H), stoichiometric ratio (n), enthalpy (S), and Gibbs energy (G) of Ca2+ binding to TnC. Calcium bindig to human cardiac Troponin C (HcTnC) and a truncated mutant (HcTnC1-89) have been studied using (ITC). In addition, isotherms for calcium binding to HcTnC at 10°C, 25°C, and 37°C have been obtained thus allowing for the calculation of heat capacity (Cp) of metal binding. These data will be compared to thermodynamic parameters obtained for other EF hand proteins. Most importantly, trends in enthalpy, entropy, and heat capacity that may shed light on the mechanism of calcium binding to HcTnC.	
Thermodynamic Studies of Copper Binding to Alzheimer's Amyloid-Beta Peptide, Sunitha Gade**,** Anne Spuches, East Carolina University, Greenville, NC 27858	GP37
Alzheimer's disease (AD) is an irreversible, progressive, and devastating neurodegenerative disease, most common cause of dementia. It is characterized by the extracellular amyloid plaques and the intracellular neurofibrillary tangles, which results in neurotoxicity. Amyloid plaques are majorly constituted of b-amyloid peptides (Ab), 40 to 42 amino acid peptides that were cleaved from the membrane bound amyloid precursor protein (APP). Elevated concentrations of copper, zinc, and iron have been measured in amyloid plaques and recent in vitro studies have shown that zinc and copper ions promote the aggregation of these peptides. Furthermore, it was found that high affinity metal ion chelators can be used in the dissolution of aggregated Ab peptides. Taken together, these studies show the important role metal ions play in AD. Previous studies indicate that Cu2+ binding occurs within the first 16 amino acid residues of the full length Ab peptides. Our lab has investigated the thermodynamics of Cu2+ binding to Ab16, Ab28 and three variant peptides using isothermal titration calorimetry (ITC) and ACES buffer as a weak competing ligand [1]. In this study, the binding of Cu2+ to Ab16 was studied at three different concentrations of ACES buffer (20mM, 50mM, 100mM). Buffer independent binding constants (K) were then extracted to test for ternary complex formation. In addition, heat capacity (Cp) data for Cu2+ binding to Ab16 and Ab28 have been obtained and compared. Taken together, this data will be used to shed light on the mechanism of Cu2+ binding to these peptides.	

Using Otolith and Water Chemistry to Determine Philopatry and Vagrancy of Striped Bass (Morone Saxatilis) in the Albemarle Sound/Roanoke River Stock, Coley Hughes**,** R. Rulifson, Coastal Resources Management, Institute for Coastal Science and Policy, Department of Biology, East Carolina University, Greenville, NC 27858	GP38
The strategic habitat areas of striped bass (Morone saxatilis) continue to be a topic of interest to researchers, fisheries managers, recreational and commercial fishermen. This research will evaluate movement and site fidelity of the key species by assessing trace elements in otoliths and water chemistry in the Albermarle Sound/Roanoke River stock of North Carolina. Intensive fishing pressure caused a drastic decline in the catch of the species in this area during the late 1970's through the mid 1990's. Proper fishery management techniques to include stock enhancement programs, creel limits, slot limits, habitat improvement, water quality improvement, and seasonal length proclamations were conducted. The Albemarle Sound-Roanoke River striped bass fishery was declared fully recovered in 1997 and is the third largest population of striped bass along the Atlantic Coast. While research has been conducted to assist in successfully managing this species, major advances in otolith chemistry will provide answers to key questions about movement and strategic habitat areas in this fishery.	
The iron transporter Bfe is a critical virulence determinant in Brucella abortus 2308 and expression of the genes encoding this transporter is regulated by iron and acidic pH, Ahmed E. Elhassanny, Eric S. Anderson, Clayton C. Caswell, R. M. Roop II, Department of Microbiology and Immunology, East Carolina University, Greenville, NC 27858	GP39
Like most bacteria, Brucella strains require iron as an essential micronutrient. Siderophore-dependent ferric iron (Fe3+)-specific and heme acquisition systems have been identified in Brucella as important means of acquiring this essential metal; however, no ferrous iron (Fe2+)-specific transport system has been characterized. The genes designated BAB2_0837-0840 in the B. abortus 2308 genome sequence are predicted to encode a ferrous iron (Fe2+) transporter belonging to the recently described Cup-II-type family of prokaryotic Fe2+ transporters. Based on its proposed function, this particular iron transporter has been given the designation Bfe (Brucella ferrous transporter) and the genes that encode this transporter the designations bfeA-D; bfeA (BAB2_0840) is predicted to encode a 19 kDa periplasmic iron binding protein, bfeB (BAB2_0839) a CupII-type ferroxidase, bfeC (BAB2_0838) a homolog of the well-characterized Saccharomyces high affinity iron permease Ftr1 and bfeD (BAB2_0837) a polyferredoxin that is thought to maintain the redox balance of the transporter. Compared to the parental 2308 strain, an isogenic bfeA mutant displays a decreased capacity to use FeCl3 (Fe3+) and Fe (NH4)2(SO4)2 (Fe2+) as iron sources in vitro and exhibits severe attenuation in cultured murine macrophages and experimentally infected mice. Transcriptional analyses indicate that bfeA expression is elevated in B. abortus 2308 in response to iron deprivation, and mutational studies indicate that this pattern of expression is mediated by the iron-responsive regulator Irr. Recent studies have shown that in addition to being responsive to cellular iron levels, bfe expression in B. abortus 2308 is also elevated in response to exposure to low pH. This is consistent with our prediction that the BfeABCD complex allows Brucella strains to successfully scavenge Fe2+ during their residence in acidified vacuoles, where Fe2+should be readily available, in the early stages of their interactions with host macrophages. Mutational analysis has shown that in addition to Irr, the transcriptional regulator MucR also controls the expression of the bfe operon in B. abortus 2308, but whether or not MucR is responsible for the pH-responsive expression of these genes has not been determined.	

Cyclooxygenase-2 is a Crucial Contributor to Anandamide-induced ER Stress in Non-melanoma Skin Cancer Cells, Eman Soliman, MS, Rukiyah Van Dross, Ph.D., Department of Pharmacology and Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	GP40
Non-melanoma skin cancer (NMSC) is the most common cancer in United States. NMSC and other epithelial tumors overexpress cyclooxygenase-2 (COX-2) differentiating them from normal epithelial cells. COX-2 metabolizes arachidonic acid to prostaglandin E2, which promotes tumor growth and angiogenesis. Another metabolic product of COX-2, prostaglandin J2 is reported to induce apoptosis by various mechanisms including the induction of endoplasmic reticulum (ER) stress. Different Stimuli can disrupt ER protein processing leading to the accumulation of unfolded proteins. In response, ER stress sensors such as PERK become phosphorylated and P-PERK then phosphorylates eIF2±. Induction of this signaling pathway attenuates global mRNA translation and induces synthesis of chaperone proteins to relieve the ER stress. However, in the presence of insurmountable ER stress cells undergo apoptosis. Anandamide (AEA) is an endogenous cannabinoid neurotransmitter which induces apoptotic tumor cell death. Our previous data show that AEA is selectively metabolized to pro-apoptotic J-series prostaglandins in cells which overexpress COX-2 and numerous reports indicate that J-series prostaglandins induce ER stress. The current study was performed to investigate whether AEA induces ER stress in a COX-2 dependent manner. To measure the induction of ER stress, NMSC cells (JWF2) were treated with 20uM AEA and the phosphorylation of PERK and eIF2± as well as the expression of ER chaperone proteins were analyzed by western blot analysis or immunocytochemistry. Our data show that AEA increased PERK and eIF2± phosphorylation. In addition, AEA increased the expression of the ER chaperone proteins, GRP78/BIP and HSP 70. To determine whether COX-2 is important for AEA-induced ER stress, HaCaT keratinocytes, which express low basal levels of COX-2, were transfected with a plasmid containing human COX-2 cDNA or an empty vector and the cells treated with AEA or ethanol (drug vehicle). We observed that AEA-induced phosphorylation of PERK and eIF2± occurred only in the presence of COX-2. These findings show that AEA-induced ER stress is COX-2 dependent and suggest that COX-2 mediated activation of PERK signal transduction may be responsible for the pro-apoptotic activity of AEA in tumor cells. As such, AEA or chemical derivatives of AEA could be ideal topical agents for treatment of NMSC.	

Zooplankton dispersal from temporary versus permanent ponds, Lauren C. McCarthy, David R. Chalcraft, Department of Biology and North Carolina Center for Biodiversity, East Carolina University, Greenville, NC 27858	GP41
The colonization of habitats by species is a critical process generating biodiversity within ecological systems. Theory predicts colonization primarily happens from large habitat patches to small habitat patches, with few migrants originating from small patches. However, there is new evidence from zooplankton in rock pool systems that small ephemeral habitats produce more migrants than larger more permanent habitats. This has important theoretical as well as conservation implications as it suggests there is great value in the conservation of smaller, ephemeral habitats. We propose to examine the value of small, ephemeral habitats in the terms of their ability to produce migrants by studying zooplankton that live in freshwater ponds. Zooplankton represent a particular interesting group to study because they can produce dormant eggs that survive desiccation. These dormant eggs can either remain in an egg bank on pond bottoms until they hatch or they can passively disperse to other ponds. Due to the exposure of the egg bank when ponds are dry, we hypothesize small temporary ponds will produce more migrants than large ponds that are always filled with water because the eggs will be more readily blown out of dried pond basins. Furthermore, it is possible that zooplankton may produce different kinds of dormant eggs that differ in dispersal ability (e.g., smooth eggs or sticky eggs that more readily attach to animals moving among ponds). Zooplankton in large versus small ponds may be prone to produce more of one kind of dormant egg than other kinds, which could also alter the number of migrants leaving a pond. To investigate zooplankton dispersal differences from small ephemeral versus larger more permanent habitat, we will monitor the colonization of artificial ponds placed around 7 temporary and 7 permanent ponds in the Croatan National Forest, NC. Furthermore, we will place sticky traps around each of the ponds to capture eggs being blown away from ponds. We will also take SEM images of dormant eggs to characterize variation in egg morphology that may contribute to differences in dispersal ability in small and large ponds.	
Jellyfish-human interactions at estuarine recreation sites are influenced by local wind dynamics, Mahealani Y. Kaneshiro-Pineiro, Coastal Resources Management, Institute for Coastal Science and Policy, Meghan B. Lell, David G. Kimmel, Department of Biology, Institute for Coastal Science and Policy, East Carolina University, Greenville, NC 27858	GP42
Many jellyfish species inflict painful stings and high jellyfish abundance may negatively affect human recreation (fishing, water skiing, kite-surfing, etc.). The stinging sea nettle (Chrysaora quinquecirrha) has been observed annually by coastal recreationists in the spring and summer in the Neuse River Estuary (NRE), NC. To evaluate what influences these jellyfish-human interactions in the NRE, abiotic data was recorded and sea nettles were counted at 6 recreation intensive sites from June to August 2011. Because the NRE is heavily influenced by wind-driven estuarine circulation, we also examined the influence of wind on jellyfish abundance at these sites. Approximately ~1,200 sea nettles were counted from the months of June to August 2011. The most sea nettles were observed in July and there were no sea nettles counted in August. We found that wind direction influenced the coastal distribution and abundance of the sea nettle at the NRE 6 recreation intensive sites.	

An application of volunteer-collected data: water quality dynamics as a result of Hurricane Irene in the Albemarle-Pamlico estuary, Michael Smith, Coastal Resources Management Program, Institute of Coastal Science and Policy, East Carolina University, Greenville, NC 27858	
The Citizens' Monitoring Network (CMN) is a volunteer-based monitoring program that consists of a network of private citizens who keep track of ambient, surface water quality in the Albemarle-Pamlico estuary and its tributaries. CMN has over 20 active monitoring sites and near 50 volunteers. On average, each monitoring location brings in 25 monitoring sessions per year. Despite huge investments to fund these types of monitoring programs and the time put forth by volunteers, regulators remain hesitant when using volunteer-collected data for management purposes. This study examines CMN data from several monitoring stations in the Albemarle and Tar-Pamlico River basins using Hurricane Irene, which made landfall in eastern North Carolina on August 27, 2011, as a baseline. Pre- and post- Hurricane Irene data from these monitoring locations revealed a pattern similar to what is observed and reported in the literature for most estuarine systems after a hurricane event thus furthering the potential of volunteer-collected data.	GP43
Dosimetric Investigation of Eye Plaque Applicator with Praseodymium-142 using Monte Carlo Simulation, Maria Clara Ferreira, JW Jung, East Carolina University, Greenville, NC 27858	
Various morbid conditions of the eye, e.g. eye plaques in large animals, have been successfully treated with Strontium-90 (90Sr-90Y) eye applicators in the past. However, these devices are no longer manufactured. Praseodymium-142 (142Pr) glass eye plaque is proposed as a viable choice of radionuclide for the treatment of scleral eye cancer in large animals. A model for the 142Pr rare earth aluminosilicate (REAS) glass eye plaque applicator was designed for the use in episcleral brachytherapy, presenting a rectangular geometry with curved interior. Dose distributions were calculated for the simulation of the eye ball using MCNPX2.6 Monte Carlo simulation. The eye applicator was designed to contour the eye and be in contact with the eye surface during the treatment. A total physical dose of 85 Gy was used as reference dose in the treated tumor volume. Value for the treatment dose was based on the American Brachytherapy Society (ABS) recommendations for brachytherapy of uveal melanomas with gamma rays. The costs and viability of producing the 142Pr device were estimated as well. Beta dose profile from the glass 142Pr showed that this device can provide high doses at very short ranges within the eyeball, being suitable for the treatment of superficial eye lesions. For example, the MCNPX2.6 simulation provided beta doses of 85.0 Gy at 0.50 mm depth while a mere 3.20 Gy at 5.00 mm depth (values at the central axis). The error found for these points from the simulation statistical uncertainty were 0.19 and 0.70 % respectively. Activation of 142Pr glass eye applicator can be achieved in a common low fluence neutron research reactor, making it accessible and lowering production costs. The 142Pr eye applicator showed to be viable for the treatment of superficial eye cancers, due to the high doses achieved in short distances, sparing healthy surrounding issues. 142Pr glass eye plaques could be molded to achieve a desired dose distribution, according to the tumor shape and size. The feasibility and costs of 142Pr also showed to be an attractive feature of this treatment modality.	GP44

Characterization of the Roles of Mcm10 in Drosophila Melanogaster, Ritu Dalia, Michael Reubens, Dr. Tim Christensen, Department of Biology, East Carolina University, Greenville, NC 27858	
Replication of the genome and proper formation, and packaging, of chromatin are processes essential to eukaryotic life. Maintenance of epigenetic chromatin states is essential for faithfully reproducing the transcriptional state of the cell; likewise, replication of DNA with high fidelity is crucial for accurate passage of genetic information from a cell to its progeny. Defects in DNA replication and improper regulation of the chromatin states can result in genome instability which can manifest as disease, or death of the organism. There are a plethora of factors involved in the process of DNA replication in eukaryotes, and recent studies have shed light on one of the factors called mini-chromosome maintenance 10 (Mcm10) as an essential DNA replication factor. First discovered in S. cerevisiae, Mcm10 is an abundant nuclear protein that has been shown to activate the Pre-RC, interact with members of the elongation machinery such as Pol± and PCNA, and has recently been implicated in the formation of heterochromatin in both yeast and Drosophila. Previous analysis of two Drosophila Mcm10 mutant alleles demonstrated that Mcm10 not only plays a role in DNA replication, but also has a role in heterochromatic silencing and chromosome condensation. To further investigate the roles of Mcm10 we intend to characterize a collection of over 20 recently acquired missense mutations generated using a Tilling approach. Observation of mitotic chromosome phenotypes; EdU incorporation analysis; and evaluation of chromatin dynamics using PEV analysis, polytene chromosomes, and ovarian tissues for each of these mutants will help us elucidate the biological functions of this well conserved protein as well as providing information on the domains of the protein required for its different biological functions.	GP45
Export of Terrigenous Material Through the Neuse River Estuary, NC Following Hurricane Irene: Evidence from Field Measurements, Remote Sensing and Numerical Modeling, Matthew M. Brown1, Richard L. Miller1,2, Ryan P. Mulligan3, 1 Department of Geological Sciences, East Carolina University, Greenville, NC 27858, 2 Institute for Coastal Science and Policy, East Carolina University, Greenville, NC 27858, 3 Department of Civil Engineering, Queen s University, Kingston, Ontario, Canada	
Coastal waters are often characterized by high concentrations of suspended inorganic and organic particles derived from the discharge of rivers or from the resuspension of bottom sediments. In addition, most rivers discharge high concentrations of colored dissolved organic matter (CDOM) derived from decaying plant debris into coastal aquatic systems. Understanding how particulate and dissolved materials are mobilized within terrestrial systems and then transported to and within coastal waters is critical to monitoring coastal water quality and gaining a better understanding of the coupling between landscape and ocean processes.The concentration of suspended particles (total suspended matter, TSM) and CDOM were investigated in the Neuse River, Neuse River Estuary, and Pamlico Sound following the landfall of Hurricane Irene in late August 2011. Due to the spatial and temporal variability of TSM and CDOM in this complex environment, traditional field sampling techniques were unable to adequately characterize the system processes. To overcome this limitation, remote sensing and numerical modeling were also used. Two field campaigns were conducted to collect water samples to develop a regional remote sensing algorithm for TSM using MODIS (Moderate-resolution Imaging Spectrometer) imagery. MODIS images were then processed to	GP46

TSM to provide a large-scale synoptic view of the Neuse River Estuary and Pamlico Sound as well as provide TSM data to initialize and validate a numerical model for water and solute transport (DELFT3D). The DELFT3D model simulations were used to examine the transport and fate of materials under various scenarios, monitor the system when remote sensing data was unavailable, and provide three-dimensional information.Here we present results derived from this integration of methods that suggest that major increases in the concentration of dissolved and particulate material were related to the passage of Hurricane Irene (August 2011). Remote sensing and numerical modeling proved to be extremely useful tools in monitoring the mobilization and transport of material within this system.	
Mathematical Analysis of Tsunamis and Rogue Waves, Bradley Eidschun Department of Mathematics, East Carolina University, Greenville, NC 27858	GP47
The world's oceans are an interesting place. They are a source of food, minerals, precipitation, energy, transportation, and recreation. However, they are also capable of spawning some of the most damaging storms on Earth, as well as causing erosion and increased salinity to coastal cropland. This presentation considers the behavior of the surface of large bodies of water capable of exhibiting tsunamis and rogue waves. A system of equations that is externally forced is utilized here to formulate the problem mathematically. In our case, earthquakes or landslides can cause the forcing responsible for tsunamis. Rogue waves, on the other hand, can be caused by steady winds and currents that channel ripples toward a focal point; this results in a resonance triad. The wave equations (used for a great deal of problems in physics) have solutions that can be found numerically as well as analytically. We compare these to actual observed data recorded from tsunamis and rogue waves. To better understand the characteristics of these phenomena, a signal analysis is performed using wavelets. It is demonstrated that different choices of wavelets lead to different efficiencies in the storage and recovery of oscillatory data. This analysis enhances our understanding of dangerous ocean-wave events.	
Characterization of preserved overwash deposits, North Carolina coast, Ian Conery, Geological Sciences, East Carolina University, Greenville, NC 27858	GP48
The low-lying North Carolina coast has been subject to hurricane strikes throughout history, and with projected sea-level rise rates of ~2-4 mm/yr, storms will more frequently cause coastal flooding with potentially detrimental impacts. More specifically, storm overwash can significantly affect barrier islands and other coastal areas, leading to impassable roads and potentially new inlets. Overwash is a primary process in barrier island sediment budgets, causing beach and dune erosion volume changes and back-barrier sediment accumulation, and ultimately driving long-term landward migration. Also, the sediment layers deposited by overwash events may be useful in deciphering the geologic past. However, overwash processes vary with geomorphic environment and the preservation of storm signatures is potentially variable, often subject to biological and physical reworking. This research seeks to identify variability in the nature of and controls for overwash preservation and storm-history reconstruction by examining preserved strata from known events that influenced two back-barrier sites on the NC coast: Caswell Beach (in the Cape Fear River Estuary) and Ocracoke Island (adjacent to Pamlico Sound). Sedimentary storm signatures will be identified and characterized using grainsize analysis and x-radiography. 14C, 210Pb, and 137Cs analysis will provide age estimates on the identified storm deposits. Loss on ignition, mineralogical analysis and aerial photography will also provide further insight into the timing and spatial extent of the	

identified deposits. Analysis and interpretation of these historical overwash deposits will lead to a better understanding of the record of historical events and potential impacts of future storms on the NC coast. Digital elevation model (DEM) data will identify locations most susceptible to future overwash. Ultimately, this research will help provide coastal managers and policymakers insight into the potential increase in coastal impacts due to more frequent storms and sea-level rise.	
Groundwater flow and water table position within the surficial aquifer, Emerald Isle, North Carolina: An assessment of causes and solutions to storm-water flooding, Michael S. Sisco, Alex K. Manda, Department of Geological Sciences, East Carolina University, Greenville, NC 27858	
The town of Emerald Isle, located in North Carolina's outer banks, experiences significant storm-water runoff and flooding problems during the fall and winter months. The topography, particularly the dunes and swales, influences drainage patterns as well as the position of the water table. As the island continues to develop, the natural drainage patterns will be susceptible to further change. The water table could be the primary cause of the flooding in these areas. Improving upon the understanding of the hydrology on Emerald Isle will lead to possible solutions dealing directly with the storm-water problem. We used fifteen wells to monitor the surficial aquifer and position of the water table over a 9-month period. During this period, the water table did not remain near the ground surface for any extended length of time. These data show there is a weak relationship between the position of the water table and storm-water ponding after precipitation events, and that the physical topography is more likely a primary factor. Further studies should include a more intricate look at the study area, particularly the percentage of impervious surfaces, shallow subsurface sediment analysis, as well as a salt-water intrusion scenario.	GP49
Investigating condition indices of Central Southern Management Area striped bass (Morone saxatilis) to asses seasonal variability in condition and reproductive enrgy allocation, Jeffrey M. Dobbs, Roger A. Rulifson, Institute for Coastal Science and Policy, Department of Biology, East Carolina University, Greenville, NC 27858	
Striped bass (Morone saxatilis) is one of the most important recreational fish species in the state of North Carolina. It is an anadromous species of fish that spawns in freshwater river habitats in the spring and migrates to mesohaline habitats in estuaries or saline ocean environments the remainder of the year. The different habitats the striped bass inhabit throughout the year vary greatly in environmental factors such as salinity, dissolved oxygen and food availability. These changes in environmental factors, as well as metabolic shifts in energy allocation to reproductive organs, cause changes in fish condition. This study asseses the seasonal changes in condition of striped bass collected in the Neuse and Tar Rivers (Central Southern Management Area) in 2011 through the use of several condition indices. Liver weight was used to determine Liver Somatic Index (LSI). Gonads weight was used to determine Gonadal somatic index. Total length and weight were used to determine Fulton's Condition Factor (K factor) and the species specific Relative Weight (Wr). The results of this study were compared to a previous study conducted by David Gentry in 2006 to determine variability over longer periods of time. The condition indices varied significantly between seasons, years and watersheds, but fish appear to be in better general health than the previous study.	GP50

Gahnite Composition in Granitic Pegmatites, Joshua Bitner1, Adriana Heimann1, Michael Wise2, Dwight Rodrigues Soares3, Ana Cláudia Mousinho Ferreira3, (1) Department of Geological Sciences, East Carolina University, Greenville NC 27858, (2) Department of Mineral Sciences, Smithsonian Institution, Washington, DC 20560, (3) Instituto Federal de Educação, Ciência e Tecnologia da Paraíba (IFPB), Campina Grande-Paraíba, Brazi	
The zinc end-member of the spinel group of minerals, gahnite ($ZnAl_2O_4$), is common in many types of rocks. Studies suggest that gahnite may be an indicator mineral for rare metal mineralization. By analyzing the major and trace element chemical composition of gahnite, it is possible to determine the degree of fractionation within a specific pegmatite. The degree of fractionation directly correlates with the presence of rare metal mineralization. A high degree of fractionation in a pegmatite may suggest the presences of rare metal mineralization, while a low degree of fractionation suggests rare metal mineralization will be minimal or non-existent. The focus of this study is to analyze the chemical composition of gahnite from granitic pegmatites from various locations. Sample sites include the Borborema Pegmatite Province (BPP) in northeastern Brazil, the East Brazilian Pegmatite Province (EBPP) in northeastern Brazil, Hawk-Bakersville, Spruce Pine District, NC (Burleson Mica Mine), Scaggsville, MD (Ben Murphy Mica Mine), Stoneham, ME (Lord Hill Pegmatite), Avondale, PA, San Miguel Co., NM, and Yunan, China. Gahnite compositions are expressed as mol % hercynite (Hc), gahnite (Gah), and spinel (Sp) end members. Most samples from granitic pegmatites show a composition Hc0.6-9.2Gah89.8-98 Spl0-4.7 whereas the sample from Stoneham, ME contains a Hc13-27 content, which indicates a lower degree of fractionation compared to the rest. The BPP, EBPP, North Carolina, and Maryland samples have higher gahnite (Gah90-98) compositions than the Stoneham, ME pegmatite which indicates a high degree of fractionation for the former. This is further illustrated by a plot of mol (Fe+Mg)/Al vs. (Zn+Mn)/Al. This comparison indicates a likelihood that rare metal mineralization is present in the BPP, EBPP, North Carolina, and Maryland pegmatites is high, but low in the Maine pegmatite. Additional research is needed to confirm preliminary results and to further understand compositional differences between various types of pegmatites.	GP51

Sedimentological and Geochemical Signatures of Flood and Storm Deposits on the Louisiana Continental Shelf, David Young, JP Walsh, and DR Corbett, Department of Geological Sciences, Institute for Coastal Science and Policy, East Carolina University, Greenville, NC 27858	
The geologic record is often used as a tool to determine environmental conditions of the past. The study of preserved sedimentological deposits may be useful to improve our understanding of coastal mechanics. However, the fidelity of the record may be disturbed by post-depositional physical and/or biological alteration. In order to accurately interpret the geologic record, it is important to investigate how sedimentary events are captured and preserved. The 2011 flooding of the Mississippi River provided an opportunity to examine if and how a large flood was received on the seabed, and provides insight into the character of a flood layer after a short time (~two months) following deposition. Here, the impacts of physical and biological processes are identified through careful investigation of chemical signatures and stratal character. Also, observations of the flood deposit preservation can be contrasted with modifications to the previously deposited event layers from hurricanes Ivan, Katrina, and Rita. Previous research has suggested that event deposits can elude reworking when rates of sediment accumulation are high, but more field data are needed for a better understanding of how events are incorporated into the long-term geologic record. More specifically, this study uses multicores collected in August 2011 at 68 sites along the Louisiana continental shelf from areas surrounding the mouths of the Mississippi and Atchafalaya Deltas. The 2011 Mississippi flood layer and previous event deposits were examined using x-radiography, 7Be, and other sedimentological and chemical tools. Grain-size information, macrofaunal density, and loss-on-ignition measurements also provide key insights in the analysis.	GP52
Phenotypic characterization of vegetative development in the maize fuzzy tassel mutant, Christine Todd, Beth Thompson, Molecular Biology Department, East Carolina University, Greenville, NC 27858	
The grasses, of which maize is a member, accounts for nearly 50% of the world food calories. In addition, maize is a powerful genetic model for plants in general and the grasses in particular. microRNAs (miRNAS) are short, non-coding RNAs that regulate gene expression post-transcriptionally in all multicellular organisms. In plants, miRNAs are processed from dsRNA hairpin precursors by the RNase III-containing enzyme, DICER-LIKE1 (DCL1). We have isolated the maize fuzzy tassel (fzt) mutant, which contains a missense mutation in the first RNase III domain of DCL1. fzt mutants have striking vegetative and reproductive phenotypes, implicating miRNAs in a broad range of developmental processes. This project focuses specifically on the role of miRNAs during vegetative development and here we report characterization of the vegetative fzt phenotype. fzt mutant plants are shorter in stature with shorter and narrower leaves than normal siblings. miRNAs have well established roles in plant development, including establishing leaf polarity and phase change, however both these processes appear grossly normal in fzt mutants. To ask if fzt plants have subtle leaf polarity defects, we examined epidermal cell types by scanning electron microscopy and vasculature polarity in hand sections. Indeed, we found that fzt leaves have adaxial-specific cell types on the abaxial surface and vascular organization suggests leaf polarity is perturbed. We also analyzed phase change in fzt mutant plants using Toluidine Blue O staining, which differentially stains juvenile and adult leaf waxes. fzt mutant plants transitioned to the adult	GP53

phase ~ 1 leaf early, consistent with defects in miRNA levels. We are currently analyzing cell size and cell number in fzt and normal sibling leaves to determine why leaves are smaller in fzt mutants than normal siblings.	
A Climatology of the Structure and Propagation of Midlatitude Cyclones that affect North Carolina, Lin Hall, Rosana Nieto-Ferreira, East Carolina University, Greenville, NC 27858	GP54
Since no major rivers flow into North Carolina, precipitation is the main source of water for replenishing surface and ground water, as well as our soils. In North Carolina, water supplies are replenished by precipitation from a wide range of different precipitating systems such as mid-latitude cyclones, mesoscale convective systems (MCS), isolated thunderstorms and the occasional tropical cyclone passage. Here we will use a composite analysis to study the intraseasonal-to-interannual variability of the structure and propagation of midlatitude cyclones that affect North Carolina. Preliminary results confirm that there is a significant difference in the propagation of midlatitude cyclones for January and July. We predict that we will be able to see monthly and seasonal differences in midlatitude cyclone propagation and structure.	
Pharmaceutical and Personal Care Product Chemicals in Eastern North Carolina Onsite Wastewater Systems, Katie Super, Dr. Siddhartha Mitra, Dr. Charlie Humphrey, Dr. Mike O'Driscoll, East Carolina University, Greenville, NC 27858	GP55
Pharmaceuticals and personal care products (PPCPs) are used in households on a daily basis and include prescription analgesics, antibiotics, and hormone regulators as well as over-the-counter medications, and cleansers. These PPCPs have been detected in water resources, including surface, ground, and drinking water, throughout the U.S. The behavior of PPCPs in aquatic ecosystems, and the potential effects on aquatic organisms is still largely undefined. While PCPPs are generally detected at trace levels (i.e., ng to ¼g per liter of water), there is concern that exposure to these chemicals could pose a significant public health threat, especially to more vulnerable sub-populations such as children. In rural areas, decentralized onsite wastewater treatment systems (OWS) may be a source of PPCPs to the environment. Thus, the first objective of this study is to explore the fate and transport of PPCPs throughout an OWS system, from the septic tank, through the drain field, and in the adjacent surface water body. A secondary objective of this study is to explore the influence of various factors that affect the behavior of PPCPs throughout the system, including: temperature, precipitation levels, the influence of microbial fauna, and dissolved organic carbon (DOC) and nitrogen (DN) throughout the study area. We hypothesize that PPCP concentrations will be highest in the septic tank of OWS, with concentrations decreasing down gradient of the system. We have collected preliminary data from an OWS in Washington County NC, but our study sites will include private residential areas in Greenville, NC. Specific PPCPs to be analyzed throughout the OWS and in the groundwater down gradient include: caffeine, diphenhydramine HCL (Benadryl), Acetaminophen, 17beta-estradiol (estrogen found in birth control), musk ketone, ketoprofen, naproxen, and others. The PPCPs in this study will be extracted using solid phase extraction and quantified by gas chromatography coupled with mass spectrometry (GC/MS). Preliminary results indicate that systems with higher DOC and DN have lower concentrations of PPCPs detected.	

Comparative Beliefs Among Rural African-Americans and Health Care Workers Regarding Organ Donation in Eastern North Carolina, Aaron Vose, Brody School of Medicine Department of Bioethics and Interdisciplinary Studies, East Carolina Univeristy, Greenville, NC 27858	GP56
While changes in organ procurement procedures and advances in education and outreach have increased the number of potential organ donors in the United States, participation in organ donation by African Americans remains less than other groups. Further, over the last 20 years in North Carolina, African Americans have made up only approximately 21.7% of organ donors1 while receiving approximately 30% of transplants over the same period2. The aim of this study is to explore the beliefs and attitudes of rural African Americans (RAAs) in Eastern North Carolina (ENC) concerning organ donation, the perception of these beliefs by health care workers (HCWs), and to understand the potential differences between these groups. The two cohorts, HCWs and RAAs, participated in interviews discussing their role in the organ donation process, their attitudes toward organ donation, and the origin of these attitudes. The HCWs also discussed the perceived beliefs of the RAA cohort in regards to organ donation. Information derived from these interviews suggested that the most common attitude held by RAAs. It's not something we talk/think about was only identified by 1 HCW; the most common attitude identified by HCW medical mistrust/lower quality of care was identified by slightly more than half of RAA. Other prevailing attitudes among RAAs were a lack of information and knowledge, the desire to keep what I was born with, lingering effects of cultural history/racism/oppression, and disadvantages due to socioeconomic status. HCWs identified some of these attitudes, but the percentage was never greater than 40%. RAAs also repeatedly expressed that decisions not to donate were based more on a lack of information or understanding than issues of mistrust. These results suggest that while HCWs may be able to identify some of the attitudes of RAAs toward organ donation, this knowledge is incomplete and further attempts should be made to educate HCWs to the concerns of RAAs on this subject. Supported by BSOM Department of Bioethics and Interdisciplinary Studies; Dr. Janice VanRiper JD, PhD, Dr. Annette Greer PhD, Dr. Tom Irons MD, Dr. Maria Clay PhD 1.Organ Procurement and Transplantation Network. Combined Live and Deceased Donors Recovered in North Carolina. 2.Organ Procurement and Transplantation Network. Transplants in North Carolina by Recipient Ethnicity.	

Readers' Theater as a Tool in Combating Childhood Obesity, Brandon Mills, Olivia Money, The Brody School of Medicine, East Carolina University, Greenville, NC 27858	
HYPOTHESIS: Childhood obesity continues to be a growing problem especially in rural and minority populations1. In North Carolina, 32% of children ages 10-17 are obese including 67.7-71.5% of Wilson County residents, according to AHEC2,3. Readers' Theater can be used as a different, but effective tool in combating childhood obesity in Wilson, NC by raising parental awareness. METHODS: Parents of obese children in Wilson, NC, were asked to participate in Readers' Theater which included four sessions. During the first and fourth sessions, parents completed pre and post surveys, respectively. In the following two sessions, three stories were read: The Sugar Spies by Carol Montgomery; Don't Call Me Fatso by Barbara Phillips; and Full Mouse, Empty Mouse by Dina Zeckhausen. The heart of the methodology was the balance between the reading of these stories about obesity and the discussions that ensued which were recorded. Both surveys included Likert Scale and open-ended questions. The incentives for participation were healthy meals provided at each meeting and nutrition education provided by a nutritionist at the final session. RESULTS: When comparing the pre-survey and post-survey, the majority of parents who pondered the types of food items purchased changed from sometimes to most of the time. More than 90% of parents felt they are better equipped to handle the psychological aspects of their child's obesity and the majority thought the program was very helpful. Additionally, 100% of parents would participate in another Readers' Theater forum and would recommend the program to a friend. CONCLUSIONS: According to the results, Readers' Theater was successful in raising parental awareness of possible causes of and ways to combat childhood obesity. Five criteria were used to gauge the success of the program, including: parents' thoughts on the nutritional value of grocery purchases, on their ability to handle the psychological aspects of their child's obesity, how helpful the program was, and would they participate again/recommend the program to a friend? The information shared in each of the Readers' Theater discussions not only raised parental consciousness, but helped parents understand the reasons for and ways to combat components of childhood obesity. Thus, Readers' Theater can be used as another weapon to fight childhood obesity.	GP57

An Exploration of the Provision of Women's Reproductive Care in a Regional Hospital in Cusco, Peru, Sarah M Bennett, Nichelle A Barbari, Brody School of Medicine, Department of Bioethics and Interdisciplinary Studies, East Carolina University, Greenville, NC 27858	GP58
Peru, as in many South American countries, has had slow progress in offering women access to reproductive services. Although women have a constitutional right, a practice of refusing these services based on personal religious or moral beliefs of healthcare providers has emerged. This practice is termed conscientious objection. We proposed to investigate the personal opinions of Peruvian physicians regarding women's access to contraceptive services. Do physicians object to prescribing oral contraceptives or offering other forms of contraception to their patients, and if so, why? We hoped to gain a better understanding of whether this practice exists and if so, the source of these objections. During our time in Peru, we interviewed 12 physicians from a public regional hospital in Cusco, using a set of pre-determined questions. By coding the responses to each question we were able to define themes which allowed us to make general observations about access to reproductive services and the opinions of the physicians providing them. We found that physicians relied on training and their own personal experiences of the reality of poverty and maternal health in Peru to influence their support of the use of contraceptive services. Despite their overwhelmingly Catholic backgrounds, physicians felt it was imperative for women to use birth control; therefore they readily and expediently informed and helped their patients obtain contraceptives. We did not find that conscientious objection was an influencing issue affecting the provision of reproductive services. We learned that there are many factors which serve as barriers to effective family planning in Peru, many of which women still face in the more developed medical world of the United States today.	
Hispanics in Eastern North Carolina have created a Health Care Network from Non-Traditional Resources, Katherine Shannon Booker, Aseem Kaul, Anusha Vadlamudi, Department of Bioethics & Interdisciplinary Studies, Brody School of Medicine, East Carolina University, Greenville, NC, 27858	GP59
The immigration status and seasonal presence of rural Hispanics make this patient population difficult to study. However, with an estimated 678,000 Hispanics in North Carolina, their health is of increasing concern. In addition, Hispanics' attitudes toward and perceptions of the health care resources available to them are vital for appropriate health care. Over a two-month period, patients of the Grimesland Sunday Clinic were interviewed to assess the health care 'system' of a difficult-to-reach population of Hispanics in the area. The clinic, run by The Brody School of Medicine, sees between 12 and 25 Hispanic patients from surrounding rural areas every week, many of whom are migrant workers. Our hypothesis anticipated that cultural barriers hindered a transition to American health care for rural Hispanics. Through a literature search we realized that the modern, western approach to medicine overlooks holistic care, including herbal and spiritual healing. However, the interviewees could not identify major differences between care in US and their home country, and placed limited value on traditional medicines. Factors cited as barriers to care at this facility included long wait times and difficulty in obtaining transportation. However as our research displays, the interviewees expressed a high degree of satisfaction with the care received. An incidental finding of our study was that this population, in the absence of health insurance,	

created a network of different health care providers, primarily the Grimesland Sunday Clinic, the Bernstein clinic, the local Health Department, and the PCMH emergency room. They also used home remedies for different needs. Our study has implications for the health care of rural Hispanics in Eastern North Carolina. It is important for all physicians to understand how this population addresses health needs and to recognize they may be the sole practitioner serving that patient. In addition, the Grimesland Sunday Clinic is successful in reaching its target population and serving an unmet need for this population. It can serve as a model for other clinics with similar populations in similar areas.	
Chief Junaluska: Fact or Folklore?, Emily Joyce Bone, East Carolina Univeristy, Greenville, NC 27858	GP60
Tall tales concerning the life of the man most commonly referred to as "Chief Junaluska" of the North Carolina Cherokee tribe have been recounted in numerous works on the tribe and military battles. The evidence supporting such tales leaves much to be desired for historians, however, evidence supports a less often told side of Junaluska, perhaps less exciting but ultimately remarkable. This poster will display some of the common tales told of Chief Junaluska, including his supposed participation at the Battle of Horseshoe Bend," but offer an examination of the sources available concerning his citizenship and the land grant given to him by the state of North Carolina, quite an accomplishment for a Cherokee following the "Trail of Tears."	
Comparison of lifting mechanics, hamstring flexibility, and functional strength in active and non-active computer users, Leah Hollar, SPT, Susan Leach, PT, PhD, NCS, East Carolina University, Greenville, NC 27858	GP61
A growing body of research is addressing the components of musculoskeletal pain and optimal ergonomic design for computer users. Posture plays an integral role in comprehensive ergonomic design and is considered an important marker of health and is an independent risk factor for musculoskeletal disorders for computer users. The knowledge of proper lifting mechanics relates to posture and can therefore be used in the prevention of musculoskeletal injury. A recent systematic study encompassing industrial and office work reported lifting as one of the main risk factors for musculoskeletal disorders, particularly involving the low back, hip and knee. The low back endures excessive loading during lifting tasks. A squat lift reduces the demand on back musculature by keeping the load closer to the body versus a stoop lift. The recognition and practice of optimal lifting methods can potentially minimize musculoskeletal complaints and disorders. The purpose of this study was to compare hamstring length, functional strength and lifting mechanics in active and non-active computer users. Hamstring length was assessed using a goniometer, functional strength using a timed completion of the 5 times sit-to-stand and lifting mechanics via video analysis of a lifting task. It was hypothesized that the active computer users would present with greater hamstring length, faster 5 times sit-to-stand and improved lifting mechanics as compared to the non-active computer users. 30 individuals between the ages of 18 and 64 who spend at least 20 hours per week at a visual display terminal participated in the study. Participants were divided into 2 groups, active and non-active, based on their responses to the International Physical Activity Questionnaire. Student s t-tests were used to compare the 2 groups with statistical significance set at a p-value < 0.05 There were no significant differences between active and non-active computer users	

when comparing hamstring length or the 5 times sit-to-stand. With regard to the lifting strategies selected during the lifting task, the safer squat lift predominated for both groups. There was not a significant difference between groups for mean knee or hip flexion angles; however, when compared to the literature value of a squat lift, there was a significant difference in hip flexion angle of non-active computer users.	
Complete Fatty Acid Oxidation is Depressed Following Chronic Hypeinsulinemia and Hyperlipidemia in Human Myotubes From Severly Obese Women, JM Maples1, TM Weber1, MA Reed5, TP Gavin1,2,4, WJ Pories3,4, GL Dohm2,4, Joseph A. Houmard1,4, 1 Department of Kinesiology, 2 Department of Physiology, 3 Department of Surgery, 4 East Carolina Diabetes and Obesity Institute, East Carolina University, Greenville, NC 27858, 5 Department of Kinesiology, West Chester University, West Chester, PA	GP62
Purpose: The purpose of this study was to determine the effects of chronic hyperinsulinemia and hyperlipidemia on fatty acid oxidation (FAO) in human skeletal muscle cell cultures (HSkMC). Methods: Fatty acid oxidation was measured in lean insulin sensitive (BMI=23.0 ± 1.6kg/m2, HOMA=1.25±0.3) and severely obese insulin resistant (BMI=41.4 ± 3.8kg/m2, HOMA=5.77±1.1) women that were age- and race-matched. The FAO assay was performed following a 4d incubation of either 1) insulin (5000pmol), 2) fat (250µM oleate:palmitate), or 3) insulin + fat. In all experimental conditions, FAO was measured by radiolabeled 14CO2 production after a 3hr exposure to 250µM radiolabeled oleate. Results: Total FAO in myotubes from severely obese women was significantly reduced in the hyperinsulinemic (obese 0.5093 vs. lean 0.8475 [nmol/mg/hr], $p<0.00$) and hyperlipidemic (obese 1.415 vs. lean 1.977 [nmol/mg/hr], $p<0.0001$) conditions. However, chronic hyperinsulinemia and hyperlipidemia had no affect on FAO efficiency, as measured by the ratio of incomplete ([14C]ASM) to complete (14CO2), in the myotubes from severely obese women. Conclusion: Depressed total FAO in myotubes from severely obese insulin resistant women, compared to lean insulin sensitive women, persists in chronic hyperinsulinemic and hyperlipidemic conditions.	
Relationship of Hamstring Flexibility and Ankle Joint Function during Running in Male and Female Runners, Paul W. Kline, Lee M. Welch, DS Blaise Williams III, Department of Physical Therapy, East Carolina University, Greenville, NC 27858	GP63
Introduction: Runners commonly experience lower extremity injuries. It has been shown that decreased hamstring flexibility is associated with increased risk for various lower extremity running injuries. Because the hamstrings and the gastrocnemius both cross the knee, it is often suspected that lack of hamstring flexibility could have negative effects at the ankle. Finally, gender differences in flexibility have been demonstrated and related to function and injury. The purpose of this study is to determine the relationship between knee and ankle movement during the first half of stance in flexible males (FM), flexible females (FF), inflexible males (IM), and inflexible females (IF). We hypothesize that knee flexion, an indicator of hamstring flexibility, will affect ankle motion in both the sagittal and frontal planes and these relationships will differ between males and females. Methods: Forty subjects were placed into 4 groups based on criteria of gender and hamstring	

flexibility as measured by popliteal angle: FM (n=10), FF (n=10), IM (n=10), IF (n=10). Biomechanical data were collected using a Qualisys 9-camera motion capture system with 2 force plates. Subjects ran 10 trials at a consistent speed of 3.35 m/s and Visual 3-D software was used to determine plantarflexion moment, ankle eversion angle, and knee flexion angle for each subject. An 2 way ANOVA (gender by flexibility) was employed to compare groups. Results: Significant differences were found between groups in knee flexion excursion and ankle eversion excursion. FM showed no difference in knee flexion excursion compared to IM. However, IF showed significantly less knee flexion excursion as compared to FF. IF everted more than FF while FM everted more than IM. No significant differences were seen in plantarflexion moment. Conclusion: The data suggests a different strategy in running mechanics between males and females in similar hamstring flexibility conditions. Females with increased hamstring flexibility actually became stiffer at the knee and ankle. In contrast, males show no changes in knee flexion excursion with increased flexibility. However, increased ankle eversion excursion was seen in flexible males. Increased hamstring flexibility may result in different injury patterns between males and females based on these differing mechanics.	

The Reliability and Validity of the Sway Sled as a New Clinical Measure of Stability Limits, R.yan Shoaf, Melissa van der Linde, Courtney Ross, N. Jones, Leslie Allison, Department of Physical Therapy, College of Allied Health Sciences, East Carolina University, Greenville, NC 27858

GP64

Purpose: Restricted stability limits are a major risk factor for falls in older adults. The Sway Sled (SS) is an inexpensive, easy clinical measure of stability limits that avoids many of the limitations of the Limits of Stability (LOS) and Multi-Directional Functional Reach (MDFR) tests. The purpose of this study is to test the reliability and validity of the Sway Sled Test.

Methods: Subjects were 10 (f=7) healthy university students (mean age = 24.9 yrs, range+6). Subjects performed the SS test first, and then completed the LOS and MDFR in randomized order. Maximum excursion (ME) scores in all trials (3) in each direction (4) for each test (3) were compared using a both a RM-ANOVA (p=0.05) followed by a series of Paired t-tests (p=0.0167), and ICC analysis (p=0.05). Between-test comparisons included RM-ANOVA (p= 0.05) followed by a series of Paired t-tests (p=0.0167), and Pearson correlation (p=0.05).

Results: Reliability: For all tests for all directions, there was no significant difference in ME scores between trials 2 and 3. All average ICC's were excellent (ICC e 0.75), while single ICCs were moderate to excellent (ICC e 0.50). Validity: Paired t-tests revealed all three tests were significantly different from each other in the anterior direction. In every remaining direction, the LOS and the SS were not significantly different from each other, but were significantly different from the MDFR. Pearson correlations between the LOS and the SS were moderate (r=0.50-0.75). Correlations between the MDFR and both the LOS and SS were low (r<0.50) to moderate.

Conclusion: The Sway Sled is a new clinical measure of stability limits with acceptable reliability and greater validity than the MDFR. Using the average ME of trials 2 and 3, all tests were reliable. The LOS and SS were not different from each other, but both were different from the MDFR. The SS was more similar to the LOS than the MDFR.

Clinical Relevance: Further development of the Sway Sled is warranted as a replacement for the MDFR in settings with parallel bars. The use of average scores is recommended for all tests.

The Effects of Chronic Pain on Skeletal Muscle and Its Response to Exercise, Melissa W. Wilson1, Eamon Doherty1, Morgan Pearce1, Sonja K. Bareiss1, Kori L. Brewer2, Terry E. Jones1, 1 Department of Physical Therapy, 2 Department of Emergency Medicine, Brody School of Medicine, East Carolina University, Greenville, NC 27858	GP65
Chronic pain affects more Americans than diabetes, heart disease, and cancer combined. Some speculate muscle atrophy occurs with chronic pain; however, there is little literature on skeletal muscle's response to chronic pain and to exercise. One potential mediator of muscle hypertrophy is glycogen synthase kinase 3-² (GSK3²). The phosphorylated (inactive) form of GSK3² is thought to be one of the mediators of muscle hypertrophy. If skeletal muscle atrophies with a pain-producing condition, such as spinal cord injury (SCI), potentially the phosphorylated form of GSK3² would be reduced in muscle. In the current study, we investigate how exercise alters total GSK3² and phosphorylated GSK3² protein content in soleus muscle from SCI rats. We hypothesized that phosphorylated GSK3² protein content will increase following exercise in the SCI rats. Rats were randomly assigned to control, sedentary, or exercise groups. The sedentary (SCI) and exercise (SCI/EX) groups underwent excitotoxic injury (a chronic pain model) while the controls (CON) underwent a saline injection of equal volume. Animals were treadmill exercised for 14 days. Soleus muscles were excised and homogenized. The homogenates were used for Western blot analysis probing for total GSK3² and phosphorylated GSK3². The total GSK3² protein content in SCI/Ex was significantly reduced by 30% compared to CON and 26% compared to SCI. Although not significantly different, there was a 13% decrease in SCI and a 29% decrease in SCI/Ex in phosphorylated GSK3² protein content compared to CON. SCI regulates GSK3² activity in skeletal muscle following SCI; however, the response of GSK3² in skeletal muscle following exercise in an animal with SCI does not coincide with what is reported in literature in healthy animals, indicating that chronic pain does alter skeletal muscle in some way. Due to the lack of research in this area, further research into atrophy and the role of mediators of hypertrophy, such as GSK3², is warranted.	

Vitamin D receptor expression with aging and exercise in skeletal muscle, Brittanny C. Matthews1, Rengfei Shi2, Hoke B. Whitworth2, William T. Mixon2, Scott E. Gordon2, Terry E. Jones1, 1 Department of Physical Therapy, 2 Department of Kinesiology, East Carolina University, Greenville, NC 27858	
Vitamin D insufficiency/deficiency is commonly associated with falls in the elderly and has been related to type 2 muscle atrophy. It has been reported that older individuals have less vitamin D receptors (VDR) in their skeletal muscle. The combination of inadequate serum vitamin D levels and potentially reduced availability of VDR contributes to the increase in falls among elderly individuals. Progressive resistance exercise has proven to be effective in reducing risk for falls in the elderly. It has not been investigated whether resistance exercise increases VDR expression in skeletal muscle which would further enhance the effects of vitamin D. We investigated VDR expression in two parts. First, VDR expression was studied with respect to aging and exercise. We hypothesized that VDR expression would decrease with age, and would be altered with exercise in young and aged rats. Second, we studied the effect of increased cytosolic calcium on VDR expression. We hypothesized that the increased cytosolic calcium would alter the expression of VDR. For the first part of our investigation, an Achilles tenotomy of the gastrocnemius muscle was performed in the left hind limb of 32 week and 8 week old rats, placing an overload on the plantaris and soleus muscles. A sham operation was performed on the right hind limb. The plantaris muscle from the right hind limb served as the control. After one week of overload, the plantaris muscles were excised and homogenized. To analyze the effects of increased cytosolic calcium on VDR, L6 myotubes were treated with caffeine. After harvest, myotubes were homogenized. Both the homogenized animal tissues and L6 myotubes were analyzed using Western blotting techniques. A paired Student s t-Test was used to analyze differences between groups (P d 0.05). We found that expression of VDR was not significantly different in plantaris muscle between young and aged rats, or overloaded versus non-overloaded plantaris muscle. There was no difference in VDR expression in caffeine treated versus non-caffeine treated L6 myotubes.	GP66

Gender Differences in Frontal Plane Excursion at the Knee during a Single Leg Landing, H. Bendahmane, KJ Waggoner, J. Hefner, WL Jenkins, DB Williams, Department of Physical Therapy, East Carolina University, Greenville, NC 27858	GP67
Objective: To assess gender differences in knee frontal plane kinematics during single-leg landing from a jump. Background: Approximately 80,000 anterior cruciate ligament (ACL) injuries occur each year in the United States.1 The majority of these injuries occur secondary to a noncontact mechanism such as landing from a jump.2, 3 Knee valgus collapse has been linked to ACL injury as a contributing mechanism.1,4,5,6,7 Previous studies have described gender differences in valgus collapse when landing from a jump.7 Methods and Measures: Thirty-six subjects (n=18 male, n=18 female) performed single-leg landings on the left lower extremity. Subjects were asked to jump to 75% of their maximum vertical jump height during each trial repetition. An 8 camera Qualysis Motion Analysis system was used to collect biomechanical measures. T-test analyses were used to determine statistical significance (pd0.05) of frontal plane knee excursion between males and females. Results: Females demonstrated greater knee varus excursion ($p<0.05$) and greater knee valgus excursion ($p<0.05$) compared to males. Conclusion: During single-leg landings from a jump females demonstrated greater knee varus and greater knee valgus excursion compared to males. Linear representation of motion at the knee depicted both females and males landing in a slightly valgus position, perform a quick varus thrust, and finally move back into valgus, with females demonstrating a statistically significant greater degree of frontal plane excursion. Previous literature has focused on valgus collapse of the knee as a contributory factor to ACL injury in females. However, gender differences in the amount of frontal plane excursion (both varus and valgus) were observed in this study.	
Comparison of static & dynamic balance between computer users who exercise and those who are sedentary, Kassi Rose, SPT, Susan Leach, PT, PhD, NCS, East Carolina University, Greenville, NC 27858	GP68
As technology continues to progress, more occupations require the regular use of computers to fulfill job requirements. Computer use is not a highly physical task; however, sustained low muscle activity can place workers at risk for musculoskeletal symptoms or disorders. One such disorder is that of balance, and the influence that a sedentary lifestyle has on postural control. Inactivity can cause a decline in postural control while physical activity helps promote and maintain balance and prevent functional decline. Considering the amount of time required to sit, those who use a computer for an extensive period of time are likely to be at risk for postural instability if they are not physically active otherwise. The purpose of this study was to determine whether people in a sedentary occupation, such as computer workers, have a difference in balance based on their amount of exercise and physical activity out of the workplace. It was hypothesized that exercisers will have a shorter trace length in the single limb stance on a firm surface and a lower total BESS score than non-exercisers. It was also hypothesized that exercisers will have longer MSL in all four directions and a longer average	

MSL than non-exercisers.Twenty-eight participants between the ages of 18-64 who used a computer at least 20 hours per week participated in this study. Participants were categorized as exercisers or non-exercisers based on self-report of physical activity using the International Physical Activity Questionnaire. Static balance was assessed using the BESS test performed on the Balance Trainer BT4 by HUR labs. Recorded data included the trace length and the total BESS score. Dynamic balance was assessed using maximum step length (MSL) in the forwards, backwards, and lateral directions. A t-test was used to compare exercisers and non-exercisers with statistical significance set at a p-value < 0.5. The results for the BESS showed that three of the six test conditions for the BESS test were approaching significance for non-exercisers having a smaller sway path than the exercisers. Overall, however, there was no difference in the total BESS score between the two groups. For MSL, there was a consistent pattern of non-exercisers having smaller step lengths than exercisers, which was true in all four directions and the average step length.	
Comparison of strength, pain and physical function between computer users: exercisers vs. non-exercisers, Tiffany Fletcher, Sue Leach, PT, PhD, NCS, East Carolina University, Greenville, NC 27858	GP69
As technology progresses, more occupations require the regular use of computers to fulfill job requirements. This increase has resulted in increased musculoskeletal symptoms of the neck and upper extremity. Physical activity is one of the best preventative measures for maintaining health and wellness, and current recommendations are 30 minutes of moderate physical activity 5 days/week. Participants were grouped into exercisers (13) and non-exercisers (17) based on their scores from the International Physical Activity Questionnaire. The thirty participants were divided into groups: exercise/no pain 4, no exercise/no pain 9, exercise/pain 9, and no exercise/pain 8. There is limited evidence on whether exercising and maintaining muscular strength can prevent the development of musculoskeletal symptoms. The purpose of this study was to compare strength, pain and physical function between computer users who exercise and those who do not. Hypotheses include: Computer users who exercise and report no pain would have increased strength compared to other groups; the exerciser and those without pain would have higher physical health scores. Finger strength was assessed using a pinch dynamometer, grip strength using a hand-held dynamometer, and back, shoulder, and arm strength using the Jackson Strength Evaluation System. The Nordic Musculoskeletal Questionnaire was used to determine musculoskeletal symptoms reported in the last week; 17 having pain and 13 without. Physical health was assessed using components of the SF-36, a quality of life measure. A 2-way ANOVA was used to assess whether current pain in exercisers and non-exercisers affects strength levels. A student's t-test was used to compare the physical health of active vs. non-active participants and pain vs. no pain in the last 7 days. A p-value of less than 0.05 was used to determine statistical significance. The results: Computer users who exercise and reported no pain had the highest scores compared to the other groups but these differences were not significant; Computer users who exercise had higher physical health scores than non-exercisers but this was not significant; Computer users without pain had significantly better physical health scores than the computer users with pain. In conclusion, there were minimal significant differences between the active and non-active computer users.	

Effects of a High Fat Diet and Muscle Contraction on the Expression of the Glucose Transporter in Skeletal Muscle, Courtney M. Stearn, L. Brittany Rice, Jonathan E. Williams, Morgan M. Pearce, Terry E. Jones, Department of Physical Therapy, East Carolina University, Greenville, NC 27858	
People with diabetes have lower levels of glucose transport into skeletal muscle. There is a correlation between a high fat diet and increased insulin resistance. A high fat diet in rats decreases glucose transporter-4 (GLUT4) expression in skeletal muscle compared to a high carbohydrate diet. The Western diet is known for high levels of trans fat, which have been shown to be adverse to health. Exercise increases cytosolic Ca2+ which increases GLUT4 expression in cultured skeletal muscle cells. The purpose of this study is to determine the effect of a cis and a trans fatty acid on GLUT4 transcriptional activity and the effect of increased Ca2+ alone and in the presence of fatty acids in skeletal muscle cells. We hypothesize that GLUT4 transcriptional activity will be decreased in the presence of a cis and trans fatty acid and that Ca2+ will increase GLUT4 transcriptional activity. Rat skeletal muscle cells were cultured and transfected with the full-length human GLUT4 promoter with a luciferase reporter. Transfected myotubes were exposed to oleic acid, elaidic acid, caffeine (to increase cytosolic Ca2+), oleic acid/caffeine, or elaidic acid/caffeine. Myotubes were exposed to fatty acids for 24 hr and to caffeine with or without fatty acids 12 hr after the beginning of the fatty acid incubation. A luciferase assay was done to determine the transcriptional activity of the human GLUT4 promoter in all groups. Compared to controls, oleic acid (cis) reduced GLUT4 transcriptional activity by 33%, elaidic acid (trans) reduced GLUT4 transcriptional activity by 23%, and increased cytosolic Ca2+ raised GLUT4 transcriptional activity by ~120%. In the presence of each fatty acid, increased cytosolic Ca2+ rescued GLUT4 transcriptional activity to that of controls or above. The trans fatty acid was no more detrimental to GLUT4-TA than the cis-form. Increased cytosolic Ca2+ improved GLUT4 transcriptional activity alone and in the presence of both the cis- and trans-form. This suggests that muscle contraction has beneficial effects in increasing glucose transport and helps amend the negative effects equivalently in the fatty acids tested. This study is evidence that patients with diabetes need to maintain an exercise level to promote glucose uptake into skeletal muscle and adhere to diet that is low in fat.	GP70

Worksite Intervention to Reduce Occupational Sedentary Time, Mallory Peavler, Lucas J. Carr, Department of Kinesiology, East Carolina University, Greenville NC, 27858	
Background: Prevalence of sedentary occupations is on the rise and sedentary time is independently associated with an increased risk for chronic diseases. Interventions conducted in the work site have potential for reducing prolonged bouts of sedentary time amongst employees working in sedentary jobs. The purpose of this study was to test the efficacy of a 12-week, worksite intervention for reducing time spent sedentary amongst full-time, sedentary employees. Methods: Forty, full-time, sedentary, employees working at desk dependent jobs were randomized to either: 1) an intervention group (N=23; 47.6+9.9 yrs; 94.1% female; 33.2+4.5 kg/m2); 2) or wait list control group (N=17; 42.6+8.9 yrs; 86.9% female; 31.7+4.9 kg/m2). Participants in the 12-week intervention group received an under the desk, portable pedal exercise machine, a pedometer, and access to an internet-based program designed to improve self-efficacy, self-monitoring and social support for physical activity. Time spent sedentary was measured objectively by a StepWatch activity monitor. Results: Results indicate participants were sedentary at baseline reporting 16.2+21.4 minutes of moderate intensity physical activity/week and sitting 66.8% of the day. The intervention group significantly reduced daily minutes sedentary time ($P<0.01$) and percent daily time spent sedentary ($P=0.03$) compared to the control group from baseline to 12 weeks. The intervention group also significantly increased percent daily time spent in moderate intensity activity ($P=0.04$) compared to the control group. Conclusions: Findings from this study suggest that the intervention was efficacious at reducing time spent sedentary amongst full-time sedentary employees. These findings are significant due to the growing number of sedentary jobs in the U.S. and the potential of for this technology to be implemented in large-scale work site health programs.	GP71
MANIPULATION OF WALKING VELOCITY IN OLD ADULTS, Alexis Sidiropoulos, Patrick Rider, Aubrey Taylor, Steve Roseno, Tibor Hortobágyi, Paul DeVita, Department of Exercise and Sport Science, East Carolina University, Greenville, NC 27858	
Maintaining walking velocity is important during aging and to preserving overall health. Aging, however, reduces muscle force and power leading to an overall reduction in walking velocity. These reductions are asymmetric, with distal muscles losing greater amounts of force and power. Increasing walking velocity in older adults is dependent upon understanding the factors that directly lead to the control of walking velocity in the older population. Based on the previously established argument that aging induces asymmetric changes in joint torques and powers, we hypothesize that walking velocity is more strongly related to hip torque and power than ankle torque and power in older adults. The purpose of this study is to identify the relationships among lower extremity joint torques and powers and walking velocity in old adults. Gait biomechanics were collected with 3D motion capture and force plate systems. Twenty-two healthy old (74±5 yrs) adults each walked at 20 velocities ranging from slow (0.62 m/s) to fast (2.70 m/s). Mean velocity over all trials was 1.50±0.37 m/s. Peak sagittal plane joint torques and powers derived through inverse dynamics were correlated to walking velocity	GP72

across all subjects and velocities. All peak torques and powers were significantly ($p<0.05$) & directly related to walking velocity. Hip and ankle relations were curvilinear upward and downward; knee were linear. Peak joint torques showed proximal to distal decrease in the strength of their relationships. Peak joint powers were similarly related to walking velocity at each joint. Overall, mechanical output at the hip and knee were the primary biomechanical correlates of walking velocity whereas mechanical output at the ankle was most weakly correlated to walking velocity. Old adults produce more hip torque and but not more ankle torque when increasing walking velocity. This manipulation strategy is similar to that used by young adults as we showed last year. Our hypothesis was supported in that walking velocity is modulated more so from proximal vs. distal muscles in old adults. Surprisingly however, this strategy was identical to the strategy used by young adults.	
Complex Movement and Cognitive Function, N.A. Boerio, T.F. Mahar, C.R. Diaz, C.D. Kemble, K. Kim, M.T. Mahar, Department of Kinesiology, East Carolina University, Greenville, NC 27858	
Previous research has found associations between physical activity and various aspects of cognitive function. Little research has examined the specific type of movement that might be associated with increased cognitive function. The purpose of this study was to examine the effects of simple movement and complex movement compared to a non-movement control condition on cognitive function. Cognitive function was assessed using the CogState Research computerized assessment program on 20 college-aged individuals before and after each condition. CogState tasks were used to measure visual attention, processing speed, working memory, and learning. Conditions included 20-minute sessions of simple movement (walking and/or jogging on a treadmill), complex movement (performing a complex movement course), and control (viewing television). The complex movement course consisted of 14 different stations that required balance, reaction time, and quick vertical, horizontal, and anterior/posterior movements. Paired t-tests were used to compare differences in various measure of cognitive function before and after each condition. Effect sizes (ES) were calculated with Cohen's delta. Participants (mean age=22.3+/-2.9 yrs; BMI=23.2+/-3.2 Kgm^2; estimated VO2MAX=51.45mLKg/min^1) averaged 20 minutes of moderate to vigorous physical activity assessed via accelerometer for both simple and complex movement conditions and heart rate of 67+/-11, 150+/-11, and 155+/-12 b/min for control, simple, and complex, respectively. No changes were seen in any measure of cognitive function for the complex or control condition ($p>.05$).	GP73

Loaded Visuomotor Training Does Not Lead to Increased Strength Gains Compared to Traditional Resistance Training in Healthy Young Adults, Jeff Morgan1, Patrick Rider1, Stanislaw Solnik2, Paul DeVita1, Tibor Hortobágyi3, 1 Department of Kinesiology, East Carolina University, Greenville, NC 27858, 2 Department of Kinesiology, Penn State University, State College, PA, 3 Center for Human Movement Sciences, University of Groningen, The Netherlands

GP74

Introduction: Skilled tasks, such as visuomotor tasks, involving movements with high variation in speed and direction have been associated with adaptations in the neurological system. These adaptations manifest at a supraspinal level within the brain. Early gains in strength that occur during resistance training protocols are commonly attributed to adaptations of the neurological system. Despite the invariable and repetitive nature of traditional resistance training exercises, adaptations to the neurological system have been similarly shown to occur within the brain. These observations lead to the hypothesis that the practice of a visuomotor skill task under a loaded condition could produce greater neural adaptations and consequently increased strength gains compared to traditionalresistance training.

Objective: The purpose of this study is to compare strength gains between groups practicing a loaded visuomotor task and a traditional resistance training protocol.

Methods: 16 healthy (n=8 for each group), college age subjects participated in 12 sessions of either a traditional resistance training program performing unilateral bicep curls or an analogous visuomotor skill task under a loaded condition. The visuomotor task consisted of vertical control of a cursor displayed on a computer screen while attempting to match a displayed target path through position of the elbow joint. An electronic goniometer provided joint position feedback to control the cursor. Performance outcomes were measured with pre and post-training elbow flexor strength assessments using an isokinetic dynamometer. A repeated measures analysis of variance ($p < 0.05$) was used to determine statistical significance.

Results: Both groups significantly increased peak torque production in the training arm from pre to post ($p = .002$). Peak torque improved from 37.6 Nm to 43.2 Nm in the strength training group and from 35.1 Nm to 39.0 Nm in the visuomotor group. The difference between groups was not statistically significantly.

Conclusions: A clear training effect was present and showed efficacy for both protocols. Although changes from pre to post appeared to be more robust in the strength training group, there was no statistical significance possibly due to the relatively small sample sizes and high variability between subjects. The data does not support the hypothesis.

The Effects of Quadriceps Strengthening Exercise on Quadriceps Biomechanics During Locomotion in Individuals with Knee Osteoarthritis, Josh Leonardis1, Patrick Rider1, Meredith Hayek1, Sean Conaty1, Jens Aaboe2, Marius Henriksen2, Robin Christensen2, Henning Bliddal2, Paul DeVita1, 1 The College of Health and Human Performance, Department of Kinesiology, East Carolina University, Greenville, NC 27858, 2 The Parker Institute, Copenhagen University Hospital	
Knee osteoarthritis is a leading cause of disability in the United States, affecting millions of people each year. This disease is defined by the deterioration of all components of the joint, and also the muscles surrounding the knee. More specifically, the quadriceps begin to function inadequately in the presence of osteoarthritis. This dysfunction is characterized by losses in strength and altered neuromuscular quality. Skewed quadriceps function has a direct effect on the mechanics of the knee joint during locomotion, typically resulting in a struggle or inability to perform activities of daily living. Since knee osteoarthritis has no known cure, therapies are limited to treating the symptoms of the condition. Of the many therapeutic options, studies have shown a positive relationship between quadriceps strengthening exercise and symptomatic improvements. Further investigation into this relationship unveils only negligible changes to knee mechanics during locomotion, even with an increase in quadriceps strength. Although the mechanics of an osteoarthritic knee have been thoroughly investigated, the mechanics of the quadriceps in the presence of osteoarthritis are still unclear. The purpose of this study is to examine whether strengthening exercise has an effect on quadriceps mechanics during locomotion in those suffering from knee osteoarthritis. We will recruit 20 individuals between the ages of 40-65 that are suffering from unilateral or bilateral tibio-femoral knee osteoarthritis. These volunteers will undergo lower-limb strength tests and gait analyses prior to being randomly placed into a strengthening or a control group. The strengthening group will take part in three quadriceps-strengthening sessions per week for twelve weeks, while the control group will be untrained. After the twelve-week training protocol both groups will again have lower-limb strength measured and gait analyzed. From this data we will determine any changes in quadriceps power, work, and force through musculoskeletal modeling. Potentially, these results will provide knowledge that can be used to develop more efficient therapies for a disease that is still not understood.	GP75
Skeletal Muscle Insulin Sensitivity and Duration of Type 2 Diabetes Mellitus. JM Ernst, SE Kehe, AH Clark, RD McKernie, HB Kwak, MA Reed, M Dar, WE Pofahl, GL Dohm, TP Gavin, FACSM, East Carolina University, Greenville, NC 27858	
We have recently observed that Type 2 Diabetes Mellitus (T2DM) resolution following Roux-en Y gastric bypass (RYGB) surgery is reduced in patients with longer duration of T2DM and lower pre-RYGB insulin sensitivity. Insulin sensitivity is reduced in T2DM. Skeletal muscle accounts for 80-90% of insulin mediated glucose disposal. PURPOSE: It was hypothesized that insulin sensitivity would be lowest in T2DM patients with long-duration (LD; e 8 y) compared to medium-duration (MD; 4-7) and short-duration (SD; d 3 y). METHODS: Insulin sensitivity (Si) and the acute response to glucose (AIRg) were measured following an insulin modified intravenous glucose tolerance test (IVGTT) using Minimal	GP76

Model analysis in T2DM patients (N = 11). RESULTS: There was a non-significant (p = 0.08) trend of lower Si with longer T2DM duration (LD: 0.7 +/- 0.5; MD: 1.8 +/- 0.4; SD: 2.3 +/- 0.7 min/mU/ml) and a significant correlation between Si and duration of T2DM (r = -0.70; p = 0.02). There was no difference in AIRg between groups. There was a significant correlation between HbA1c (an index of glycemic control) and Si (r = -0.70; p = 0.02), but not AIRg (r = -0.293; p = 0.382). CONCLUSIONS: Insulin sensitivity is lower in T2DM patients with longer duration of T2DM. Clinically, lower insulin sensitivity, but not lower insulin secretion is linked to poor glycemic control. SUPPORT: East Carolina Diabetes and Obesity Institute (ECDOI) Grant.	
Efficacy of an Intervention to Reduce Sedentary Time for Improving Cardiometabolic Risk Factors, Rebecca D. Smith, Lucas J. Carr, PhD., East Carolina University, Greenville, NC 27858	GP77
Background: More than half of the US adult population is sedentary and this type of behavior is known to increase an individual's risk for overweight/obesity, hypertension, cardiovascular disease, stroke, type 2 diabetes mellitus, anxiety, and depression. The rise of the desktop computer may be a contributing factor for the increased sedentary behaviors in the occupational setting. Few interventions have been conducted with the purpose of reducing sedentary time to improve cardiometabolic risk factors. Purpose: The purpose of this study was to examine the efficacy of a worksite intervention aimed at reducing sedentary time for improving risk factors for cardiometabolic diseases. Methods: Forty sedentary, overweight/obese adults (21-65 years) working a minimum of 35 hours per week were recruited to participate in a 12 week intervention. Participants were randomly assigned to an intervention (N=23; 42.6 years; 86.9% females) or wait-list control (N=17; 47.6 years; 94.1% females) group. Sedentary time was measured objectively over seven days with a StepWatch activity monitor. Cardiometabolic risk factor measures included resting heart rate, blood pressure, height, weight, body mass index, waist circumference, percent body fat, estimated cardiorespiratory fitness, and fasting blood lipids. All measures were collected at baseline and 12 weeks. Two-way repeated measures analysis of variance (ANOVA) was used to test group and time differences in cardiometabolic risk factors. Results: No between group differences were observed at baseline for any demographics or cardiometabolic risk factors. Participants who received the intervention reduced their sedentary time when compared to their control group counterparts (P<0.01). The intervention groups also reduced their waist circumference (p=0.03) significantly over the control group. No changes were observed for any other cardiometabolic risk factors. Conclusion: The results from this study suggest the intervention group significantly reduced their sedentary time and improved their waist circumference. These findings are important considering the increasing number of sedentary occupations and the rising prevalence of obesity in the U.S.	

Assessing Relationships between Health Literacy, Diabetes Status, and Income, Sarah Williamson, Kenda Lewis, Holly Mahoney, Joy King, Emily DiNatale, Lesley Lutes, PhD, East Carolina University, Greenville, NC 27858	GP78
In spite of improvements in global health over the years, the prevalence of type-two diabetes is increasing worldwide. If uncontrolled, diabetes can lead to several other chronic diseases, which increases the risk of mortality. Two possible contributors to the rise in diabetes diagnoses within the United States involve low heath literacy scores of diabetes patients along with their socioeconomic status. Low health literacy is a risk factor for several adverse outcomes, such as the misuse of preventative services, poor self-management, increased hospitalizations, higher medical costs and worsening health outcomes. The purpose of this pilot study was to assess whether the mediator variable, income, contributes to health literacy scores and diabetes diagnoses in a clinical sample of a community population within Eastern North Carolina. A brief health literacy tool was administered to gather demographic information and assess participant's knowledge of health issues related to obesity, diabetes, and weight management. We gathered a convenience sample of 60 middle-aged participants who were primarily female, 35% of whom were diagnosed with type-two diabetes. We predict that income serves as a mediator variable that explains the relationship between a patient's health literacy and their diabetes diagnosis. Results will be presented.	
Knee Moment and Force Predictions Using Ultrasound-Based VS. Scaled Musculoskeletal Models, John Pope, Paul DeVita, Anthony S. Kulas, Patrick Rider, East Carolina University, Greenville, NC 27858	GP79
A musculoskeletal model's ability to accurately predict joint moments is subject to error based on the generic and scaled parameters used. Muscle moment estimations are typically based on musculotendon parameters that are either scaled or scaled and then optimized. Using a musculoskeletal model with ultrasound-derived muscle force generating parameters may lead to more accurate estimations of joint moments compared to using a model with scaled muscle force generating parameters. Our objective was to determine if subject-specific ultrasound derived parameters can more accurately predict inverse-dynamics calculated knee moments compared to a model with scaled muscle force generating parameters. Ultrasound images were taken from four subject's right leg. Cross sectional and longitudinal images were taken from the quadriceps, hamstrings, and gastrocnemius. Each subject performed single-leg squats during which surface EMG, force plate and motion data were collected. Maximal voluntary isometric contractions on a dynamometer were used to normalize the EMG. Measurements of the subject s ultrasound-based muscle parameters (maximal isometric force, optimal fiber length, and tendon slack length) were applied to a Hill muscle model and static optimization was used to produce knee muscle moments within SIMM. This process was repeated using a second model which utilized scaled muscle parameters. We compared knee moments produced from the scaled and ultrasound derived models to inverse dynamics calculated knee moments. Both the scaled and ultrasound models moment predictions showed strong positive correlations (scaled r=.996, ultrasound r=.998). On average, the ultrasound based models produced knee moments with 65% less root mean squared errors compared to the scaled model. Both models (scaled & ultrasound) showed a strong correlation with the inverse dynamics predicted model. But the ultrasound model's smaller errors verses the scaled model's favors the use of ultrasound-derived models to estimate knee moments in a professional setting in a single le squat. The effect that these errors had on muscle force estimations will also be reported for each model.	

Comparison of Joint Kinematics and Ground Force Data between Lean and Obese Canines, Robert Brady, Alexis Sidiropoulos, Patrick Rider, Hunter Bennett, Paul DeVita, East Carolina University, Greenville, NC 27858	
Similarly to the human population of the United States, the canine population is becoming increasingly obese. Current estimates are that greater than 50% of the canine population is overweight with 30% being obese. The obesity epidemic in dogs has been linked to many negative side effects including diabetes, heart disease, and ultimately younger mortality. Obesity has also been associated with increases in joint diseases such as hip, and elbow dysplasia, along with other arthritic changes. As a canine's weight increases, there are greater forces present throughout the musculoskeletal system. Larger forces may in turn alter the way in which canines ambulate, potentially causing greater stress on the skeletal system partially contributing to arthritic changes seen in obese canines. The purpose of this ongoing study is to investigate how obesity affects joint kinematics and ground reaction forces of both the fore and hind limbs of mixed breed canines. We have recruited and tested 8 lean and 5 obese mixed breed canines out of the proposed 10 canines per group for our preliminary investigation. Canines were categorized utilizing an obesity scale implemented by Purina. The dogs were fitted with 12 infrared markers placed on joint centers including the shoulder, elbow and carpus on both the fore and hind limbs. Both groups walked and trotted over a force plate while simultaneously recording motion capture data. Joint angular positions, ranges of motion, angular velocities and ground force data were calculated. Our preliminary data indicated that obese dogs walked with ~ 10° greater range of motion at the hip, stifle, and hock compared to lean. Also in walking, obese have a greater angular velocity at the stifle than the lean, ~692°/s for obese, and ~577°/s for lean. These data refuted our original hypothesis that obese canines, like obese humans, would walk with a smaller range of motion than their lean counterparts to reduce joint loads. From these preliminary data we now hypothesize that obesity in canines will alter gait characteristics in a manner that promotes osteoarthritis. This hypothesis will serve as the basis for a future grant application.	GP80

Dose-Response Relations Between Change in Sedentary Time and Change in Cardiometabolic Risk Factors, Kayla Cangelosi, Lucas J. Carr, Department of Kinesiology, East Carolina University, Greenville, NC 27858	GP81
Background: Sedentary time is associated with an increased risk for chronic diseases independent of physical activity behavior. Few studies have examined the relation between changes in sedentary time and changes in risk factors for chronic diseases over time. The purpose of this study was to explore the relationship between changes in sedentary time and changes in cardiometabolic risk factors among participants completing a 12 week randomized controlled trial designed to reduce daily sedentary time. Methods: Forty sedentary, overweight/obese, healthy adults were randomized to an intervention (N=23; 47.6+9.9 yrs; 94.1% female; 33.2+4.5 kg/m2) or wait-list control group (N=17; 42.6+8.9 yrs; 86.9% female; 31.7+4.9 kg/m2). Daily sedentary time (StepWatch activity monitor) and cardiometabolic risk factors including body mass index (BMI), waist circumference, percent body fat, blood pressure, estimated aerobic fitness (sub-maximal treadmill test), and fasting blood lipids (total cholesterol, HDL, LDL, triglycerides, TC/HDL ratio) were assessed at baseline and 12 weeks. Results: The intervention group significantly reduced their sedentary time (p=0.03) compared to the control group from baseline to 12 weeks. Linear regressions testing change in sedentary time against change in cardiometabolic risk factors indicate significant relationships for BMI (P=0.03), and near significance for weight (P=0.07), systolic blood pressure (P=0.07), and triglycerides (P=0.052). These findings suggest reducing sedentary time is efficacious for improving some cardiometabolic disease risk factors. Supported by Oak Ridge Associated Universities Grant#212112	

Effect of Muscle Activation on Fascicle Behavior of the Biceps Femoris Long Head, Hunter Bennett, Matt Salzano, Marguerite Howell, Patrick Rider, Dr. DeVita, Dr. Kulas, ECU Biomechanics Lab, Athletic Training Research Lab, East Carolina University, Greenville, NC 27858	GP82
Introduction: Hamstring strains have been shown to occur more often in the long head of the biceps femoris (BFLH) than the semitendinosus and semimebranosus, with most injuries occurring in the proximal half of the BFLH. Muscle modeling of the BFLH has shown significantly greater strains in the proximal region compared to the distal region. These data suggest there are regional differences in fascicle behavior between the proximal and distal fascicles of the BFLH during contractions. Objective: The purpose of this research is to investigate the effects of muscle activation on regional fascicle behavior in the biceps femoris. Specifically, proximal vs. distal fascicle behavior will be characterized. Methods: Subjects were young (ages 18-25) males and females who were resistance trained and were non-collegiate athletes (n=3). Longitudinal ultrasound images were taken of the BFLH at rest (hip and knee at 0°) and during sustained isometric contraction levels of 10, 25, 50, and 75% MVIC, while prone on a dynamometer with hip and knee flexed to 45°. Electromyography was used to record activation of the semitendinosus/semimembranosus during all contractions. Results: When normalized to the prone condition, the proximal fascicles shortened an average of .26 cm from rest to 75% MVIC, while the distal fascicles shortened an average of .31 cm. The largest effect size of the proximal fascicles, 0.81, was observed from 25% to 50% MVIC. The largest effect size of the distal fascicles, 1.21, was observed in the 50% to 75% MVIC. Conclusions: These preliminary data show the distal fascicles are longer than their proximal counterparts, and the averaged distal fascicles shortened more than the proximal fascicles, which suggest heterogeneous fascicle behavior within the BFLH muscle. While muscle activation increased, the proximal fascicles shortened similarlywith each increase in activation level, while the distal fascicles shortened much more during the highest contraction levels compared to lower contraction levels. Further research will address the overall hypothesis in dynamic contractions.	

Regulation of Lipolysis by Beta-Adrenergic Activation and Exercise in Obese African-American and Caucasian Women, Dustin K. Raymer, Kathleen Gavin, Charles Tanner, Robert C. Hickner, FACSM, Human Performance Laboratory, Departments of Kinesiology and Physiology, Center for Health Disparities Research, East Carolina University, Greenville, NC, 27858	
African-American women (AAW) are twice as likely to be obese as Caucasian women (CW); however, previous in-vitro studies have shown that AAW have higher densities of beta-adrenergic receptors (B-AR) in the subcutaneous (SC) adipose tissue and an increased lipolytic response to B-AR stimulation when compared to CW. There are no in-vivo studies to help resolve this apparent contradiction between in-vitro lipolytic response and the incidence of obesity. Purpose: To determine if AAW, as compared to CW, have a larger lipolytic response to pharmacological (isoproterenol) and physiological (exercise) stimulation. Methods: 33 obese women (16 AAW; 17 CW) participated in this microdialysis (MD) study. MD consisted of two probes placed in SC abdominal adipose tissue and perfused with either isoproterenol (ISO) or a control solution. Dialysate glycerol (index of lipolysis) was measured from probes at rest and, from the control probe, during exercise. Results: Dialysate glycerol increased 189 mmol/L in AAW and 133 mmol/L in CW in response to ISO (p=0.047 AAW vs CW). Dialysate glycerol increased 66 mmol/L in AAW and 84 mmol/L in CW in response to exercise (p=0.94 AAW vs CW). Conclusion: AAW have a higher lipolytic response to pharmacological B-AR stimulation, but have a similar lipolytic response to exercise, as compared to CW. These findings suggest that lipolytic response to B-AR stimulation and exercise are likely not contributing factors to the higher incidence of obesity in AAW as compared to CW.	GP83

Comparison of student self-efficacy and attitudes towards web-based and face-to-face instructional methods for a food science course and lab experience, Ashley Roseno, BS, East Carolina University, Greenville, NC 27858	GP84
Web-based instruction has become a popular method utilized at all levels of education, particularly higher education. A sophomore level online food science course was developed as an alternative for the face-to-face experience at East Carolina University in Greenville, North Carolina. A researcher developed survey using a Hedonic Scale (5=Strongly Agree; 1=Strongly Disagree) measured self-efficacy (25-items) and attitudes (47-items). The survey was administered pre- and post-test to compare the web-based (n=13) and the face-to-face (n=38) courses. At post-test, efficacy scores indicated a significant difference on 7 of the items, including recipe costing, sensory characteristics of food, communication with classmates and faculty, and professionalism in the classroom with students and faculty. On all these items, the web-based instructional method scored lower than face-to-face method. At post-test, attitude scores indicated a significant difference on 3 of the items, including hands-on activities, project-based learning, and communication with classmates. As with the efficacy results, the web-based instructional method scored lower than the face-to-face method on all of these items. Overall, both methods appear to be equivalent in impacting student self-efficacy and attitudes for the majority of items tested. However, researchers can use these findings to revise the web-based methods of instruction in an effort to improve scores on the lower items.	
FoodMASTER Initiative: nutrition knowledge gains of 4th grade students after use of an integrative education program, Carissa Ochab, RD, Virginia Carraway-Stage, MA RD LDN, Melani Duffrin, PhD RD LDN, East Carolina University, Greenville, NC 27858	GP85
The White House Task Force on Childhood Obesity recently suggested that nutrition concepts may be taught through an interdisciplinary approach, such as examining caloric needs while teaching math skills. This idea is rooted in the concept that improved nutrition knowledge will help prepare children to live healthier lives. Supported by the National Institutes of Health (NIH) Science Education Partnership Award (SEPA), the Food, Math, and Science Teaching Enhancement Resource (FoodMASTER) Initiative is a compilation of projects aimed at using food as a tool to teach math, science, and nutrition. During the 2009-2010 school year, FoodMASTER researchers implemented a hands-on, food-based intermediate curriculum in nineteen 4th grade classrooms in Ohio (OH) (n=10) and North Carolina (NC) (n=9). A total of 443 students were exposed to the curricula, while 319 students acted as a control group. Students completed a researcher-developed nutrition knowledge instrument before and after completion of the curriculum in their respective classrooms. Results indicated significant improvements in nutrition knowledge among the intervention group when compared to the control in both states. Average score of 71% was found for both Ohio and North Carolina students, while students who did not participate in the initiative had an average score of 54.6% in North Carolina and 54.3 in Ohio. FoodMASTER Intermediate integrates math, science, and nutrition through the utilization of interactive, hands-on food-based and familiar medium of food learning. Teachers are excited to use this integrative approach as a method to meet state standards for math, science, and health.	

Acceptance and Implementation of SBIRT protocols within Primary Care, Marina Stanton, MS, LMFTA, Jennifer Hodgson, PhD, LMFT, Paul Toriello, RhD, CCS, LCAS, CRC, Josh Fowler, BS, East Carolina University, Greenville, NC 27858	
In the United States, there is an estimated 23.3 million people age 12 or older who meet criteria for an alcohol or drug use disorder nearly 9% of the US population (SAMHSA, 2007). Untreated, those who misuse or abuse substances may account for a disproportionate amount of medical and mental health concerns treated in the United States (Samet, Friedmann, & Saitz, 2001). The failure to recognize and appropriately address substance misuse and abuse can lead to negative effects within the individual, family, and society. In order to address this growing concern, the National Quality Forum developed consensus standards on evidence-based practices for the treatment of substance use disorders (2007). The standards call for annual substance abuse screenings in medical and mental healthcare settings, a systematic screening method, and additional assessment and/or referral to specialty substance abuse treatment when appropriate. One model for addressing substance use disorders specifically tailored for the medical setting is that of Screening, Brief Intervention, and Referral to Treatment (SBIRT). Recent literature has demonstrated that this protocol in primary care settings is an effective method for identifying and treating patients who abuse substances (Broyles & Gordon, 2010; Babor et al., 2007; Bernstein et al., 2007). Early detection of substance use and abuse issues, particularly within the primary care setting, can lead to successful management, and may prevent progression of both mental health and medical concerns. Although there is evidence to support the effectiveness of SBIRT within primary care settings, the uptake and implementation of SBIRT has been notoriously slow (Broyles & Gordon, 2010). Challenges of implementing the SBIRT model include a variety of system-, provider-, and patient- level obstacles. As part of a larger implementation effort, we conducted focus groups to collect qualitative data regarding both the benefits and challenges associated with incorporating SBIRT protocols into three busy primary care practices. Our poster will discuss the qualitative results of the 6 focus groups at these three sites, which included a total of 52 participants (24 medical providers, 25 clinical staff, and 5 behavioral health staff).	GP86

Process evaluation and cost benefit analysis of at risk youth through middle school intervention for dropout prevention, Katherine Kovarik, Samantha Gabriele, Ben Blanton, East Carolina University, Greenville, NC 27858	
The purpose of this study is to determine whether the implementing of the Wildcat Leadership Life Skills Academy (WLLA) at Wellcome Middle School is cost effective in reducing dropout rates. Originally the WLLA program sought to defray Pitt counties 54% dropout rate with prevention and intervention programs. The revised purpose is to determine the cost versus benefit of the program by conducting a cost benefit analysis with a process evaluation. By calculating cost per student using data collected during the original research the cost per student will be determined and compared to drop out repercussions. The estimated lifetime costs associated with high school drop out rates will be explored. The process evaluation involving social work counseling, student assessments, and family involvement will look to determine the feasibility and effectiveness of the interventions. The implications of the cost benefit analysis are that interventions in schools at risk of high dropout rates are beneficial in comparison to cost per students that are at risk.	GP87
Ophelia Boiling! Relational Aggression among Middle School Girls: Social Work Prevention and Intervention for Teachers and Families, Mary Beth Campbell, Rachael A. Jones, Amy M. O'Neal, Meagan Capers, Tracy Carpenter-Aeby, PhD, LCSW, East Carolina University, Greenville, NC 27858	
Relational aggression is a common and harmful form of covert bullying, and many school systems do not have the training to recognize, prevent, and intervene. One-third of girls have experiences with relational aggression, either as the aggressor or victim. Forty-three percent of girls fear harassment in the school environment. Eighty-five percent of the time there is no intervention for relational aggression. This study attempts to define relational aggression, as well as to identify evidence-based methods of prevention and intervention for middle school girls. In addition, it examines the effects of relational aggression on the victims and the perpetrators. Further, the study investigates the prevalence of those experiencing relational aggression. Successful programs will be highlighted, and recommendations for teachers and families will be offered. Based on preliminary examination of the professional literature, the researchers believe that educating adults, particularly families who work with middle school-aged females on relational aggression and its effects, was the most successful strategy for preventing and stopping relational aggression.	GP88

A Systematic Review of Evidence-Based Social Work Practice: Minimizing the Effects on Children who have Witnessed Domestic Violence, Kellie Jones, Ashley Robinson, Nicole Williams, Tracy Carpenter-Aeby, PhD, LCSW, The School of Social Work, East Carolina University Greenville, NC 27858	
Research in the last 20 years confirms that children who witness domestic violence are at risk for maladaptation. However, there are few evidence-based practices pertaining to domestic violence and its influence on children. In order for social workers to successfully intervene with children who have witnessed or experienced domestic violence, they must understand the damage domestic violence perpetrates on its smallest victims. Further, social workers need to adopt techniques that have demonstrated positive results in minimizing the impact of children's exposure to violence. Employing a systematic review of the available evidence-based practices, we hope to provide social workers with recommendations to help prevent and ameliorate the damaging effects of domestic violence on children. It is vital that social workers educate each other, as well as the community including teachers, coaches, and families, about domestic violence and its destructive force on children. Ultimately, we strive to improve the lives of children living with domestic violence by providing the information and interventions necessary for appropriate social work intervention.	GP89
A Qualitative Description and Comparison of the Self-Reported Strengths and Concerns of Obese Treatment-seeking Youth and Caregivers, Sarah Radley, Keeley Pratt, PhD, Angela Lamson, PhD, Annette Greer, PhD, MSN, RN, East Carolina University, Greenville, NC 27858	
While much research has been dedicated to quantitative psychosocial factors that are associated with childhood obesity, little research has been conducted to explore whether quantitative assessments accurately capture the lived experience of obese treatment-seeking youth and their caregivers. Therefore, we sought out to explore the self-reported strengths and concerns of obese treatment-seeking youth and their caregivers. The aim of this study was to address the following questions: 1. What are the self-reported strengths and concerns of obese treatment seeking children and teenagers? 2. What are the self-reported strengths and concerns of caregivers of obese treatment seeking youth? 3. How do children's self-reported strengths and concerns compare to their caregivers? This study included 267 youth (ages 8-18) and their associated caregivers who initiated treatment at the Pediatric Healthy Weight Research and Treatment Center (PHWRTC) in Greenville, NC, from 2007 - 2009. A demographic inventory was administered to the youth's caregiver that assessed race, age, sex, insurance status, family structure, caregiver employment status, and insurance status. Youth and caregivers self-reported strengths and concerns were addressed through an open-ended questionnaire whereby a numerical list was provided from 1-3 and youth and caregivers were independently asked to list their top three strengths and concerns. Responses were entered into Microsoft Excel using a non-identifiable code and then transferred to NVivo version 9.0, which was used for the qualitative analysis. Phenomenology was used as the qualitative approach in order to explore the lived experience of obese	GP90

treatment-seeking youth and caregivers (Creswell, 2007). Through this approach we explored the strengths and concerns that obese youth and their caregivers had in common within and between groups. Specifically a psychological phenomenology approach was followed (Moustakas, 1994) given that responses were provided via a written format thus encouraging the focus to be on the participant's experience rather than that of the researcher. A coding scheme was developed, codes were clustered under trees with a triangulated investigator, data was checked for trustworthiness and inter-rater reliability, and the researchers created clusters based on common themes. Then phenomenological descriptions were written.	
Factors Influencing Brand Loyalty to Microbreweries in North Carolina, Alison Murray, East Carolina University, Greenville, NC 27858	GP91
The purpose of this study is to gain a clearer understanding of what factors influence brand loyalty to microbreweries among visitors to the breweries as well as residents who live in town where the breweries are located. The influential factors explored are accessibility to the product, environmental consumption, connection with the local community, desire for unique consumer products, quality and satisfaction, and involvement with beer. The study also compares the perspectives of the visitor and resident groups. The setting for the study is Mother Earth Brewery in Kinston, North Carolina and Aviator Brewery in Fuquay-Varina, North Carolina. A Tourism Impact Attitude Scale (TIAS) will be modified to determine the response (positive or negative) that residents have to the breweries and to beer tourism in their town. It is the researcher's aim for the survey instrument to become a tool for microbreweries to increase their brand loyalty among beer tourists. Through an in-depth look at each of the breweries and their visitors, other small-scale craft breweries should be able to apply some of the successful practices and learn what can be done to create community and stakeholder support.	
Mapping The Negro Motorist Green Book: A Geographic Legacy of Tourism during the Jim Crow Era, Richard Kennedy, Department of Geography, East Carolina University, Greenville, NC 27858	GP92
On January 19, 2012, President Barack Obama declared, the travel and tourism industry is one of our Nation's leading service sectors and sources of export. In support of this statement, President Obama issued an Executive Order to focus efforts on reducing the legacy of exclusion and unfairness that influences the historical geography of contemporary travel and tourism. This research seeks to use The Negro Motorist Green Book: An international travel guide to map, spatially investigate, and judiciously illuminate the historical geography of African American tourism during the Jim Crow era. The purpose is to understand the legacy of this geographic history and its influence, if any, in contemporary travel and tourism. The research may also produce landmarks that prove useful as heritage resources for travel and tourism today and in the future.	

Evaluating Group Dynamics in an Experiential Groups Class for MSW Students, Jason Radosevich, Tamyra Jovel, East Carolina University, Greenville, NC 27858	GP93
Understanding group dynamics facilitates a greater ability for MSW students to use this knowledge in practice settings. Personality attributes also affect the ability to work cohesively with groups in educational and practice environments.This study assesses the ability of MSW students to interact with peers effectively and cohesively regardless of their personality type and role within the groups in an experiential groups class. This study focuses on a quasi-experimental design utilizing quantitative data to support qualitative data. This study aims to evaluate the cohesion of MSW students while they work in task groups and report after each meeting on different interactions and feelings concerning the group process. The purpose of this study is to analyze group dynamics based on the McKenzie Group Climate questionnaire, process recordings, group member's weekly evaluation, sociograms, and triangulating with the Keirsey temperament sorter in order to gain a better understanding of group process in MSW students who are learning how to lead groups. Based on the focus of the relational cultural perspective in this MSW program, we predict that the groups will maintain enough cohesion to complete the assignment in the task group. This study will create a better understanding of group process and how MSW students may develop cohesion in an experiential group work class and transform their future practice as social workers.	
Program Evaluation of Life Skills Groups for Elementary Students At-Risk for Suspension, Academic Failure, or Dropout, Lynn C. Bassett, Tonya M. LeBlanc, Philip A. Pennington, Sarah Tyson, Elana C. Zipkin, School of Social Work, East Carolina University, Greenville, NC 27858	GP94
Although high school drop out rates have declined over the past 30 years, they are still a problem that plague the United States. In 2009, 8.1% of high school students between the ages of 16 and 24 dropped out of school, with minority students dropping out at a much higher rate. The high drop out rate is not only significant because of its negative effect on those who do not graduate high school, but because of the financial burden it creates for the federal government. Research has shown that students with poor grades, truancy problems, many suspensions, and familial conflict are at a particularly elevated risk of dropping out. This study evaluates an early intervention program aimed at identifying elementary-school-aged children who may already be at risk for not graduating high school. Teachers identified fourth and fifth grade students displaying at-risk behaviors. The students were assessed using the Birleson Depression Self-Rating Scale, Rosenberg Self Esteem Scale, and the Norwicki-Strickland Locus of Control. They were placed into small groups and taught pro-social skills through modeling, role-playing, feedback and transfer. Based on our preliminary evaluation of the research, we predict that this intervention will positively impact students' depression score, self-esteem and locus of control.	

<table>
<tr><td>Use of Weather and Climate Data in Tourism Business Decision-Making: The Case of Beaufort, North Carolina, Heather Blair, Department of Geography and Center for Sustainable Tourism, Scott Curtis, Atmospheric Science/Geography and Center for Sustainable Tourism, Patrick Long, Center for Sustainable Tourism, Sarah Jessup, Department of Geography, East Carolina University, Greenville, NC 27858</td><td rowspan="2">GP95</td></tr>
<tr><td>This study attempted to better understand the ways, and to what extent, tourism businesses are affected by weather conditions and fluctuations, as well as by climate change in Beaufort, North Carolina. In addition, the study gathered information on what strategies tourism businesses implemented to accommodate weather and climate circumstances. A focus group methodology was used to collect information from several Beaufort County tourism-related businesses including retail, accommodations, diving, kayaking, catamaran cruise, museums and food service. General categories addressed included: 1) types of tourism products and services provided, 2) weather conditions that effected the destination and each individual type of business, 3) how business operators communicate with clients regarding weather conditions, and 4) how business decisions will be guided by changing climate and weather conditions.

Findings reveal that weather conditions today are different than in the past although they are described as ideal for a tourism-dependent coastal environment; that they differ over open water from over land; that differences frequently exist between what is forecasted by the media and actual weather conditions; that rainfall is highly variable across the immediate region; that weather is influenced by the airstrip effect of the neighboring Air Force base; and there is a lack of any observable strong trends due to climate change.

Somewhat sensationalized weather forecasts affect cancellations despite efforts by tourism businesses to communicate actual weather conditions; weather assessments by individual travelers are also problematic. Many businesses respond to tourists’ questions about daily weather with seasonal based responses. Boaters and pilots are the savviest about weather. Regarding the future, weather and climate do not appear to be changing dramatically although increased storm surges are being observed and the wind seems to blow more now than before. There is also an observable increase in jellyfish, fewer hurricanes and more erosion and deposition on nearby shoals and banks. Tourism businesses desire a realistic forecast, less hype over hurricane season, and weather language that indicates more “mostly sunny” days than “partly cloudy”.</td></tr>
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Genetics and Bioethics for the Non-Medical Social Work Practitioner, Traci Crayton, Kelley Reinsmith-Jones, Ph.D., College of Human Ecology, School of Social Work, East Carolina University, Greenville, NC 27858	GP96
The continuous advances of knowledge and technology in the field of genetics increases the need for social workers, among other practitioners, to be involved in educating their clients/patients about genetics, genetic testing, and the ramifications of genetic interventions. Although genetic counseling is growing as a field of practice, geographical limitations often prevent genetic testing sites and genetic counselors from being readily available to persons needing information, especially in rural areas. This project examined the current level of knowledge of social workers in rural Pitt County, NC about genetic technologies and the related ethical, legal, and social implications. Although 88% of social worker respondents agreed that part of social worker's role is to create and maintain self-help groups, resolve bereavement, and take action in the community in regards to genetic testing (n=29), queries about academic experience with bioethics and genetics revealed that respondents may lack the knowledge needed to take such action: 89% of respondents have not taken any biotechnology courses (n= 33); the remaining 11% of respondents indicated that they have taken 1 biotechnology course (n=4); 95% of respondents have taken d 1 CEUs concerning bioethics (n=35). Survey results also indicate that some respondents would refer a client to a genetic counselor for reasons that were unwarranted, while others would fail to refer a client to a genetic counselor for reasons that were warranted. This variation in responses indicates a need for social workers to have a better working knowledge of genetics and bioethics in order to reach a consensus on warranted reasons for referral and to ensure that service users in rural areas have access to genetic knowledge and resources.	
An Importance-Performance Analysis (IPA) of Tourist Activities and Amenities in Cuba, Erin Green, Nathan Hingtgen, Dr. Carol Kline, Center for Sustainable Tourism, East Carolina University, Greenville, NC 27858	GP97
Cuban tourism is on the brink of entering a new era of development as the political structure continues to change and the U.S. trade embargo loosens. The purpose of this study is to assess the current visitors' satisfaction with Cuban tourism products, particularly among the various types of visitors who travel to Cuba (e.g. business travelers, ecotourists, sun and sand tourists). Surveys will be collected at tourism sites around Cuba that tailor to a variety of tourism markets. Following an Importance-Performance Analysis protocol, visitors will rate how 'important' certain items are to a travel experience, and then rate how Cuba 'performs' on those same items. This data would be extremely beneficial to the myriad of stakeholders in the Cuban tourism industry, especially as entrepreneurship becomes more widespread and as Cuba's political system continues to change.	
Survival Landscapes for a Zombie Apocalypse, Janna Caspersen, Matthew Carey, Department of Geography, East Carolina University, Greenville, NC 27858	GP98
Scenario: A zombie apocalypse has descended upon North Carolina, through all its boarders and major city centers. You and a cohort of people are together and alive. It is time for you to find shelter and protect yourself from the walking dead that surround you. Where will you go to feel safe? How will you get there? This project, will present a map for you to navigate these difficult dissensions and help keep from being eaten. While also addressing how popular	

culture has affected your perception of desirable and safe landscapes, in the case of a zombie apocalypse. Using T.V. shows and films to determine suitable landscape types and then Geographic Information Systems (GIS) to locate within North Carolina where these suitable landscapes would be.	
Identifying breakdowns in North Carolina's agricultural value chain using Importance-Performance Analysis, Shan Newton, Dr. Carol Kline, East Carolina University, Greenville, NC 27858	GP99
North Carolina has an abundance of food producers, service providers, and a growing consumer market for sustainable food products. Conversely, within North Carolina exists poverty and hunger, and a phenomenon known as food deserts, which are often low-income residential areas where the majority of inhabitants have very limited access to fresh produce, and whose diet often consists of canned and dry goods. The purpose of the study is to identify gaps and barriers along the value chain of North Carolina's agricultural system, particularly to analyze the different perceptions of audiences regarding the change agents needed to connect the various stakeholders into a seamless food system. This will be achieved by constructing a survey built upon Importance-Performance Analysis (IPA) framework, and utilizing a partnership forged with Appalachian Sustainable Agricultural Project and Carolina Farm Stewardship Association to assist in the statewide distribution of the survey. The analysis will acknowledge the economic, socio-cultural, and ecological contexts that exist within North Carolina, and the results will assist agricultural-based non-profit organizations and state-supported agencies in decision-making regarding program and policy creation.	
Assessment of Campus Recreation & Wellness Student Employees and Leadership Skill Development, Stephen Tucci, Nelson Cooper, Recreation and Leisure Studies, East Carolina University, Greenville, NC 27858	GP100
The purpose of this study was to assess college student perceptions of how their employment in a campus recreation department contributed to their development of leadership skills. Utilizing a convenience sample, subjects from 2011-2012 campus recreation student employees were invited to complete an online Importance-Involvement Survey, which was coordinated by the campus assessment office. The conceptual framework for the Importance-Involvement survey was based upon the four university student learning outcomes pertaining to leadership (Jordan, 2010). A one-group pretest-posttest design was conducted, with the pretest completed in the fall semester and the posttest completed in the spring semester of the 2011-2012 academic year. An analysis of student employment contributions will provide further insight into college student leadership development.	

Hurricane Irene: North Carolina Tourism Impacts, Haley Winslow, Alex Naar, East Carolina University, Greenville, NC 27858	
At 7:30 a.m. Saturday, August 27th, 2011, a week before one of the most significant tourism weekends of the year for coastal North Carolina, Hurricane Irene made landfall at Morehead City. The storm was feared to be of historic proportions due to its large size and slow movement, which was expected to cause significant destruction along the eastern seaboard of the United States. North Carolina Governor Bev Perdue declared a state of emergency for 39 counties throughout eastern North Carolina, encouraging more than 3.5 million people to prepare and evacuate westward just as tourism businesses were preparing for the expected vacation weekend.	GP101
Control Methodology in Organic Residue Analysis Using FT-IR Spectroscopy, D. Kyle McCandless, Department of Anthropology, Dr. Laura Mazow, Department of Anthropology, Dr. Anthony Kennedy, Department of Chemistry, Susanne Grieve, Department of History, Kim Tillapaugh, Department of Chemistry, East Carolina University, Greenville, NC 27858	
In this poster, the author raises concerns about the impact of contamination in organic residue analysis projects of archaeological materials. Concerns with contamination and subsequent methodological controls are rarely mentioned in the archaeological literature, but could have profound effects on the results that are obtained in research involving residue analysis. Through an organic residue analysis project at East Carolina University, a set of control experiments were developed, with the goal of determining the impact of contamination introduced by the sample methodologies used during the original project. These experiments attempt to isolate and identify the sources of potential contamination in the sample methodologies, while building a database that will be used for comparative analysis of data from collected samples. Preliminary results suggest that almost all of the sampling materials (i.e. swabs, solvents, and storage containers) have introduced analytically significant contaminants into the control samples. The results of the control experiments further suggest that previously collected samples will include some amount of contamination from sampling methodologies, and storage and shipping materials which may impact data analysis. The results of these experiments should allow the project to develop a successful sample collection methodology by ruling out unsatisfactory materials and determine a collection methodology that introduces the least amount of contaminant residues into samples. This case study serves as a means of addressing the greater issue of contamination in residue analysis projects, particularly those using Infrared (IR) spectroscopy, a method that is becoming increasingly common in archaeology for the analysis of organic residues.	GP102

Examination of Psychological Change After a One Week Mindfulness Meditation Intervention, Anne Corinne Carroll, Kristen Williams, Rebekah Evans, Layton Reesor & Christyn Dolbier, PhD Department of Psychology, East Carolina University, Greenville, NC 27858	
Background: Mindfulness meditation (MM) is the process of becoming aware of thoughts, feelings or sensations that arise and refraining from judging those feelings, thoughts, or sensations. Research on the standard 8-week MM intervention has shown that it leads to decreases in emotional distress and increases in positive states of mind. Therefore, MM is a technique that can help facilitate more adaptive responses to stressful situations, resulting in reduction of negative effects of stress. Shorter-term MM practice (i.e., 4 weeks) has been shown to result in similar beneficial psychological changes. It is unknown exactly when these beneficial changes start to occur. Purpose: The purpose of this study is to determine whether one week of daily 20-minute MM practice will be effective in reducing negative and enhancing positive psychological states. The one week time period will help narrow down the window in which these changes towards a positive psychological state begin. Methods: This study uses a single-group experimental design with a sample of college students. Participants are enrolled in Introductory Psychology courses and recruited through the Psychology Department participant pool. Inclusion criteria are: aged 18-25, English as primary language, no current psychological or physical illness, not currently practicing any stress management technique, not working the nightshift, and interest in integrating a daily stress management technique into their lives. Participants attend two similar lab sessions spaced one week apart, which consist of listening to a MM CD for 20 minutes and completing surveys before and after the MM practice. For each day in the week interval between lab sessions, participants will follow the MM CD for 20 minutes. Participants are compensated with credit toward course work and $30 in gift cards. Hypotheses: We hypothesize that participants will report less negative affect, stress, and anxiety and greater positive affect, relaxation, and mindfulness after the lab 20-minute MM practice compared to baseline, and that the magnitude of these changes will be greater during the second lab session compared to the first. We also hypothesize that following the one week intervention participants will demonstrate decreases in perceived stress and anxiety and increases in positive well-being and dispositional mindfulness.	GP103

John Lawson's Hatteras "Indian Town", Baylus Brooks, East Carolina University, Greenville, NC 27858	GP104
John Lawson's Hatteras Indian Town is discovered. Early Carolina explorer John Lawson ended his Thousand-mile Journey on the Outer Banks of North Carolina in 1701. There, he visited an Indian Town on the island of Hatteras, a remote and nearly forgotten outpost of the British colony. Lawson has since recorded his observations at that town in his book A New Voyage to Carolina in which he describes gray-eyed Indians whose ancestors could write, alluding to their descent from Sir Walter Raleigh's Lost Colony. This has become a North Carolina legend. Another explanation, however, has been made possible through archaeological study of the Cape Creek site made by the late Dr. David S. Phelps, formerly of the Department of Anthropology at East Carolina University. Phelps found coterminus European and Indian artifacts at this site, indicating cohabitation and possibly miscegenation as early as 1650, more than fifty years before Lawson's visit. This could have explained his observations there in 1701. The Indian Town that Lawson found, however, did not exist at this town near Buxton. The town of traditional Hatteras Indians that Lawson found was actually located more than three miles to the west of Buxton at the King's-Brooks Point locale. That town has been discovered on a land grant given to William Elks and the Rest of the Hatteras Indians in 1759. Dare County's Geographic Information System database (GIS) still shows the southern half of this grant and, thus, the town's location.	
Sustainability in Skiing: Applying an Industry Analysis to a Sustainable Mountain Playground Model, Garrett Ziegler, Dr. Jason Oliver, East Carolina University, Greenville, NC 27858	GP105
The purpose of this project is to better understand the sustainability practices being used within the ski industry. The ski industry has a 66 billion dollar per year economic impact in the United States and is a main economic driver for many northern and western mountain communities. With the current and future impacts of global climate change, it is important for the ski industry to become a leader in the movement toward a more sustainable future. The industry depends upon natural resources such as natural snow precipitation and water for man-made snow. These resources may become even scarcer as the impact from global climate change is felt. This project will research what is currently being done to improve the overall sustainability of the ski industry and how those practices can be applied to a new model for ski resort development proposed by the Mountain Rider's Alliance (MRA) organization. The research is examining major industry themes on a macro level and will apply them to the micro or resort level. This will allow for a better understanding of what does and does not work in terms of sustainable resort operation. This analysis will examine ski resort websites as well as gain information from the people who are having the greatest impact in furthering the goals of sustainable tourism within the ski industry.	

Bullying and School Violence: Trends, Prevention, and Evidence-Based Interventions in Social Work Practice, Emily Lybrand, Tracy Carpenter-Aeby, PhD, LCSW, Vic Aeby, PhD, East Carolina University, Greenville, NC 27858	GP106
Bullying has existed for decades, but recently has become more vicious and easier to accomplish. One out of every four teens is bullied. On any given day, as many as 160,000, students stay home because they are afraid of being bullied. A bully is six times more likely to be incarcerated by the age of 24. Two-thirds of students who are targets become bullies. Twenty-percent of high school students say they have seriously considered suicide with the last 12 months. Bullying was a factor in two-thirds of the 37 school shootings reviewed by the US Secret Service. Every 7 minutes a child is bullied on the playground. Adults intervene 4% of the time and peers intervene 11%, but 85% of the time, no one helps them. Forty-three percent of kids have been bullied while online. Bullying not only causes immediate stress and harm, but can also cause negative long-term psychological effects that can easily last to adulthood. Bullies may also experience negative mental health effects, as well as delinquent behaviors. Cyber-bullying has become an epidemic since the advancement of social media, Facebook, Twitter, MySpace. Perpetrators can invade the victim's own house through their cell phones and computers. This meta-analysis strives to examine what bullying is, the causes, and effective bullying programs and prevention strategies. The researchers examined research published between 2005- 2012 to obtain current and correct information on bullying interventions. We believe that education and awareness among students, faculty, and families may be among the most effective prevention and intervention approaches.	
Resource Mobilization and Organizational Mortality in the North Carolina Environmental Movement, 2003-2009, Hyun Woo Kim, East Carolina University, Greenville, NC 27858	GP107
Organizational mortality has been one of core foci in the population ecology of organization and sociology of organizations. Although great progress has been made by much previous literature on organizational mortality (Carroll 1985; Carroll and Hannan 1989; Freeman et al. 1983; Hannan and Freeman 1984; 1988; Hannan et al. 1998), relatively little attention has been paid to the critical differences of mortality rate created by membership and governance structures, organizational activities, issues at stake, and various types of resources the organization possess under the concept of structural inertia. In this article, from a resource mobilization perspective, I discuss the impacts of organizational structures, philosophies, activities, and various resource types on organizational mortality, using my unique data set on the North Carolina environmental organizations and a mortality fact sheet that measures if each organization is still active after seven years. Logistic regression analysis is used to analyze what kinds of population- and organization-level determinants are significant in explaining organizational mortality. In the analysis, I conclude that professionalization of environmental organizations is particularly one of the most important criteria that determine organizational longevity, and that depending on the degree of professionalization, impacts of population- and organization-level variables on mortality are strikingly different.	

Statistical analysis of Distress Toll Implemented to Measure Psychosocial and Physical Stressors within an Oncologic Population, Carolyn Sisenstein, East Carolina University, Greenville, NC 27858	GP108
The Oncology Nursing Standards (ONS) Association and the (AOCS) is instituting a new standard in Oncological care 2015. All cancer patients will be evaluated for Biopsychosocial distress and referred by a nurse when scoring a five or over for further assistance. The RAAB Oncology Clinic has begun this process by implementing the NCCN distress tool after approval by the Carteret General Hospital Oncology Advisory Committee. The purpose of this study is to analyze the data collected in the first 6 months of the new standard to ascertain the number and reason for referral to a nurse or social worker. The participants are current cancer patients who complete a self reporting survey. The research will be completed by meta analysis of the survey instruments. The data will be analyzed using SPSS software and possibly presented in a poster format, and in manuscript form.	
How Do You Fly Fish?, Whit Winslow, Center for Sustainable Tourism, East Carolina University, Greenville, NC27858	GP109
This study will examine the behaviors of fly fishermen in specific areas to determine what, if any, correlation exists between their involvement in the sport, and their travel habits and environmental behaviors by looking at how long a fisherman has been fishing, how often he goes fishing, how much money he is willing to spend on the sport, their reported environmental behaviors and travel habits.This study proposes a relationship between fly fishing and pro-environmental behavior which is consistent with previous literature, dating back to the mid-1970s, which suggests a positive relationship between outdoor recreation participation and pro-environmental behavior. However, some types of outdoor recreation are considered more strongly associated with pro-environmental behaviors than others. It is not clear whether fly fishing enthusiasts engage in pro-environmental behaviors and, if so, which fly fishermen/women are most likely to engage in the behaviors. The results could have implications both for non-profit environmental groups/efforts and for profit-seeking marketers who are trying to generate goodwill from consumers by reducing the environmental harm associated with the consumption of their firms' products. Specifically, this study examines the connection between fly fishers who travel; and participate in fly fishing as a form of serious leisure, an activity that they participate in many times a year and their pro-environmental behaviors. First, we establish the size and desirability of the fly fishing lifestyle segment. Next, we propose that fly fishing enthusiasts have higher pro-environmental attitudes and behaviors than members of the general population.	

Jamming Attack and Detection in WLAN, Tian Fu, Department of Technology Systems, East Carolina University, Greenville, NC 27858	
Because Wireless Local Access Networks (WLANs) are a common way to establish connections, keeping WLAN secure is a priority. One major threat to WLAN are jamming attacks. Jamming is a style of attack that falls under the category of DoS attacks. In WLANs, all traffic is transported through channels. It is easy for attackers to jam a particular channel in order to block all the traffic in it. Detecting jamming attacks can be done by setting up traffic delivery ratio thresholds. When jamming attacks are detected, systems can be establised to safeguard against these attacks. These systems include the ability to connect communication again by switching channels, blocking jamming packets when the channel is under attack, and setting priorities of packets sent between legitimate nodes. In order to provide a better understanding of jamming attacks and find a way to detect jamming attacks in WLAN, a simulation tool is used to build, configure, and monitor the networks. We chose OPNET as the simulation tool for all the experiments. OPNET is software that simulates networks with protocols. It contains a thorough set of models of wireless network protocols and devices. Through these experiments, we want to test how much influence jammers have in network communications. In security, we also want to find how effective setting thresholds and jumping channels are at protecting networks against jamming attacks. We believe that the results will show that jammers actually block communications in the WLAN, and that the protection methods will be effective.	GP110
The Effect of the Mathematics of Finance on the Dynamics of a Credit Economy, Jessica J. Bennett, Department of Mathematics, East Carolina University, Greenville, NC 27858	
The general equilibrium theory of J.M. Keynes was developed in the 1930 s to help explain the great depression and prevent future economic downturns. Out of this came the IS-LM (investment saving/liquid money) model, introduced by J.R. Hicks in 1936. There is controversy about the success of his approach, not the least of which is the lack of dynamical aspects in the theory. The thesis considers three interest groups identified as bankers, capitalists and workers. A coupled system of differential equations describes the flow of money, capital and credit over time. A mathematical analysis of the high dimensional system reveals the existence of equilibrium points. Their stability properties are determined and, as is common with sufficiently complicated systems, cycles appear corresponding to periods of boom and bust. Thus, shocks to the system, which are theorized by neoclassical economists to be due to external events, are shown to be possible using dynamical endogenous models. The consequences of poor risk assessments, inadequate modeling and different government policies are examined. Various data are used to demonstrate the failure of quantitative easing at stabilizing the economy. Particularly, a measure of the ratio of debt to gross domestic product indicates continued problems for many economies in the world, and the policy of continued low interest rates may not provide much of a resolution.	GP111

Safety Performance Evaluation of the North Carolinian Motor Carriers Compare to other Motor Carriers in the North America based on the Compliance, Safety, Accountability (CSA 2010) Measurement System, Hossein Hosseini Tabar, East Carolina University, Greenville, NC 27858	
The Compliance, Safety, Accountability (CSA) is a new Federal Motor Carrier Safety Administration (FMCSA) standard to improve large truck and bus safety and ultimately reduce crashes, injuries, and fatalities that are related to commercial motor vehicles. According to this standard, all commercial motor vehicles are inspected based on the Federal Motor Carrie Safety Regulations (FMCSRs) and Hazardous Material Regulations (HMRs) in seven categories as: Unsafe Driving, Fatigued Driving (Hours-Of-Service), Driver Fitness, Controlled Substance/Alcohol, Vehicle Maintenance, Cargo-Related and Crash Indicator. Then, based on the Carrier Safety Measurement System (CSMS) carriers are ranked, and those that have the worse safety performance among the similar carriers are identified and preceded for further interventions.In this project, we will compile the safety performance of the registered carriers in the CSA database which their headquarters are located in North Carolina. Then, we will conduct a comparative study to determine the current safety performance status of motor carriers in North Carolina comparing to other motor carriers in the North America, which are registered in the database.	GP112
Project MENTOR: Effect of a mentor based exercise intervention on body mass index and DEXA levels for obese adolescents, J. Andleton, M. Erickson, T. Raedeke, L. Lutes, M. McCammon, East Carolina University, Greenville, NC 27858	
Increasing childhood obesity rates signifies the importance of interventions targeting physical activity. Project MENTOR was a mentor-based exercise intervention for overweight children, ages 12-18 years. Undergraduate exercise physiology students (n = 11) served as mentors to facilitate healthy lifestyle modifications through exercise based on C.A.R.E. (competence, autonomy, relatedness, and enjoyment from self-determination theory). Mentors led exercise training three time a week. They also implemented a weekly lesson focused on self-regulatory skills and goal-setting related to healthy eating and lifestyle activity. The current study examined MENTOR's impact on BMI-Z score and DXA-total body fat (BF) % levels. Obese female (n=11) and male (n=12) adolescents, including Caucasian (n=13) and African American (n=10) participants were randomly assigned to two groups: a 14 week intervention or wait list control. The 23 participants had an initial BMI Z-score of 2.17 (SD=0.40) and DXA-total BF % score of 43.67 (SD=6.28). Five additional participants (male=3, female=2; BMI Z-score M=2.15, SD=0.37; DXA-total BF % M=42.04, SD=6.29) completed a 22-week intervention with all conditions including a 16-week no contact follow-up. All participants were assessed at baseline, 14 weeks, and follow-up. 3 (group) X 3 (time) repeated measures ANOVAs revealed nonsignificant time by group interactions, F=2.08, p=.10 and F=1.62, p=.18 for BMI Z-score and DXA-total BF %. Inspection of effect sizes (Cohen d) revealed minimal change in control group's BMI Z-score and DXA-total BF % levels was at 14 weeks and follow-up compared to baseline (Cohen's BMI Z-score d=.11 and .06; DXA-total BF % d=.005 and .02). In comparison, both intervention groups made small improvements in BMI Z-score (d=.23 and .30) at post-test. The 14-week intervention group did not maintain change in BMI Z-score or body fat % at follow-up (d=.04), but 22-week intervention group was able to maintain (if not improve) their BMI Z-score and DXA-total BF % with the effect sizes in the moderate range	GP113

(d=.56 and .62). These findings suggest that a longer treatment may yield sustained improvement or maintenance in BMI Z-scores and body fat %. For future studies, having a larger sample size and longer intervention period may help develop a better understand the impact of a mentoring based program on obese adolescents.	
Vessels for Growth, Karen H Silinsky, East Carolina University, Greenville, NC, 27858	GP114
This report supports the creative thesis entitled Vessels of Growth. My work in clay and mixed media references southern culture with particular interest in the barns and buildings of the southern landscape because of the stories and activities they contain. These barns and their outbuildings contrast with our modern lifestyle, yet they are still a visual part of our contemporary life. My work imparts the poetic, emotional qualities of these physical forms while revealing the beauty that occurs with their decay. Crops of tobacco, cotton, soybeans or corn often surround these decaying buildings. My work uses the imagery of the southern landscape as subject, and incorporates the crops and plants of this region. The barns and the land on which these buildings are supported inspire these vessels built of clay. I will also describe my research into the agriculture and agricultural architecture in this region, particularly the cotton, corn and tobacco crops that thrive here.	

Graduate Distance Education Poster Abstracts	ID#
Benefits of Hepatic Resection for Noncolorectal Nonneuroendocrine Liver Metastases Based on Histology, Shannon Banks, Jason Brinkley, Timothy Fitzgerald, The Brody School of Medicine, Department of Surgery, Division of Surgical Oncology, East Carolina University, Greenville, NC 27858	GDP1
Introduction: The benefit of hepatic resection for colorectal liver metastases has been widely documented. However, there is little evidence supporting the benefits of hepatic resection for noncolorectal nonneuroendocrine liver metastases (NCNLM). This study aims to present the available research on the overall survival rates of various histological types of NCNLM. Methods: Articles were identified via Pubmed and Web of Knowledge using specific search terms. Articles were excluded if published prior to 1984, had less than 10 patients, the primary tumor was of colorectal neuroendocrine origin, or lacked data on hepatic resection of metastases. A manual search of the literature included in the analysis provided an additional source of articles. Results: There were 7857 articles identified as potentially relevant, after a full text review 66 were identified for inclusion. Thirty-three different histological primary tumors were identified from the 66 articles. When placed into one of ten main categories, genitourinary and breast cancer had the longest average overall median survival at 41.56 and 38.7 months respectively. Throat primary tumors had the shortest overall median survival at 16 months. Conclusions: Genitourinary and more specifically germ cell primary tumor types had prolonged overall median survival rates attributed to hepatic resection. The best results were seen when R0 curative resection was possible and there were no extra-hepatic metastases present.	

What It is: A Concept Analysis of Sexual Coercion, LaNika Wright, Martha Alligood, PHD, RN, College of Nursing, East Carolina University, Greenville, NC 27858

GDP2

Objective: Sexual coercion is an abstract term used in various types of literature. There is not one universal definition of sexual coercion, it is sometimes used as broad term to describe all types of sexual victimization and other times more narrow as a subset of sexual victimization. The purpose of this project is to provide define and clarify the concept of sexual coercion and identify related concepts.

Methods: The evolutionary method of concept analysis was chosen as the method of analysis. The purpose of the evolutionary method is to provide a working definition of a concept as noted at the point in time in which the analysis is being conducted, recognizing the definition is ever-changing. This method investigates the definitions of a concept, identifying surrogate terms, reviewing its relationship to related concepts, antecedents and consequences of the concept, and provides an exemplar of the identified concept.

Results:
Surrogate Terms: Rape ,Sexual Assault, Forced sex, Sexual Pressure, Post refusal sexual persistence
Related Concepts: Sexual Abuse, Interpersonal Violence, Sexual Harassment
Attributes: Four Levels of sexual coercive tactics

1.) Mild Coercion
2.) Manipulation of emotions
3.) Chemical Intoxication
4.) Physical Force

Antecedents-

1.)Factors that increase the risk of being coerced
2.)Factors that increase the risk of being a male perpetrator
3.)Factors that increase the risk of being a female perpetrator

Consequences

1.)Negatively affects Mental Health
2.)Negatively affects Sexual Health
3.)Negatively affects Physical Health
4.)Increases likelihood of becoming involved in an abuse cycle
5.)Affects relationships- positively and negatively

Conclusion: Based on this analysis, sexual coercion can be described as the use of physical force, verbal pressure, intimidation, deception, chemical substances, manipulative tactics, or psychological persuasion to elicit any type of sex act from an unwilling partner. This information will help health-care providers and victims define unwanted sexual experiences. It also provides an understanding of the types of sexual coercion, risk factors associated with sexual coercion, and its consequences.

Effects of Instruction Method on Vital Capacity and Maximum Sustained Phonation in Adult Female Controls, Angela Ohlhaut, Kathleen T. Cox, Ph.D., Department of Communication Sciences and Disorders, East Carolina University, Greenville, NC 27858	GDP3
The collection of aerodynamic measurements including vital capacity and maximum sustained phonation is common practice in Speech-Language Pathology to aid in the assessment and treatment of vocal dysfunction. Current research lacks information regarding the ideal instructions to be given to a patient about how to exhale for vital capacity or what type of feedback is reasonable to provide to a patient during maximum sustained phonation collection. The purpose of this study is to determine the effect of instruction and visual feedback during the collection of vital capacity and maximum sustained phonation tasks, respectively. Fifty female participants were included in this study. Each participant performed a total of 12 maximum sustained phonation tasks. 6 trials were conducted while sustaining the vowel /i/, and 6 trials during the vowel /a/. For each vowel sound /i/ and /a/, 3 trials received visual feedback from the examiner during collection and 3 did not. Each participant also performed 6 vital capacity tasks. Participants were instructed to exhale utilizing a slow exhalation for half the trials (8-10 seconds) and a fast exhalation (3-6 seconds) for the other half. The order of maximum sustained phonation and vital capacity tasks was randomized for each patient. Descriptive analysis of the data revealed that instruction and visual feedback provided no practical significance in predicting length of maximum sustained phonation or amount of air exhaled during vital capacity collection.	
Examining the Relationship between Intramural Sports Participation and Sense of Community among College Students, Chelsea A. C. Phipps, Recreation & Leisure Studies, East Carolina University, Greenville, NC 27858	GDP6
The purpose of this study was to examine the relationship between intramural sports participation and sense of community among college students. A convenience sample was used, comprised of intramural sports participants from a university in the southeastern United States. Participants completed a questionnaire consisting of demographic questions and the Sense of Community Index 2 (SCI-2) (Chavis, Lee & Acosta, 2008) to rate their level of sense of community experienced through participation in intramural sports. The SCI-2 consists of four subscales, pertaining to the four contributing elements of sense of community: membership, influence, integration and fulfillment of needs, and shared emotional connection (McMillan & Chavis, 1986). The overall instrument was shown to have a coefficient alpha of 0.94, while the four subscales have coefficient alpha scores ranging from 0.79 to 0.86. Questionnaires were distributed once and administered online. All responses were kept confidential, and results stored securely. Pearson correlations and multiple analysis of variance tests were conducted to examine the relationships between sense of community and the respondent's length of intramural sports participation, and frequency of intramural sports participation, in addition to demographic variables. Results of this study may contribute to future research, such as intramural sports' student outcomes, college student retention and student involvement in campus organizations.	

Tourism Impacts and Second Home Development in Coastal Communities: A Sustainable Approach, P. Long, H. Hao, W. Knollenberg, C. Landry, D. Peterson, T. Crawford, Center for Sustainable Tourism, Department of Geography, East Carolina University, Greenville, NC 27858	
Studies of full-time and second home owners' perceptions on tourism impacts and second home development are useful in formulating plans to support future practices in sustainable tourism. A survey of randomly selected homeowners from Brunswick, Currituck, and Pender counties was implemented by ECU's Center for Sustainable Tourism. Property owners were asked to assess the importance of a set of sustainable actions to the future economic success of the county as well as to determine the manner and extent that climate characteristics impact property values and recreational decisions. This study utilizes a Geographic Information System (GIS) to explore and analyze survey data results and to visualize geographic patterns of the response to the survey questions. The contributions of the spatial analysis will aid in the interpretation of the results and highlight the spatial arrangement of the responses in regards to the respondent's level of support for tourism, second home development, and sustainable tourism actions. Preliminary data suggests there are contrasts in the perceptions on tourism impacts between the full-time home owners and second home owners within the three selected counties and that significant spatial clustering related to these contrasts is present.	GDP7

Undergraduate Oral Presentation Abstracts	ID#
The Agni, Jonathan Burger, East Carolina University, Greenville, NC 27858 The presentation will discuss my recent series of performance pieces, titled The Agni. Agni is the Sanskrit word for fire, also for the god of fire, who was a messenger between man and the gods through the ritual of fire sacrifice. The series is composed of three performance works: Dukkha Samudaya (The Origin of Suffering), Ayra Satya (The Noble Truth), and Jin Mandala (Iron Mandala). These three pieces track the evolution of the mind as it attempts to unravel the nature of itself and reality, using mostly Buddhist and Hindu symbolism and terminology to express larger concepts about enlightenment and the awaked individual. All three pieces use the purifying power of fire as the driving force of the performance, consuming some part of the piece in order to leave behind the aspect of Truth we are searching for. All three also use the symbolism of the lotus to represent the enlightened mind, drawing from Buddhist iconography and Indian mandalas. For the presentation I plan to have video and photographs of the work to view while I discuss the pieces, their construction, symbolism, and place in the context of my larger body of work.	UO1
A Kiln Named Pandora, Jacob Herrmann, East Carolina University, Greenville, NC 27858 As a ceramic artist I feel a disconnect between the raw materials used in my chosen medium, and their natural sources. This is not surprising as most of these materials are mined on a large scale and shipped over long distances.Thinking about these ideas, and with sustainability in mind, I am working to find local resources to use in the ceramic process. Using local materials, as much as possible, will move the artist closer towards these ideas of sustainability. Pitt County clay will be used to facilitate the manufacture of kiln bricks. These bricks will be used to build a new wood fired kiln at East Carolina University. This project will also incorporate local clay bodies in the ceramic work that is fired in the kiln. Glazes will be mixed using wood ash recycled from the existing wood kiln, and fuel for the new kiln will come from the ECU test forest. With this project, a successful wood kiln will be built and fired using local resources. These efforts may help remove me from harmful practices of mining the earth on a larger scale and shipping materials across states and countries. This work will also embrace local diversity in Eastern North Carolina clays used in ceramics.	UO2

The Qero Half Full: The Value of Water and Liquids in Ancient Andean Life, Heather M. Bowen, East Carolina University, Greenville, NC 27858	
Ancient Andean cultures relied on one very powerful life force. They understood its power to give life, and its power to take it away. This element determined their survival and the survival of the landscape around them. Without the fuel of life, they would be sure to perish. Without water, anyone would be sure to perish. The ocean, rivers, and lakes played a vital role in the shaping of the landscape that played host to the many centuries of Andean settlements. Water also came down from the sky and made the people and the crops fertile and healthy. Water was the starting point for most living things in the eyes of Andean people, and it was seen as the catalyst for other liquids which were made important in Andean societies, like blood, semen, and especially maize beer. These liquids were seen as the flow of life itself; they were worshiped and used in many different ceremonies. They were representations of life and renewal among most Andean societies and the cities and ceremonial sites were often established or organized in accordance to their relation to the water sources. In this paper, I would like to explore the role of liquids, mainly water and chicha maize beer, in the lives of ancient Andean societies. Focusing on sources which refer to the Incas, I will discuss how liquids played a crucial role in rituals, ceremonies, religion, and the life cycle of the native peoples. The origins and importance of ritual qero vessels as part of these liquid-based beliefs will also be discussed. The connections this relationship with sacred liquids made between the people and their surrounding landscapes is also a subject explored in this paper, as well as how these ancient qero rituals have survived to still have important roles in Andean societies today.	UO3
The House of Connelly, Michael Avery, Margret Bauer, East Carolina University, Greenville, NC 27858	
The House of Connelly is a 2-act/6-scene play that has a provocative, disturbing, and controversial original ending in which two black women in the play kill the female (poor white) lead, an ending Green was asked to change for its Broadway production. Paul Green is famously known as the author of America's longest running outdoor drama (The Lost Colony), but The House of Connelly is, according to my mentor, one of his best plays. A reprint of this largely unknown (and out of print) play will not only reintroduce the remarkable story that is The House of Connelly but also give further recognition to Paul Green, North Carolina's most famous playwright, who has been neglected in recent years. This reprint will not only serve the reading public, it would also be a superb teaching tool in literature classes. The URCA award has allowed me to do exactly as I intended which is look at different published and unpublished versions of the play and to compare the screenplay to the film in order to provide editorial notes to accompany their reprinting. I will also prepare the play (with both endings) and the screenplay for reprinting. In addition to the previously stated I have also looked extensively at the film Carolina that closely resembles the play and looked at the original movie script.	UO4

The Constitution of a Foundation: Philosophical Education, Moral Reasoning, and Facing the Challenges of the 21st Century, Dillon R. Godley, Dr. James L. Smith, East Carolina University, Greenville, NC 27858	
The lack of emphasis placed upon moral argumentation of any kind, much less that which can be buttressed by formal logic, in state-subsidized public schools in order to assess the premises, appeals, and shortfalls of our constitutionally-constrained representative democracy, much less that of alternatives, is disturbing. Modern universities purport to offer a liberal education to students, yet points of harmony as to the constitution and delivery of said education among universities are relatively few. Perhaps the most significant conclusion reached via research and contemplation was the startling lack of concurrence regarding an apparatus for moral decision-making for university graduates to enable the maturation of talents and judgment in their ascent towards civilization and civic leadership. Critical to cultivating said apparatus is determining a sound definition to what generally constitutes a liberal education, then pruning it to ensure that it provokes sound questions rather than the conceit of prejudice. Analysis of over thirty books, fifty articles, and several interviews pertaining to the history of general and liberal education, choices among ethical criteria, plausibility of equitable and sensible standards, and attempts by other organizations and institutions to facilitate leadership development led to striking conclusions pertaining to the state of the modern university, the worth of a liberal education for the student, and their relationship as far as perpetuating virtus in man's weightiest endeavors is concerned.	UO5
The Demise of the Nazi Regime as Depicted in Downfall, William Schmidt, Christopher Nilson, Valerie Mele, East Carolina University, Greenville, NC 27858	
In this paper we sought to determine the most effective description of Adolf Hitler's final days in the Führerbunker as seen in different mediums. When learning about this tumultuous time period it is important to study the most honest representation of the end of National Socialism in Germany. The magnitude of Hitler's influence has left an irreversible mark on history. Yet, he is still one of the most enigmatic figures of all time. By studying the causes and events surrounding Hitler's death one can better understand his impact on World War II and the nature of National Socialism. We compared biographical texts such as John Toland's "Adolf Hitler and Robert Payne's: The Life and Death of Adolf Hitler" to Oliver Hirshbiegel's film, Downfall, to judge which mode was most capable of conveying the spirit of the last days of the Nazi regime. We found that, as a film, Downfall was more powerful and successful in depicting the reality of Hitler's demise. Filmic elements such as mise en scéne, diegetic sound, and provocative performances by the actors all contribute to giving the audience an intimate account of the events leading up to the end of one of the most horrific periods in history.	UO6

Immigration and Chicana Identity in 'Across A Hundred Mountains' (2006), Cassidy Cloninger, East Carolina University, Greenville, NC 27858	
Reyna Grande is a speaker, teacher, and author of two novels thus far: Across a Hundred Mountains (2006) and Dancing with Butterflies (2009). Grande was named a PEN USA Emerging Voices Fellow in 2003 for Across a Hundred Mountains. This novel treats themes such as immigration, gender, loss and abandonment. Originally published in English, and later in Spanish, Across a Hundred Mountains is a story born of the border region between Mexico and the United States and presents a tale of two girls, one from Mexico, Juana, and the other from the United States, Adelina. This Bildingsroman portrays Juana Garcia's development from childhood to maturity as she confronts a variety of experiences including a journey from Mexico to the United States. My presentation examines Juana's passage to adulthood, and focuses on the protagonist's identity formation. I discuss how the content and form of the novel reflects the suturing of a binational identity and demonstrate how the novel manifests this process via the character of Juana Garcia. My analysis of Across A Hundred Mountains will first present some information about the author, discuss the reception of the text, explore its prevalent identity issues as well as the content and form of the novel, and conclude with the implication and impact this type of novel has on the field of Chicana literature. [220]	UO7
Development of a Novel Carbon Nanotube Filter for Farmer Respiratory Protection Compliance, Erica Reid, North Carolina Agromedicine Institute, ECU Office of Technology Transfer, Department of Chemistry, Department of Engineering, East Carolina University, Greenville, NC 27858	
The technical and financial feasibility of a novel carbon nanotube filter has been investigated for patentability. This has been achieved by literature review, in-depth prior art and patent searching, as well as proof of concept through laboratory synthesis of nanotubes for a filter prototype. The filter medium is a suspended network of single-walled nanotubes on substrates containing lithographically patterned silicon posts. By catalyzing the tube growth in a honeycomb (hexagonal) shape, the properties of the individual tube can be expanded and enhance the filtration properties of the tube mass. The novelty of this filter is in the arrangement of the carbon nanotubes as a group and how they apply to filters for respiratory protection. Health risks in the agriculture industry have compelled lawmakers to require respiratory protection in many farming practices as well as to recommend it for all practices which pose risks. These include but are not limited to fumigation, spraying of pesticides, and work in poultry houses. Based on literature review, no filter is currently available that provides protection in a manner that farm workers are willing to employ, primarily due to filter size and comfort issues. With the proposed carbon nanotube honeycomb structure, this filter has the ability to efficiently filter harmful particulates and chemicals from the air; and, paired with currently available masks, it will enhance comfort and promote safety.	UO8

Oil spill cleaning method by nanofiber sorbency, Lauren R. Bridgers, Brooke E. Sullivan, Department of Engineering, East Carolina University, Greenville, NC 27858	
Many oil spills occur yearly around the world adversely affecting plants and animals. Methods of removing oil from aqueous systems include containment, skimming, sorbent and dispersant methods. In this study, we evaluate and compare different materials for sorbent-based cleaning including novel nonwoven nanofiber mats produced from aqueous biocompatible polymer solution. First, we compared oil absorbency of commercially available materials, from microfiber cloth to fiberglass, determining both a swelling ratio and oil absorbency rating on a likeness scale. Although some other materials such as cotton had a swelling ratio of as high as 25, we determined fiberglass to be the best oil-only absorber, as many of the commonly used sorbent materials also absorbed a significant amount of water. Next, nanofibers comprised of biocompatible whey protein isolate and poly(ethylene) oxide were prepared by aqueous solution electrospinning and rendered insoluble in water via heat treatment. The nanofiber mats were produced with and without the addition hydroxypropyl-²-cyclodextrin. Cyclodextrins have been used to remove unwanted substances in soil as well as from aqueous solutions via cloud point extraction. The nonwoven nanofiber mat's ability to absorb oil has been compared through efforts to remove 1 ml of sunflower oil, olive oil, and toasted sesame oil from 10 ml of deionized water. The mats were also submerged in 5 ml of pure sunflower oil, olive oil, and toasted sesame oil. Finally, the mats were used to remove sunflower oil and olive oil from a mixture of deionized water and food-safe dye. Swelling ratios were used to compare the mat performance. We determined that, while the cyclodextrin-loaded nanofiber mats were able to remove the most pure deionized water, mats without cyclodextrin were able to remove more oil from the water-oil mixture as well as retain more pure oil.	UO9
Exploration of Microbial Diversity in Serpentinite Habitats, Emilee K. Quinn, Katrina I. Twing, Alyssa N. Kloysuntia, William J. Brazelton, Matthew O. Schrenk, PhD, Department of Biology, East Carolina University, Greenville, NC, 27858	
Serpentinization is a geological process that occurs when water reacts with rocks from the Earth's deep interior. This process creates an extreme environment for life characterized by energy-rich, high pH (10-12) fluids that favor the growth of unique alkaliphilic microbial communities. Although serpentinites occur throughout the world, very little research has been done to describe the microbiology of these habitats. Microbes that are known to be found in these extreme environments have been shown to have important implications in astrobiological studies and in global warming investigations. Microbial ecosystems from three geographically distinct continental serpentinites in Canada, Italy, and the U.S. were sampled from 2009-2012 and analyzed using enrichment cultures and culture-independent approaches. Microbial isolates were obtained on organotrophic pH 11 media. The DNA of these isolates was extracted, sequenced, and used in terminal-restriction fragment length polymorphism (T-FRLP) analyses of the 16 rRNA gene. The fingerprint generated through T-RFLP analysis for each microbial isolate was compared to the sequence data for that isolate in order to both identify and characterize the microbe. A T-RFLP profile was generated from environmental samples from complex microbial communities existing in one-of-a-kind rock cores obtained from the serpentinite subsurface in northern California to investigate the occurrence of the cultivars. This project will provide a sense of both the microbial diversity and ecology in the high pH subsurface habitat, and findings can be compared with data generated from serpentinite sites throughout the world.	UO10

Does egg shell coloration influence parental care in the Eastern bluebird?, William Davis, East Carolina University, Greenville, NC 27858	
Biliverdin is an antioxidant that has been linked to blue-green coloration in the shells of avian eggs. Previous studies have shown a negative correlation between plasma antioxidant levels and pigment levels in egg shells. We thus expect there to be an adaptational advantage to allocating an antioxidant into egg shells, and it has been proposed that the blue-green coloring produced by biliverdin in egg shells may act as a signal to mates of female quality. One prediction from this hypothesis is that males mated to females who produce brightly colored eggs should invest more in parental care. We have investigated parental feeding rates and egg shell coloration in Eastern bluebirds (Sialia sialis) over one breeding season. The Eastern bluebird lays blue eggs. Yet this species nests in cavities, where we would not expect crypsis to be a strong factor in shell color evolution. Of our 32 nests 26 were occupied by bluebirds and each pair raised an average of 2 broods. Broods that were laid within 2 days of each other and differed noticeably in egg color were swapped between nests. Newly hatched nestlings were swapped back after hatching to control for the possible confounding factor of signaling by different quality chicks hatched from experimental eggs. Because we seek to only measure difference in feeding rate due to egg color, allowing the parents to raise their own chicks in both control and experimental nest assures that the only difference is egg color during incubation. Through both visual and camera observations we obtained the feeding rates of both male and female bluebirds. Preliminary results do not suggest any association between egg brightness and total male feeding rate, nor an association between egg brightness and male feeding rate per chick.	UO11
Investigation of the Formation and Degradation of Urea Linkages Formed Between Aromatic Isocyanates and Aromatic Amines using Model Compounds and in-situ Kinetic NMR Spectroscopy, Jason Atkinson, East Carolina University, Greenville, NC 27858	
Polyurethanes, a relatively broad class of technologically and commercially important materials are based primarily on isocyanate chemistry. Aliphatic and aromatic isocyanates readily react with alcohols and amines to form urethane and urea linkages (respectively). This chemistry forms the basis for vast majority of polyurethane synthesis. While some urethane and urea connective groups can be subject to hydrolysis or oxidative degradation under some conditions, many years of research and experience has shown that they are generally very stable. During elevated temperature degradation studies of poly (urea-urethane) copolymers conducted in our laboratories, some questions emerged regarding the stability, potential reversibility or possible exchange reactions of urea linkages formed between aromatic isocyanates and aromatic amines. In order to further understand these results and potentially exploit this finding to our advantage, we have designed and synthesized model compounds to allow direct observation of the groups in question using in situ kinetic 1H NMR spectroscopy. Model compounds have been synthesized and characterized using Electrospray Ionization Mass Spectrometry and 1H NMR spectroscopy and preliminary kinetic experiments have been carried out. Initial studies have been conducted using commercially available carbodiimide modified 4, 4-methylenediphenyldiisocyanate and 4,4-Methylenebis(N-Sec-Butylaniline). Further kinetic experiments involving these and related compounds coupled with the synthesis of selected new secondary aromatic amines are currently underway.	UO12

An Examination of the Psychological & Neurological Mechanisms of Mindfulness Meditation Practice, Suzanne M. Frisbee, Christyn L. Dolbier, PhD, Department of Psychology, East Carolina University, Greenville, NC 27858	UO13
Background: The stress levels of college students are much higher than other groups. Mindfulness meditation (MM), the practice of focusing one's attention on the present moment without judgment, is an empirically supported stress reduction technique that is effective in reducing overall negative mood. Understanding the underlying mechanisms of MM can aid in the refinement of MM interventions, resulting in brief and effective MM that can be integrated into the busy lives of college students. Proposed mechanisms include specific brain activity experienced meditators achieve that corresponds to focused attention and emotion regulation. Of particular relevance to MM are theta brain waves in the frontal brain region that correspond to attentional processing, left-sided frontal activation that corresponds to emotion regulation, and alpha brain waves in the posterior brain region that correspond to relaxation. Purpose: The aims of this study are to: 1) examine the effects of MM on brain activity in a sample of undergraduates; and 2) relate brain activity to proposed psychological mechanisms by which MM achieves its benefits. Methods: This study began in the fall semester of 2011 and is ongoing through the spring 2012 semester. It employs an experimental within-group research design in which each participant receives a one-week MM intervention. Thirty undergraduates recruited through the Psychology Department's participant pool attend two identical lab sessions one week apart. Lab sessions will include: 20 minutes of MM led by instructional CD; brain activity assessed using an electroencephalogram before and during MM; and psychological measures assessed using surveys before and after MM. Participants are instructed to practice MM daily for one week in between lab sessions. Hypotheses: I hypothesize that compared to baseline levels, during MM participants will have greater: 1a) frontal theta activity; 2a) left-sided frontal activation; and 3a) posterior alpha activity. I further hypothesize that: 1b) frontal theta activity will correspond to self-reports of greater focused attention; 2b) left-sided frontal activation will correspond to self-reports of greater positive affect; and 3b) posterior alpha activity will correspond to self-reports of greater relaxation. I expect my hypotheses to show some support from the first lab session, but even stronger support from the second lab session.	

Business School Forecasting for the Real World, Jacob Davis, John Kros Phd., East Carolina University, Greenville, NC 27858	
Business schools are only as good as their ability to match their curriculum with techniques that industries and individual firms use to be profitable. Forecasting is a huge part of what many industry and firms use to try to predict budgets and to provide some guidance to the direction the business is headed in. This paper focuses on forecasting and how well businesses match up with what the industry professionals require. Forecasting is such an important tool and it is increasingly becoming more and more complex. It is important for firms to be able to forecast so that they can be more certain of the direction that the business is taking and possibly prevent any huge setbacks before they happen. The results of the test performed in this experiments show that, business school are indeed teaching students the forecasting tools that business students need to be successful in an industry setting. Further this paper explores the tools that business schools and firm use to conduct their forecasting. The paper discusses the issue of trying to align the software learning curve between industry expectations and business school curriculum.	UO14
A New Approach to a Given Solution, Angelina Knies, Secondary Mathematics Education, East Carolina University, Greenville, NC 27858	
Research literature states that all students are capable of age-appropriate algebraic reasoning. The teaching and learning of algebra is often found in the middle grades curriculum. However, middle grades students are often asked to solve equations in a procedural manner with little conceptual understanding. The question considered in this project is whether an appropriate curriculum can be developed for middle grades students such that they can solve linear equations with more conceptual understanding by integrating mathematical ideas commonly seen in undergraduate Modern Algebra.	UO15
Understanding Creatively Gifted Students: Pre-Service Teachers' Understandings and Professors' Practices, Maria E. Avery, Elizabeth A. Fogarty, East Carolina University, Greenville, NC 27858	
During the course of their education, teacher education students are exposed to a variety of teaching strategies to support the average student in their classrooms. These strategies can work for all types of students when adjusted, but creatively gifted students can benefit greatly from other approaches. A review of literature surrounding this topic shows that the lack of undergraduate training to teach pre-service teachers to support creatively gifted students is a problem for graduates of teacher training institutions across the country, as well as practicing teachers. In order to address this, we will analyze the relationships between education professors' practices and pre-service teachers' understandings. We will also determine whether an online module influences pre-service teachers' beliefs about the characteristics and practices for use with creatively gifted students. The module includes a description of characteristics of creatively gifted students, how to support these students, and examples of these types of students. Still in progress, research findings will be reported at the time of the presentation. However, we predict a positive improvement in the pre-service teachers' attitudes towards working with creatively gifted students.	UO16

Effects of a Potential Mate's Presence on Athletic Performance, Nicholas Thomas, Dr. Michael Baker, East Carolina University, Greenville, NC 27858	
This research aims to test for effects of the presence of an attractive female on male athletic performance. Ronay and von Hippel (2010) performed research that suggested that men use physical risk taking as a sexual display strategy in the presence of females viewed as potential mates. The current study extends Ronay and von Hippel's research by testing athletic performance as a sexual display strategy in the presence of an attractive female. Three competing hypotheses will be tested. Hypothesis 1 states that the presence of the female confederate will boost athletic performance in men, regardless of their current relationship status. Hypothesis 2 states that the presence of the female confederate will increase the performance of men who are single but have no impact on the athletic performance of men in committed relationships. Hypothesis 3 states that men in committed relationships will reduce their performance level when the female confederate is present in order to preserve their current relationship. Participants will be asked to complete two tests of athletic performance, the dumbbell chest press and bicep curls. Male participants completed the exercises with an attractive female confederate present in one session and with no attractive female confederate present in a different session.	UO17
Comparing the Health Locus of Control among Caucasian and Hmong College Students, Doaw Xiong, BSW, Tracy Carpenter-Aeby, Ph. D, LCSW, The School of Social Work, College of Human Ecology, East Carolina University, Greenville, NC 27858	
The Hmong people are among the many ethnic minorities that could be found throughout the United States. The fourth largest population of Hmong resides in western North Carolina. Originally from Southeast Asia, the Hmong relied solely on Shamans, who are spiritual healers, and traditional herbal medicine to help them stay healthy. Once in the United States the Hmong face exposure to external factors that may alter their health beliefs and practice such as fast food, indoor employment, and dramatic changes in life style. Such changes may affect cultural roles and individual responsibilities. When Hmong adolescents leave home to go to college, they experience individual freedom to choose their own health behaviors. Caucasian college students, who have been exposed to fast food and western medicine throughout their lives, may have different beliefs about health than the Hmong. This study seeks to compare the health locus of control among Hmong and Caucasian students using the Multi-Dimensional Health Locus of Control Scale (MHLC), Form A. The MHLC scale, Form A is constructed of 18 questions, with a six-item subscale that focuses on the factors of internal, powerful external, and chance. College students were invited to participate anonymously by email and social media utilizing Qualtrics, similar to Survey Monkey. Based on the rapid acculturation of Hmong families in the US and the social pressure to adopt the college lifestyle, we predict that there will be no difference between Hmong and Caucasian College students. Keywords: Caucasian, Hmong, Multi-dimensional health locus of control, internal, powerful external, chance	UO18

Scanning the B&B industry for current marketing practices: Research in progress, Rose Bobbitt, Mary Sanderson, Alleah M. Crawford, PhD, East Carolina University, Greenville, NC 27858	
Bed and breakfasts have over 17,000 establishments scattered throughout the U.S., worth an estimated 3.4 billion dollars (PAII). The B&B establishment has an average of four to eleven guest rooms that generally include a private bath and high speed, wireless internet (PAII). Approximately 79% of B&B owners and operators live on the premise (PAII). According to our scan of the literature, the most recent study regarding B&B specific marketing practices was conducted by Lee, Reynolds, and Kennon and published in 2003. In this study several marketing strategies were investigated, including brochures, yellow pages, newspaper and magazine articles, etc. (Lee, Reynolds, Kennon, 2003). Interestingly social media, a common tool used in marketing today, was not included. This supports the need for an updated understanding of marketing practices specific to today's B&B industry. It is stated in numerous articles that marketing is a key task for B&B operations but unfortunately is not a priority (Davies, Hardy, Bell, & Brown, 1996). Therefore this study seeks to investigate current marketing strategies and practices among bed and breakfast operators. An engaged model will be used for this project, where the partner and the research team work together meeting the needs of the organization while conducting the study; creating a reciprocal relationship between the organization and the research team. The partner for this study is a quality-focused organization specific to the bed and breakfast industry. Data will be gathered using semi-structured interviews approximately 45 minutes to 1 hour long. Participants must be an operator of a B&B and a member of our partner organization. A funneling technique will be used to build rapport with the participants. From here a qualitative analysis will be conducted using four individual coders. Data collected will be analyzed for identification of current marketing practices.	UO19

Can a One Week Mindfulness Meditation Intervention Have Substantive Psychological and Physiological Benefits?, Benjamin Aydelette, Dr. Christyn Dolbier, Department of Psychology, East Carolina University, Greenville, NC 27858	UO20
Background: Mindfulness meditation (MM) entails awareness of sensations, feelings and thoughts in the present without judgment or reactivity. Eight-week MM training reduces stress in populations both psychologically and physiologically. Increases in mental relaxation, decreases in emotional distress and in blood pressure have been observed. MM has also been associated with increased heart rate variability, indicative of heart health and responsiveness to the environment. Recent studies suggest shorter MM training, ranging from three day to six week interventions, may be effective. Purpose: This study aims to examine psychological and physiological benefits of one-week MM in a sample of undergraduates. Undergraduates tend to experience greater stress than other populations, and thus may benefit from such a stress management intervention. Significance: If meaningful reductions in psychological and physiological manifestations of stress are achieved with shorter MM training, the time and effort required for longer-term MM training may be unnecessary. An effective short term MM intervention may allow populations requiring a relatively quick change in lifestyle may be able to use MM, and may provide a viable stress management intervention for undergraduates, who often have very little time. Methodology: Participants (N=30) recruited from the Psychology Department's participant pool attend two identical lab sessions separated by one week. During lab sessions, participants undergo 20 minutes of MM with an instructional CD, complete surveys before and after MM that assess relaxation, mindfulness, stress and anxiety, and an electrocardiogram (ECG) records their heart rate variability (HRV) before and during MM to assess PNS (high HRV) and SNS (low HRV) activity. For the one week interval between sessions, participants practice MM daily for 20 minutes with the MM CD. Hypotheses: Participants will demonstrate greater relaxation and mindfulness, and less stress and anxiety after MM compared to baseline. Participants will demonstrate greater parasympathetic nervous system (PNS) activity (reflecting calm and homeostatic balance), and less sympathetic nervous system (SNS) activity (reflecting stress arousal) during MM compared to baseline. I expect my hypotheses to show some support from the first lab session, but stronger support from the second lab session.	

Pink Ribbon vs. Red Dress: Does Over-marketing Cause Misconceptions about Women's Health Risk?, Carlyn Whtten, Maureen Thomas, Sierra Bowser, East Carolina University, Greenville, NC 27858	
Cause-Related-Marketing (CRT) is a common marketing practice used by corporations or brands to benefit a selected cause through consumers' purchase of certain products. There are critiques, however, challenging such common marketing practices about either the motivation behind a corporation's CRT strategy or the nature of the consumption approach to solving social problems (Amazeen, 2011; Nickel & Eikenberry, 2009). The purpose of this study was to compare the Pink Ribbon (breast cancer awareness) and Red Dress (cardiovascular disease awareness) campaigns and explore the relationship between consumers' exposure to these campaigns and their perception of leading health risks facing women. A survey questionnaire was distributed randomly and 106 surveys were completed and usable. The survey contains nominal, ordinal, interval and dichotomous questions related to demographics and the two causes. The results showed that 47% of respondents selected breast cancer as the number one cause of death among women and 47% identified cardiovascular disease as the number one cause of death. Breast cancer accounts for one in twenty-nine deaths among women while cardiovascular disease causes one of every 2.4 deaths of women (Schroetter & Peck, 2008). Paired T-test indicated that the respondents' awareness and exposure to breast cancer related marketing and advertisement (mean = 3.8, 4.1) were significantly higher (p = .0000; .0000) than those related to cardiovascular disease (mean = 2.6, 2.3). 94% of the respondents purchase items that contributed to the breast cancer cause while only 22% purchased items related to cardiovascular disease causes. When demographic factors, such as race, income and gender, were applied for between group comparisons, significant differences were found with a number of factors between White and Black respondents, between lower income and higher income groups and also between male and female. In conclusion, this study found that there was a misconception by nearly half of the respondents of identifying breast cancer being the number one health risk, and that the respondents' awareness of , exposure to and participation in breast cancer cause campaign were significantly higher than those related to cardiovascular disease. This suggests that breast cancer awareness commercial marketing may have overshadowed cardiovascular disease awareness.	UO21

Undergraduate Poster Abstracts	ID#
Analyses of the human parainfluenza virus type 3 RNA polymerase predomain in vivo, M. Addington-Hall, G. Wells, A. Malur, Department of Microbiology and Immunology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	UP1
Human parainfluenza virus type 3 (HPIV 3) is a non-segmented, negative-sense RNA virus and a member of the genus Respirovirus within the subfamily Paramyxovirinae. HPIV 3 is second only to respiratory syncytial virus as the causative agent of lower respiratory tract infections leading to bronchiolitis, pneumonia and croup in children, elderly and immunocompromised patients. The lack of effective vaccines or antiviral agents demands the generation of novel vaccine candidates. Here, we have initiated studies to generate mutant viruses by targeting the large, multifunctional HPIV 3 RNA polymerase (L) protein. The HPIV 3 L protein (250 kDa), like other Paramyxovirinae L proteins, comprises of six highly conserved domains that are essential for transcription and replication of the 15,462 nucleotide viral genome that is arranged in the order 3-[leader(le)-N-P-M-F-HN-L trailer(tr)]-5. A previous study identified the presence of another highly conserved domain located within the NH2 terminus of the L protein. Mutational analyses of I13, L14, Y15 and P16 amino acid residues within this domain demonstrated their importance in regulating viral transcription and replication in vitro. In this study, individual mutations of I13A, L14A, Y15A and P16A residues were introduced into the full length anti-genome RNA that additionally harbours the gene encoding the green florescent protein. Following transcription of the individual full length anti-genome RNA and plasmids encoding N, P and L proteins into HeLa cells, mutant viruses were rescued and plaque purified. Further studies are currently in progress to examine the transcription and replication profiles of these mutant viruses.	
Relative Muscle Force Steadiness and Visual Steadiness in Young Adults, Luke Spangler, Kathryn Reynolds, Rebecca Krupenevich, Patrick Rider, Dr. Nicholas Murray, Dr. Paul DeVita, Department of Kinesiology, East Carolina University, Greenville, NC 27858	UP2
The ability to exert steady muscle forces is critical for accurate neuromuscular function to carry out activities of daily living. Muscle force variability is often measured with visual stimuli directing the magnitude of muscle force. We hypothesize that subjects with increased visual variability also have increased muscle force variability. The purpose of this preliminary study was to investigate the relationship between visual steadiness and muscle force steadiness among young adults. Four subjects performed three vision dependent force tasks using eye tracker glasses and a dynamometer. Muscle force was controlled in all tests by watching a visual stimulus on a monitor with its vertical position proportional to muscle force. First test required subjects to contract the quadriceps muscle isometrically at a relative force of 40% of maximum quadriceps torque for 8 seconds. Second test required isometric quadriceps contractions increasing linearly from 0 to 40% of maximum torque and then decreasing linearly to 0%. Third test has isometric quadriceps contractions increasing in a parabolic pattern from 0 to 40% maximum torque and then decreasing in a parabolic pattern to 0%. The mean 40% maximum torque for all subjects was 90 ± 30 Nm. The preliminary data showed that for horizontal and linear increase to decrease tests increased visual variability was directly related to increased muscle variability. The parabolic test showed no relationship between muscle and vision variabilities. These preliminary data give tentative support for our hypothesis suggesting that there is a relationship between muscle force variability and visual variability during the	

relative force tests. These results may be influenced by the small sample size or inaccuracies with the eye tracker equipment. After collecting more subject data we will continue to calculate and analyze the correlation between force steadiness and visual steadiness in young.	
Absolute Muscle Force Steadiness and Visual Steadiness in Young Adults, Kathryn Reynolds, Luke Spangler, Rebecca Krupenevich, Patrick Rider, Dr. Nicholas Murray, Dr. Paul DeVita, Department of Kinesiology, East Carolina University, Greenville, NC 27858	UP3
The ability to exert steady muscle forces is critical for accurate neuromuscular function. Past studies showed that reduced muscle force steadiness was based on visual stimuli. Therefore the ability to visually perceive the stimuli may affect the muscle force output. We hypothesized that there was a direct relationship between muscle force steadiness and visual steadiness. The purpose of this preliminary study was to identify the relationship between muscle force steadiness and visual steadiness in young adults all adults exerted the same absolute muscle force. In this preliminary data set, four healthy subjects performed three vision dependent force tasks using eye tracker glasses and a dynamometer. For each task, the target or peak torque (directly proportional to muscle force) was set at an absolute value of 54 Nm. The first test required participants to contract the quadriceps isometrically at a constant target force of 54 Nm for 8 seconds. The second test involved isometric quadriceps contractions increasing from 0 Nm to 54 Nm and then decreasing to 0 Nm in a linear manner. The third test, like the second, involved quadriceps contractions increasing from 0 Nm to 54 Nm and then decreasing to 0 Nm in a parabolic curvilinear manner. Subjects controlled muscle force based on visual feedback by viewing the vertical position of an icon on a computer monitor that was proportional to the force. After collecting preliminary data from four young adults, we calculated and analyzed the relationship between force steadiness and visual steadiness. Only the parabolic test showed a direct relationship between muscle and visual steadiness. Whereas the other two tests surprisingly showed inverse relationships. These preliminary data did not strongly support our hypothesis that there is a direct relationship between muscle force steadiness and visual steadiness when all subjects performed at the same force level. This may be in part due to the small sample size or inaccuracy in the eye tracking glasses.	

Differentiation of Candida dubliniensis and Candida albicans isolates collected from three clinical microbiology labs in Eastern North Carolina, Brittany V. Whitehurst, Katie N. Casto, Mallory A. Herbold, Department of Clinical Laboratory Science, College of Allied Health Sciences, East Carolina University, Greenville, NC 27858	
Candida albicans is the most frequent fungal pathogen isolated from patient specimens in clinical laboratories. This species is identified based on only a few phenotypic characteristics, primarily the colonial characteristics and the production of a germ tube structure under specific in vitro conditions. Recently another species, C. dubliniensis, has been found to be a significant pathogen in individuals with cell-mediated immunodeficiencies. C. dubliniensis and C. albicans have many phenotypic characteristics in common (colonial and germ tube production), making it difficult to easily differentiate them. A therapeutic concern is that C. dubliniensis isolates have shown increased resistance to fluconazole, a common anti-fungal agent. Therefore, the purpose of this research project is to evaluate additional testing methodologies that would effectively differentiate these species in the clinical lab. Yeast isolates identified as C. albicans were collected from three E. NC hospital clinical microbiology labs. Each patient isolate and control strains of C. albicans and C. dubliniensis were tested to determine tolerance to 43 C temperature and to 6.5% NaCl. Typically C. albicans is positive for both tests, and C. dubliniensis is negative. A standardized inoculum was added to the test media and the plates incubated for 48 – 72 hours. Those isolates demonstrating good growth or slightly less growth on test media were interpreted as positive (likely C. albicans); those demonstrating no growth on test media were interpreted as negative (likely C. dubliniensis); and isolates producing significantly less growth on test media were interpreted as equivocal (either C. albicans or C. dubliniensis). To date, a total of 78 Candida isolates were obtained and 77-80 % were C. albicans (60/78 and 62/78 for 6.5% NaCl and 43C growth, respectively). Candida dubliniensis was isolated at 8 11.5% (8/78 and 9/78 = no growth at 43C or on 6.5% NaCl, respectively). Approximately 10-11.5 % of the isolates yielded equivocal results (8/78 and 9/78 = reduced growth at 43C and on 6.5% NaCl, respectively) which would require repeat or additional testing to definitively identify. This preliminary study indicates that C. dubliniensis is present in the patient population in E. NC and that differential testing should be performed on a more routine basis in clinical laboratories.	UP4

Impact of Crude Oil Exposure on Caenorhabditis elegans Locomotion Behavior and microRNA Expression, Adrien Ennis, Yanqiong Zhang, Xiaoping Pan, East Carolina University, Greenville, NC 27858	
In April 2010, the tragic oil spill happened in the Gulf of Mexico. The economic, environmental, and human health impacts of the Deepwater Horizon oil spill have been widely concerned by the public and scientists. One of the response actions was injecting tons of chemical dispersant into the flow of raw oil. In this study, we used Caenorhabditis elegans (C. elegans) as an animal model to test the effects of exposure to oil and dispersant on locomotion behavior and microRNA (miRNA) expressions. The C. elegans L4 larvae were dosed with raw oil and dispersant at three different concentrations. The locomotion behavior of C. elegans were then analyzed using a worm tracker system. The miRNA gene expression that related to locomotion and stress response were analyzed using quantitative real-time PCR. The mean behavior of each exposure group can then be compared with a control to determine any effects resulting from exposure to oil, dispersant, or both oil and dispersant. Several selected miRNA genes are aberrantly expressed following exposure. This work is useful to analyze miRNA-mediated mechanism of behavioral changes under oil exposure.	UP5
HTLV-1-encoded protein, HBZ, stabilizes c-Jun expression, Oppah Kuguyo (Bristol Exchange Student), Nicholas Polakowski, Isabelle Lemasson, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Human T-cell leukemia Viruses (HTLV) are complex delta-retroviruses that do not contain proto-oncogenes in their genome yet are capable of transforming primary T lymphocytes. HTLV has four known strains: HTLV-1, HTLV-2, HTLV-3, HTLV-4. While most strains do not cause disease, HTLV-1 causes Adult T-cell Leukemia (ATL) and HTLV-1 Associated Myelopathy /Tropical Spastic Paraperesis (HAM/TSP). HTLV-1 basic leucine zipper (HBZ) is a viral protein encoded by the anti-sense mRNA and is expressed in all individuals infected with HTLV-1. HBZ contains three domains: an activation domain, a central region important for nuclear localization and a basic leucine zipper domain (bZIP). HBZ is localized in the nucleus with heterochromatin and euchromatin, hence suggesting a strong association with transcriptional modulation. HBZ interacts with host factors that also contain a bZIP domain such as CREB, CREB2, c-Jun, JunB and JunD. The Jun family proteins function by regulating the expression of a myriad of genes in a variety of tissues and cell types. Interestingly, the level of c-Jun is increased in HTLV-1 infected cells. We found by Western blots that HBZ increases the level of c-Jun. Because HBZ did not increase the levels of c-Jun mRNA, we propose that HBZ stabilizes the c-Jun protein. We are in the process of determining the mechanism by which HBZ stabilizes c-Jun.	UP6

Excitotoxic dorsal horn injury induces inflammatory changes in dorsal root ganglia below the level of injury, Stefania Blevins, Kori L. Brewer, Ph.D., Elizabeth Dugan, Ph.D, Brian Whitfield, Brody School of Medicine, Department of Emergency Medicine, Division of Research, East Carolina University, Greenville, NC 27858	
Behavioral manifestations of post-spinal cord injury (SCI) pain are similar to what has been described after peripheral nerve injury, and include hypersensitivity to both mechanical and thermal stimuli. The current study examines they hypothesis that excitotoxic destruction of the deep dorsal horn leads to pathological changes within the peripheral nerves below the level of injury that mimic those seen with direct peripheral nerve injury. This includes changes that are correlated with neuropathic pain after injury such as increased expression of inflammatory cytokines. Twelve, Long-Evans rats underwent dorsal horn injury through intramedullary injection of quisqualate (QUIS) at the T12 spinal level. Control (Sham) animals recieved an equal volume of saline. Dorsal root ganglia (DRG) were processed for immunohistochemistry and double-stained for TNF-alpha and GFAP, or TNF-alpha and NF-200. The remaining DRG were homogenized and protein extracted for determination of TNF-alpha levels by ELISA. TNF-alpha protein levels in DRG were compared between QUIS- and saline-injected animals. DRG from QUIS-injected animals showed increased expression of TNF-alpha below the level of injury compared to sham animals. TNF-alpha expression was localized to both astrocytes and neurons. The current stidy suggests that central neuropathic pain may share a mechanism with the neuropathic pain that arises from the peripheral nerve injury, and that treatments directed towards protecting and restoring peripheral nerve function may aid in the treatment of central neuropathic pain.	UP7
Chemokines and Pro-tumor Neutrophils May Contribute to the Pre-Metastatic Niche, Jered Cope Meyers, George Howard, IV, H Keith Pittman, Zachary Phillips, Dare Moore Imes, David Milbourn, Kathryn M. Verbanac, Department of Surgery, The Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Most cancer deaths result from tumor metastases or their complications. Pre-metastatic niche refers to a tissue microenvironment that supports tumor cell attachment and growth. It has been reported that bone marrow-derived cells migrate to specific locations prior to tumor cells. Neutrophils have been isolated from tumors with anti-tumor N1 or pro-tumor N2 phenotypes but their role in metastatic development is unknown. HYPOTHESIS: Pro-tumor neutrophils are one of the cell types that establish a pre-metastatic niche. METHODS: We tested our hypothesis in studies using a murine Lewis Lung adenocarcinoma (LLCa) in vivo metastasis model. C57Bl/6 mice (n=20-28) were injected s.c. with 10^5 LLCa cells and sacrificed sequentially 12-31 days later, before and after established lung metastases. Lung tissue was homogenized and assayed for cytokines by ELISA and for total protein. Lung sections were stained for neutrophils by Ly6G (1A8) immunohistochemistry and with H&E to detect tumor cells. RESULTS: Tumor cells metastasized to the lungs with increasing time and primary tumor growth. Levels of all cytokines were low or undetectable in normal lungs from naïve mice	UP8

(n=5-7/group). In contrast, the neutrophil chemoattractant KC/CXCL1 was elevated in lung tissue from tumor-bearing mice, starting at 2 weeks and increasing over time (slope=14.3 vs. normal lung=0.9; $p<0.001$). MCP-1/CCL2, a marker of N2 neutrophils, also increased consistently over time in pre-metastatic lung tissue of study mice (slope=56; $p<0.05$) and was highest in lung metastases compared to normal lung (874 vs. 33 pg/mg protein; $p<0.01$). In contrast, TNF-alpha, a marker for N1 neutrophils, remained low or undetectable in lung tissue throughout metastatic tumor development. Neither active nor total TGF-beta, the putative control switch for the pro-tumor phenotype, was elevated in pre-metastatic tissue. Ly6G+ neutrophils were detected in the lungs of all study mice, exhibited the greatest density around lung tumors and tumor vasculature, and were most dense in tumor-bearing mice. CONCLUSION: The neutrophil localization and the profile of proteins expressed in lung tissue prior to detection of tumor cells support our hypothesis that pro-tumor N2 neutrophils assist in the formation of a pre-metastatic niche. Ongoing studies are using RT-PCR to detect tumor cells and to further define neutrophil subtypes.	
Borrelia burgdorferi periplasmic flagellar proteins FliP and FliQ are important for flagellar biogenesis, K. Lees1, X. Zhao2, J. Liu2, M. Motaleb1, 1 Deptartment of Microbiology and Immunology, East Carolina University, Greenville, NC 27858, 2 Deptartment of Pathology and Lab Medicine, University of Texas medical School at Houston	UP9
Borrelia burgdorferi is the causative agent of Lyme disease. The disease is the most prevalent arthropod-borne infection in the United States and Europe (e90% of all cases). The number of Lyme disease cases reported to the CDC increased 300% between 1997 and 2009. The disease is transmitted to humans by the bite of the Ixodes scapularis tick infected with the spirochete B. burgdorferi. The spirochete disseminates from the site of infection to eventually inhabit a multitude of host tissues e.g., skin, joints, nervous system, and the heart causing Lyme arthritis, cardiac anomalies and nervous system disorders. Deaths have also been attributed to Lyme disease. No vaccine is currently able to prevent the disease. Motility and chemotaxis are known to be required for host tissue colonization and disease production by many bacteria; however these processes have not been rigorously characterized in B. burgdorferi. In this communication we are analyzing two periplasmic flagellar proteins FliP and FliQ. These proteins share 45% and 39% amino acid sequence identity with respective proteins from other bacteria such as Helicobacter pylori. Previous studies conducted in Helicobacter pylori, show that fliQ and other mutants from this gene group, are non-motile and aflagellated. A similar phenotype was seen in fliQ and fliP mutant strains we constructed in B. burgdorferi. Wild type cells have a wave-like morphology whereas the mutants are rod-shaped and non-motile. Further investigation using Cryo-electron microscopy tomography will be used to determine how their periplasmic flagella and motors have changed. Additionally, similar to our other non-motile mutants, we predict that these paralyzed mutants will be unable to establish an infection in experimental mice suggesting that motility is important for B. burgdorferi virulence.	

AMP-Activated Protein Kinase Inhibits Transforming Growth Factor-beta Mediated Cell Cycle Progression and Proliferation of Vascular Smooth Muscle Cells, Jackson R. Vuncannon, Joshua D. Stone, David A. Tulis, East Carolina University, Greenville, NC 27858	
Vascular growth disorders are a major contributing factor to cardiovascular disease, the leading cause of morbidity and mortality in the United States. Activation of normally quiescent vascular smooth muscle cells (VSMC) by various growth factors results in an aberrant proliferative phenotype, a characteristic of and a primary mechanism for cardiovascular disease processes. Transforming growth factor-beta (TGF-B) is a multifunctional signaling protein capable of potent growth stimulation via its traditional Smad signaling cascade. Although TGF-B/Smad signaling is well characterized in many tissues, its regulatory role in VSMCs and in particular, vasculoproliferative disorders, remains uncertain. Recent data from our lab and others implicate the metabolic regulator AMP-activated protein kinase (AMPK) in the inhibition of VSMC proliferation and implicate a role for TGF-B in this process. Therefore, this investigation explored the hypothesis that AMPK inhibits VSMC proliferation by reducing TGF-B-mediated cell cycle progression. Preliminary data reveal that treatment of rat primary VSMCs with the AMPK agonist AICAR significantly decreased the pro-synthetic activity of Smad3 and concomitantly increased expression of inhibitory Smad7 after 24 hours. AMPK activation specifically reversed TGF-B-mediated increase in the G0/G1 cell cycle regulator cyclin D1 and its dependent kinase CDK6. AICAR treatment also significantly reduced TGF-B-mediated CDK2 expression. Moreover, AICAR induced significant increases in the CDK inhibitors p21 and p27. Functionally, AICAR significantly reduced the G2/M phase cell population in TGF-B-stimulated VSMCs while promoting G0/G1 cytostasis after 24 hours and reduced total cell numbers after 48 hours. Taken together, these comprehensive findings show that AMPK has capacity to inhibit VSMC proliferation by inhibiting TGF-B/Smad-induced cell cycle progression. These results provide a unique link between AMPK and TGF-B/Smad signaling in VSM biology and provide insight into a possible therapeutic approach for the prevention of deviant VSMC proliferation associated with vascular growth disorders.	UP10
Psf2 Mediation Through the Chk2 Checkpoint Pathway, Samantha Mandel, Dr. Christensen, East Carolina University, Greenville, NC 27858	
We use the model organism D. melanogaster to investigate the role of DNA replication proteins in maintaining genomic integrity and facilitating chromosome condensation. As a contributing member of the lab, our primary objective is to examine the interaction between Psf2 and Chk2. In D. melanogaster, Psf2 is a subunit of the GINS complex which interacts with MCM2-7 and Cdc45 to comprise the larger CMG complex. The CMG complex provides the helicase function making DNA replication and elongation possible. Preliminary evidence from our lab shows that reduced expression of Psf2 results in an M-phase delay as well as defects in chromosome condensation and oogenesis. Furthermore, 35% of animals with a haploinsufficiency in Psf2 display apoptosis in ovaries. Our hypothesis is that the damage caused by reduced expression of Psf2 is mediated through the Chk2 checkpoint pathway which is responsible for ensuring the cell is capable of transitioning from G2 to M-phase. If genomic damage is acquired during S-phase, activation of Chk2 through phosphorylation by ATM can result in a pause to repair the damage or, in the case that the damage is too severe, activation of apoptosis. To test this hypothesis we will take a genetic approach using mutations in Psf2 and Chk2 using single and double mutant fly strains generated in the lab to further examine the interaction in ovaries. If the damage caused by a mutation in Psf2 is mediated by Chk2 we expect to see suppression of	UP11

apoptotic events in ovaries in which Chk2 has been removed. If we do not see suppression of apoptotic events, other checkpoints such as Chk1 and p53 will need to be considered in future experiments.	
Microbial Cell Counts: What cell counts surround us?, Nicole M. Bermudez, Matthew Schrenk, East Carolina University, Greenville, NC 27858	UP12
Highly reducing, high pH environments associated with the serpentinization of deep Earth rocks exists throughout the world, along the continental margins. Typically, the only way to access the microbial communities that exist in the subsurface is through fluids (or seeps) from underground. High pH (10-12) seep samples were collected from California, Canada and Italy in distinct locations, such as at surface and subsurface, with differing physical and chemical characteristics such as pH, temperature, Eh, etc.. In order to discover the presence of what is found and if something is found, microbial cell counts were conducted by epifluorescence microscopy using the DNA stain DAPI. Ultrabasic pH can impact microbial function in a variety of ways such as affecting RNA stability, the proton motive force, and membrane permeability. Therefore, the number of microbes found in each site differs due to the pH level. California, Canada and Italy have samples collected from the subsurface and in between rocks with a pH around 12. The calculated microbial cell count for a Canada sample is 10^5 cells, which is similar to the 10^5 cell count found in groundwater (also known as tap water). Through the plotting of cell enumeration versus pH levels of selected samples from each site will allow determining how microbe populations are affected by pH and what are the observed microbial counts for varying levels of pH. The understanding of the existence of microbes in varying conditions is a way of understanding their roles in the environment, such as in the case of groundwater, calculating microbial cell counts allows us to know what is considered safe to drink or potentially hazardous.	

Elevated cardiac glutathione peroxidase activity is a strong predictor of adverse post-operative outcomes following cardiac surgery, Timothy M. Darden1, Kathleen Thayne1, Taylor A. Mattox1, Lalage A. Katunga1, Alan P. Kypson2, Evelio Rodriguez2, J. Mark Williams2, Curtis A. Anderson2, Theodore C. Koutlas2, Ethan J. Anderson1,2,3; 1 Department of Pharmacology & Toxicology, 2 Department of Cardiovascular Sciences, 3 East Carolina Diabetes and Obesity Institute; East Carolina University, Greenville, NC 27858	
Background: Post-operative atrial fibrillation (POAF) is a spontaneous complication that occurs in 20% - 50% of patients who have heart surgery. It lengthens the hospital stay, increases cost of treatment and has been shown to lead to further post-operative complications and shorter life expectancy. Glutathione (GSH) is a short peptide (3 amino acids) responsible for neutralizing all types of free radicals and peroxides in the body. It does so with the help of 2 enzymes, glutathione peroxidase (GPx) and glutathione reductase (GR). In experimental models, depletion of glutathione has been repeatedly shown to trigger cardiac arrhythmias. In addition, we have preliminary indications that the activity of GR and/or GPx in heart of a patient undergoing CABG surgery is strongly correlated with POAF. Methods and Results: In the present study, total GSH (GSHt) was measured in serum of ~200 patients undergoing CABG surgery. Biopsies of cardiac right atrium taken at time of surgery from these patients were assayed for GSHt, GR and GPx activity. No correlation was found between incidence of POAF and serum GSHt, cardiac GSHt and cardiac GR activity. Surprisingly, cardiac GPx activity was markedly increased in patients who subsequently went on to develop POAF, particularly in non-diabetic patients ($P<0.001$). Moreover, a strong positive correlation ($P<0.0001$) was found between cardiac GPx and post-operative length of stay (dictated by all-cause complications). Conclusions: These novel findings are exciting for the following reasons. First, it represents the first time anyone has examined the activity of redox-related enzymes in heart tissue from a large patient population and correlated the enzyme activity with post-operative complications. Second, these findings suggest that glutathione peroxidase may have potential to be used as a biomarker to predict complications following cardiac surgery (e.g. POAF, need for inotropic support, risk of infection, etc). Lastly, the data supports a growing body of evidence showing that reactive oxygen species (ROS), and the enzymes responsible for producing ROS, can be used as predictive markers for clinical outcomes in patients with cardiac disease. We are currently exploring the role that ROS-producing enzymes such as monoamine oxidase and mitochondrial oxidative enzymes play in the risk for post-operative complications.	UP13

Immunopathogenesis in Autism: Regulatory T Cells and The Effects of Developmental Exposure to Perfluorooctanesulfonic Acid (PFOS) and Perfluorooctanic Acid (PFOA) on the Cerebellum in C57BL/6 MICE, IL Bryan1, JC DeWitt2, 1 Department of Biology and Chemistry, 2 Department of Pharmacology and Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC, 27858	UP14
Developmental exposure to exogenous agents may be associated with increased autism prevalence and may trigger underlying genetic susceptibilities toward the development of autism. The emerging contaminants perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) are widespread environmental pollutants that can induce developmental and immuno-toxicities. As immunopathologies have been reported in subsets of autistic patients, agents such as PFOA and PFOS can disrupt immune system development and may contribute to autism prevalence. An immunopathology associated with autism is the presence of serum autoantibodies against brain-specific proteins, which suggests damage to the brain during development via autoreactive T cells. Our hypothesis is that developmental exposure to PFOA or PFOS will lead to changes in levels of myelin basic protein (MBP) and may increase T cell infiltration in the cerebella. C57BL/6 female mice were orally exposed to 0.02, 0.2, or 2 mg/kg of PFOA, PFOS, or a water vehicle beginning at pairing with males and continuing through weaning of pups. In the mature male and female offspring, levels of MBP and T cell infiltration in the cerebella were evaluated. No dose-dependent changes in either endpoint were observed. Additional studies to evaluate the relationship between autoreactive T cells and neural development are in progress.	
Multi-walled Carbon Nanotubes Inhibit Regenerative Axon Growth of Dorsal Root Ganglia Neurons in Mice, Dioval A. Remonde, Abdalla Raafat, Di Wu, Elena Pak, Christopher Wingard, Alexander Murashov, East Carolina University, Greenville, NC 27858	UP15
Recent evidence suggests that nano-scaled particulate matter can penetrate the blood-brain barrier, affecting brain signaling pathways that are linked to Alzheimer's and Parkinson's disease. It has also been observed that due to their size, nanoparticles may exhibit greater toxicity to human tissue and cell cultures, resulting in increased oxidative stress, inflammatory cytokine production and cell death. However, the mechanism of nanomaterial toxicity on the nervous system has been poorly investigated. Addressing the question of what changes nanoparticles trigger in nerve cells could lead to discovering detectors that arise before the manifestation of physiological defects. In our research we examined if direct and indirect exposure of primary neuronal cell cultures to nanoparticles may compromise regenerative axon growth. The regenerative response was induced by a sciatic nerve crush five days prior to the collection of dorsal root ganglia (DRG). DRG cultures were cultured at low density and incubated overnight with different concentrations of multi-walled carbon nanotubes. Analysis of results indicated a significant decrease in axonal length and branching after direct exposure of DRG cultures to Multi-walled carbon nanotubes (MWCNT) in comparison to cultures incubated with the vehicle (10% surfactant). Neurite growth showed a significant decrease at 1 ¼g/ml while axonal branching significantly decreased at a 5 ¼g/ml MWCNT concentration. A separate group of mice were used to examine the indirect effects of MWCNT in sciatic nerve	

regeneration in vivo. These mice were exposed to sciatic nerve injury and then instilled with MWCNT at a concentration of 4 ¼g/g bodyweight. The functional recovery after nerve injury was examined at several distinct time points (2, 4, 7, 14, & 21 days) using von Frey test and a walking track assessment. Results indicated that mice instilled with MWCNT showed a decrease in trend for restoration of sensory and motor function in comparison to mice instilled with the vehicle (10% surfactant), but the results were not significant. The cell culture results from direct and indirect exposure of multi-walled carbon nanotubes indicates that nanoparticles may have a detrimental effect on regenerative axon growth and may potentially trigger axonal pathology.	
The Effects of Synaptopodin 2 Overexpression in Colon Cancer Cells, M. Campbell, S. Thalhamer, K. Shortt, M. Schmidt, J. Chalovich, JL Scemama, Department of Biology, East Carolina University, Greenville, NC 27858	UP16
Synaptopodin 2 is one out of the three members that comprise the Synaptopodin family of actin binding proteins. Found in brain, kidney, and muscular tissue of mammals, the Synaptopodin 2 subfamily possesses four isoforms, one of which is myopodin. Down regulation of myopodin expression by hypermethylation or deletion of the gene has been shown to affect the invasiveness of cancers including prostate and bladder cancer. These studies have led to calling myopodin a tumor suppressor gene; furthermore, other studies have shown that the sub cellular location of the myopodin protein influences its effects on cell proliferation and migration. Synaptopodin-2 expression and its effects on invasiveness in colon cancer cells is being studied using the HT29 colorectal adenocarcinoma cell line. Four isoforms of synaptopodin-2 have been described and are generated by alternative splicing from a single gene located on chromosome 4q26. Unfortunately, little is known on the function of synaptopodin-2 and its individual isoforms. We have shown that synaptopodin-2 splice variants A and B are expressed in HT29 cells. We have also shown that synaptopodin-2 isoform B localized in the nucleus of these cells. To analyze further the function of the different isoforms, we have designed primer pairs to amplify the complete open reading frame of synaptopodin-2 splice variant C so that the entire coding region could be inserted into an inducible expression vector. The vector will be used to establish stably transformed cell line capable of overexpressing isoform C. Wild-type cells will be compared to cells over expressing the individual isoforms through immunofluorescence and western-blot analysis.	
The Effects of C60 Exposure to Pregnant Dams on Neuronal Activation and Behavioral Outcomes of Offspring, Alvin M. Tsang, Christopher J. Wingard, Jamie C. DeWitt Department of Psychology, Departments of Physiology and Pharmacology & Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	UP17
Buckminsterfullerenes are molecules composed entirely of carbon in the form of hollow spheres. Due to their unique chemical and physical properties, C60 particle use has increased in material science, electronics, and nanotechnology. C60 particles also have been proposed as possible delivery vehicles for therapeutic agents. Although some studies have demonstrated the ability of C60 particles to act as antioxidants, others demonstrate their potential to cause oxidative stress as well as trigger an inflammatory response that may become systemic. Other studies also have demonstrated the ability of C60 particles to cross the placenta and transmit from dams to offspring through milk and cause abnormalities in developing embryos, raising concern over the effects of exposure on the development of offspring. Microglia of the central	

nervous system play an important role in the neuronal inflammatory response and in the pruning of neurons during development. However, the role of microglia in neuronal pruning following nanoparticle exposure that may activate an inflammatory response is unknown. Our main focus is on the neurodevelopmental effects of C60 exposure that are possibly mediated through microglial activation. We hypothesize that intratracheally instilled C60 particles to pregnant dams will cross the placenta and trigger an inflammatory response in the pups, increasing microglial activation and subsequently hindering normal neuronal development. Ten-day old offspring of exposed dams were evaluated with behavioral and physical observations, including goal-seeking behavior and achievement of developmental milestones appropriate for age. Brains and blood serum were harvested and will be analyzed for biomarkers of inflammation and microglial activation, including tumor necrosis factor- alpha (TNF-±), interleukin 6 (IL-6), and/or IL-1². Preliminary data from the homing tests suggest that there may be differences in the goal seeking behavior of exposed and non-exposed pups.	
Role of Zur and ZnuABC in Maintaining Intracellular Zinc Levels in Pseudomonas aeruginosa, Ryan M.D. Cook1, Whitney A. Parrish1, Matthew L. Ellison2, Everett C. Pesci2, Allison S. Danell1, 1 Department of Chemistry, 2 Department of Microbiology and Immunology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	UP18
Pseudomonas aeruginosa is a very common gram-negative bacterium that is the primary cause of death in Cystic Fibrosis patients. A recent investigation of the P. aeruginosa genome identified several genes which are very similar to those encoding the ZnuABC zinc uptake system in Escherichia coli. This system is under tight control of the zinc uptake regulator (Zur). Based on sequence homology, we hypothesized that the P. aeruginosa homologs of ZnuABC and Zur are involved in zinc uptake and that mutation of these genes will result in differential intracellular zinc concentrations as compared to a wild-type strain. To test the hypothesis, we constructed isogenic mutants of P. aeruginosa znuA, znuB, znuC, and zur genes and determined if these mutations affected intracellular zinc concentrations. Quantitative analysis was performed with Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) to detect emission of 213.9 nm light from zinc atoms in solution. Ultrapure (18 M© cm) water was used and glassware was acid-washed so samples were not contaminated with interfering ions. To prepare the cells, the bacteria were grown in high zinc growth media. The cell pellets were washed in fresh media and a chelating buffer to remove exogenous zinc. The pellets were dried at 60° C to remove water, digested in 100 microliter 1 N sulfuric acid and 500 microliter 1 N nitric acid, and brought to 10 ml total volume in water. A series of zinc standards were prepared from purchased 1000 ppm zinc standard specially formulated for atomic spectroscopy. Each sample was analyzed three times, and the average and standard deviation were calculated. A plot of atomic emission intensity versus standard concentration yielded a linear calibration curve. Our data indicate that loss of a functional ZnuB or ZnuC results in decreased intracellular zinc levels, while loss of ZnuA had no effect. Loss of Zur resulted in increased intracellular zinc concentrations. These data support the hypothesis that the P. aeruginosa genes encoded a zinc uptake system similar to that of E. coli.	

Involvement of integrin signaling in macrophages in alcoholic liver, Amber Norris, Kun Zhang, Sherri Moore, Ian N Hines, Department of Nutrition Science, East Carolina University, Greenville, NC 27858	UP19
Background: Alcohol is a risk factor for the development of acute and chronic liver pathologies such as hepatitis, fibrosis, and cirrhosis. Kupffer cells (KC), the hepatic macrophage, produce tumor necrosis alpha (TNFa) and interleukin 6 (IL6), which injures the alcoholic liver. In order to prevent and treat both early and late stages of alcoholic liver disease, the mechanism of activation and pro-inflammatory mediator production by KCs must be understood. Integrins are an important part of cell adhesion, movement, and infiltration particularly within damaged tissues. Integrin signaling through integrin linked kinase (ILK) is common to all surface integrins though its function in acute and chronic tissue injury including alcoholic liver injury has not been explored. Purpose: The current project was designed to test the effects of ILK within macrophages during chronic alcohol exposure in mice. Methods: Wild type mice or mice deficient in ILK specifically within macrophages were fed a high fat control diet or high fat ethanol-containing diet for 1 or 4 weeks. Liver injury, ILK activation, and tissue expression of TNFa and IL6 were then quantified. Results: Chronic exposure to ethanol increased hepatic ILK activation, beta1 integrin expression, TNFa and IL6 production, and liver injury. Deleting ILK specifically in macrophages reduced alcohol-induced liver injury in conjunction with decreased hepatic TNFa and interleukin 6 (IL6) production in the absence of significant changes in hepatic F4/80+ Kupffer cell numbers. Conclusions: Integrin signaling through ILK in macrophages is responsible for alcohol induced liver injury and inflammation. Inhibiting integrin signaling in macrophages may be a useful therapeutic target to treat or even prevent alcohol-induced liver injury. This work has been supported by grants from the NIAAA, the Alcoholic Beverage Medical Research Foundation, and the ECU URCA award.	
The effects of light environment on female threespine stickleback red throat coloration, Christina Webster, Anais Delacruz, Dr. Jeffrey McKinnon, Lengxob Yong, East Carolina University, Greenville, NC 27858	UP20
The threespine stickleback is a classic model system for understanding the evolution of morphological traits and sexual dimorphism. To attract mates and deter competitors, sticklebacks have red throats-which are typically expressed in males only. However, we have studied populations of these fish, in British Columbia and California, in which females also exhibit red throat coloration. Since red throats have been previously regarded as a characteristically male trait, it is of great evolutionary interest to discover the causes of this phenomenon. Adaptation to different light regimes, resulting mainly from water staining, has been suggested as one of the factors that may have influenced the evolution and expression of female coloration. Thus, we investigated the effects of different light environments on female color expression in two populations of threespine stickleback. We hypothesized, based on a published study of male color, that if fish were raised in a red-shifted light environment, there	

would be a higher percentage of females with red throat coloration; males were also included for comparison. Seven families of lab-raised fish were divided and raised for 6 months under different light treatments: red-shifted light, full spectrum light, and tea-stained. Using reflectance data collected with a spectrophotometer, we tested whether light treatments affected the expression of red throat coloration in females and males. Our overall results showed no significant differences in coloration between the two different light treatments, i.e. full light and red shifted environments. However, red intensity of female throats in both treatments was higher than in the tea-stained environment. These results were not consistent with a previous study of males. Differences in results could have arisen from sex differences or other factors. Further work on the effects of light environment on red throat coloration is desirable to isolate the direct causes.	
Raccoonpoxvirus Safety in Immunocompromised Mice, Corey Boles, Lori Byers, Gwen Jones, Rachel Roper, Department of Microbiology and Immunology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	UP21
Raccoonpox virus is a naturally occurring North American poxvirus that is attenuated compared to other poxviruses (e.g. vaccinia virus), and thus it is of interest as a safer vaccine vector platform. Companion animals immunized with raccoonpox virus expressing the rabies glycoprotein antigen are protected against rabies virus challenge, and this recombinant is being evaluated as a commercial vaccine. Raccoonpox is known to be attenuated compared to vaccinia virus, but the extent of attenuation was unknown. Vaccinia virus (smallpox vaccine) is dangerous for immunocompromised individuals, so we assessed raccoonpox virus safety in two immunocompromised mouse models. This is important because veterinarians and pet owners might be exposed to the virus vaccine administered to pets. Our studies showed that raccoonpox virus is highly attenuated in terms of morbidity and mortality compared to vaccinia in immunocompromised mouse models (severe combined immunodeficient and athymic nude mice). In addition, viral organ titers were assessed and showed that raccoonpox virus had low or no replication in numerous mouse organs, whereas vaccinia had high virus titers. These results indicate that raccoonpox virus is likely a much safer poxvirus vaccine vector than vaccinia.	
Protective Effects of the Soluble Guanylate Cyclase Activator BAY 60-2770 on Vascular Smooth Muscle Growth, Amber N. Heckart, Chintamani N. Joshi, David A. Tulis, Department of Physiology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	UP22
Abnormal growth of vascular smooth muscle, the primary tissue in blood vessels, is a major contributor to cardiovascular disease, which has historically been the leading cause of death and morbidity in the United States. The identification and characterization of more effective pharmacological agents aimed at preventing or treating these disorders is critical. Cyclic guanosine monophosphate (cGMP) is an important multifunctional signaling molecule in cardiovascular tissues. The current focus of our research is to characterize the effects of a newly synthesized, proprietary soluble guanylate cyclase activator BAY 60-2770 (BAY60; Bayer HealthCare) on vascular smooth muscle cell (VSMC) growth. We hypothesize that BAY60 inhibits VSMC proliferation through selective phosphorylation of vasodilator-activated serum phosphoprotein (VASP) via an increase in cGMP. In rat primary VSMCs, BAY60 (0.1-10 μM) significantly ($p<0.001$) reduced cell proliferation observed by the MTT assay after 72 hours. Using flow cytometry, a significant decrease in DNA synthesis (~42%; $p<0.05$) was	

observed after 16 hours BAY60 treatment compared to vehicle controls. Incubation of VSMCs in the presence of BAY60 (1-10 μM) for 15 min increased cGMP content 20-fold compared to vehicle controls without significant effects on cAMP content. After incubation of VSMCs in the presence of BAY60 for 15 min at 0.1, 1.0, and10 μM, phosphorylation of VASP at Ser 239 (an indicator of PKG signaling) increased ~2.5-fold while phosphorylation at Ser 157 (an indicator of PKA signaling) increased 1.5-fold. Interestingly, pretreatment of cells with the PKG inhibitor DT2 or the PKA inhibitor PKI did not reverse BAY60-mediated increases in site-specific VASP phosphorylation. These data suggest that BAY60 has protective, anti-proliferative effects mediated by cGMP but independent of PKG and PKA signals in primary VSMCs. These findings provide evidence for BAY60 as a relevant and successful therapeutic agent to combat VSMC growth.	
Aging-Related Changes in Heart Function and the Role of the Dopamine D3 Receptor, Mukund Patel, Stefan Clemens, PhD, Department of Physiology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	UP23
With age, there is a gradual increase in the prevalence of cardiovascular disease and hypertension, and a role of the dopamine (DA) D3 receptor in the pathophysiology of hypertension has been well established in both basic and clinical studies. While DA agonists targeting inhibitory D2-like receptors (primarily D3 and D2) have been shown to restore normal blood pressure after experimental induction of hypertension, the effects of D3 dysfunction on autonomic output and heart structure and function have not been explored. In this study, using non-invasive blood pressure measurements and ultrasound echocardiography, we tested whether D3 receptor dysfunction may provide a new link between aging and high blood pressure.Heart function and anatomy were examined in four groups of mice: Wild-type (WT) aged 2 months (n=10), WT aged 1 year (n=10), WT aged 2 years (n=8), and D3 receptor knockout (D3KO) aged 2 months (n=6). Autonomic data were obtained with a tail-cuff method, and ultrasound echocardiograms were collected and analyzed with a Vevo 2100 Ultrasound system. We found an aging-related increase in blood pressure and cardiac function in WT animals, which was accompanied by bradycardia in the oldest animals. Intriguingly, the 2 month-old transgenic D3 receptor knockout mice (D3KO) displayed blood pressure and heart rate values that were significantly increased over their age-matched WT controls and that were comparable to those of the 2 year-old WT group. Functional echocardiography confirmed the aging-related change in the WT animals and identified significant differences in systolic diameter ($p=0.024$), lateral ventricle mass ($p=0.003$), systolic volume ($p=0.019$), diastolic volume ($p=0.028$), cardiac output ($p<0.001$), ejection fraction ($p=0.033$), and fractional shortening ($p=0.017$). Surprisingly however, we did not detect significant differences between young WT and young D3KO in any of these parameters. We are currently exploring the hypothesis that increasing fibrosis might be related to the increase in blood pressure in young D3KOs.	

An evaluation of Mcm10 mutant fly lines in Drosophila melanogaster, Wayne A. Rummings, Jr., Tim W. Christensen, East Carolina University, Greenville, NC 27858	
The complexity that is life is dependent upon a highly orchestrated sequence of events known as the cell cycle. It is through these series of regulated biochemical events that proper growth, division, and delivery of genetic material to progeny can occur. Essential for the proper transmission of genetic material is successful progression through S phase and accurate synthesis of the genome. The evolutionarily conserved protein Mcm10 has been demonstrated to be involved in the activation of the pre-replication complex (Pre-RC) and the stability and activation of some replicative elongation machinery. Furthermore this protein has been observed to be involved in the establishment of chromatic states in both S. cerevisiae and D. melanogaster. To aid in unraveling the mystery surrounding the exact biochemical functions of this abundant nuclear protein within the cell, a collection of 30 mutant fly lines have been established with each line containing a different point mutation in D. melanogaster Mcm10. The establishment of this mutant fly collection is dependent upon a method of verifying the presence of the appropriate mutations in each acquired fly line. Thus a process of genomic DNA extraction, Mcm10 gene amplification utilizing polymerase chain reaction (PCR) techniques, and the subsequent sequencing of the entire coding region of Mcm10 has been carried out for each point mutation present in the collection. The verification of the presence of the appropriate mutation, and the absence of other potentially confounding mutations within Mcm10, establishes the mutant line as a part of the final collection. The mutant flies that compose this collection will ultimately be investigated to establish any impacts that the mutation may have on the processes of DNA replication, cell cycle progression, and chromatin dynamics. The characterization of these point mutants and evaluation of their impacts on cell cycle progression, DNA replication, and chromatin biology will ultimately provide a better understanding of this protein's functions within these essential cellular processes, and could provide insight into better treatments or diagnostic tools for disease states such as cancer.	UP24
Disruptions in the glycosylation pathway alter cell surface expression of the Kv3.1 glycoprotein, Christopher J. Bernetski, M. Kristen Hall, Ruth A. Schwalbe, Department of Biochemistry and Molecular Biology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	
Voltage-gated potassium (Kv) channels have critical roles in cell migration, cell proliferation and the excitability of cells. The determinants that regulate the distribution of Kv channels at the cell surface are quite limiting. In this study, it was determined whether the type and composition of N-glycans attached to the Kv3.1 channel contribute to the spatial arrangement of this glycoprotein at the adherent membrane. Glycosylated (wild type) and unglycosylated (N220Q/N229Q) Kv3.1 proteins tagged with EGFP were expressed and characterized in parental Chinese Hamster Ovarian (CHO) cells and several glycosylation mutant CHO cells. Western blots of the Kv3.1 proteins treated with PNGase F, Endo H, or neuraminidase verified the type of N-glycans attached to the Kv3.1 glycoprotein and that N220Q/N229Q was not N-glycosylated. Total internal reflection fluorescence microscopy demonstrated that the Kv3.1 glycoprotein with sialylated N-glycans was much more localized to the cell-cell interface than that with oligomannosyl N-glycans while this difference was lacking for the cadherin glycoprotein. Differences in localization were also observed between the Kv3.1 glycoprotein with sialylated N-glycans and that with bisecting type N-glycans, as well as N-glycans which lacked sialic acid and/or galactose. In contrast, the distribution patterns of the Kv3.1	UP25

aglycoform in the various cell lines were quite similar. These results showed that distinct N-glycan structures of the Kv3.1 glycoprotein are recognized by cellular components, thereby localizing the glycoprotein to specific microdomains of the basal membrane. It is speculated that changes in N-glycosylation processing of the Kv3.1 protein alter the distribution of the Kv3.1 protein at the cell surface, and therefore alter conducting and non-conducting functions of the Kv3.1 channel.	
Regulation of Connexin 43 by DADS in Vascular Smooth Muscle, Danielle N. Martin, Chintamani N. Joshi, David A. Tulis, Department of Physiology, Brody School of Medicine, East Carolina University, Greenville, NC 27858	UP26
As the predominant gap junction protein within vascular smooth muscle cells (VSMCs), Connexin 43 (Cx43) acts as the principal mediator of intercellular communication and consequently plays crucial roles in maintaining normal vessel function. Cx43 mediates gap junction intercellular communication (GJIC) by regulating movement of ions and other signaling molecules, and the extent of GJIC is directly dependent on both connexin expression and function. Our studies aimed at understanding the effect of diallyl disulfide (DADS), a sulfur compound found in garlic, on connexin expression and functionality with respect to VSMC proliferation. Our hypothesis is that DADS regulates VSMC proliferation through mechanisms dependent on Cx43 and GJIC. Using the MTT assay to estimate cell proliferation, rat primary VSMCs treated with DADS (50 ¼M) caused 20% decrease in cell proliferation after 72 hours, and bromodeoxyuridine incorporation assays showed 20% decrease in the rate of DNA synthesis after 6 hour DADS treatment. Flow cytometry analysis showed a 40% decrease in S phase activity in DADS-treated cells compared to vehicle controls after 16 hours. Incubation of VSMCs for 270 minutes in the presence of DADS stimulated Cx43 expression 25% over vehicle controls, and through inhibitor studies it was evident that PKA, PKG and PKC had no involvement in this stimulation. Fluorescence recovery after photobleaching (FRAP) analysis showed that GJIC was almost doubled by DADS after 15 minutes; however, DADS-mediated stimulation of GJIC was effectively reversed by PKG inhibition (p=0.06). Western blot analysis revealed that DADS significantly increased phosphorylation at the mitogen-activated protein kinase (MAPK)-sensitive sites Ser255 and Ser279, the cell cycle regulatory p34cdc2 kinase-sensitive Ser262 site, and the PKC-sensitive Ser368 sites after 30 minutes. These findings shed light on underlying mechanisms of DADS in VSMCs by showing DADS regulates VSMC growth through stimulation of Cx43 expression and functionality likely through distinct kinase-directed mechanisms.	

Transgenerational Effect of Paternal High-fat Diet and Exercise on Metabolic Profiles in Mouse offspring, O.Williams, M.Koury, M.Jeyakumar, A.Ajmera, E.Pak, D.Walters, D. Neufer, A.K. Murashov, Department of Physiology, East Carolina Institute for Diabetes and Obesity, East Carolina University, Greenville, NC 27858	
Obesity and diabetes are the biggest public health concerns of the twenty-first century. Studies have identified a powerful correlation between obesity and the development of diabetes mallitus type 2. This association has elicited exploration of contributing factors, such as genetic and non-genetic transgenerational effects. Previous research shows support that the maternal diet plays an important role in offspring obesity and metabolic disfunction; however, paternal influence remains unclear. Our model examines the epigenetic mechanisms of a paternal high-fat diet on the predisposition of offspring to obesity and glucose intolerance. C57 black male mice were separated into 3 diet-based groups at 4 weeks of age (60% fat, 10% fat, and 10% fat with exercise). After 12 weeks of regulated diet, male mice were mated with control females. F1 offspring were then assigned to either a 60% or 10% fat diet for 12 weeks. Parameters measured postnatally at 4, 10, and 16 weeks in F0 and F1 generations include: plasma insulin and glucose metabolism (glucose tolerance test, GTT), body composition (eMRI assessment of lean /fat mass), energy expenditure (5 days housed in metabolic cage to assess motor activity, respiration, and dietary consumption), and developmental monitoring (assessed each day prior to weaning). Analysis of developmental patterns revealed impairment of upper and lower incisor development in fat fathers (FF) offspring, as well as postponed eye-opening. GTT analysis included all groups at each time point. As expected, after 12-weeks of dietary regulation the AUC of FF group was significantly elevated compared to both control fathers (CF) and exercise fathers (EF). Further observations revealed intriguing variations amongst the offspring groups. At 4weeks of age, male offspring from EF showed notable increase in GTT, analyzed by area under the curve (AUC). At 16 weeks of age there was also a notable increase in lean mass of EF offspring versus CF offspring. The male offspring from FF on control 10% fat diet showed a significantly higher GTT in comparison to offspring from CF at 16 weeks of age. However, male offspring from FF on 60%-fat diet showed markedly diminished AUC in comparison to their fathers. Our findings indicate that prolonged paternal high-fat diet or physical activity can induce epigenetic changes in metabolic profiles of successive generation.	UP27

College-Age Males and Oral Human Papillomavirus: Risk factors, Vaccination and Public Health, Justin Sharpe, Sloane Burke, Karen Vail-Smith, East Carolina University, Greenville, NC 27858	
The human papillomavirus (HPV) is a causal agent for certain cancers in both females and males. Most recently, the professional literature has established a clear link between oral HPV and cancers of the oropharynx, especially in males. In October 2011, the Centers for Disease Control's Advisory Committee (ACIPO) on Immunization Practices voted unanimously to recommend routine quadrivalent HPV vaccination of 11- and 12-year old boys. The ACIP has recommended HPV vaccination for 9-26 year-old females since 2007 and studies indicate that targeted females have followed this advice. However, experts agree that if the vaccination is to have the greatest potential for prevention of HPV, both males and females need to be immunized. This study surveyed 900 male students from East Carolina University's Health 1000 classes to assess their behavioral risk factors associated with increased incidence of oral HPV and their intention to receive the HPV vaccine. Preliminary results indicate that these males are at risk and that public health interventions should target them to promote more widespread HPV vaccination compliance.	UP28
College Students' Dietary Habits and Perceived Barriers to Following a Healthy Lifestyle, Cecilia Batchelor, Kimberly Heidal, PhD, RD, Department of Nutrition Science, East Carolina University, Greenville, NC 27858	
One major challenge college-aged students (18-24) encounter is establishing healthy eating behaviors. Little is known regarding student perceptions of this problem and trends have indicated that college students show higher frequency of consumption of calorically dense meals, which over time can lead to adverse health implications. Data collected using a validated health survey measured diet habits of East Carolina University students and perceived barriers to following a healthy lifestyle. A total of 339 college-aged students with a BMI >18.5 participated. The 59-question survey included years enrolled in college, stress factors, weight influences, cooking practices, and nutrition consumption using food categories. It was hypothesized that college-aged students do not adhere to the MyPyramid recommendations. Data was analyzed using SPSS version 19. The average meals cooked per week by students was 2.56 ± 2.97 while fifty-nine percent reported having the ability to cook well to very well on a Likert scale. Thirty-three percent of students consumed fast food three to five times per week and chose fast food for reasons of convenience, lack of time and availability. Students also claimed they consumed 2.03 ± 1.11 servings of dairy, 1.89 ± 1.09 servings of fruits and 1.8 ± 1.15 servings of vegetables daily. These findings support the hypothesis that college-aged students are not meeting current dietary recommendations and further dietary interventions are needed for this population.	UP29

Feasibility of LifeBalance Station® for Reducing Sedentary Time in the Workplace, Pamela J. Muscher1, Lucas J. Carr1, Christoph H. Leonhard2,3, 1 Active Office Research Laboratory, Department of Kinesiology, East Carolina University, Greenville, NC 27858, 2 Clinical Psychology Department, Chicago School of Professional Psychology, Chicago, IL, 3 K&A Manufacturing Inc., Schofield, WI	
Objective: The present study investigates the feasibility of LifeBalance Station (LBS), a unique hybrid of a recumbent elliptical office chair machine used with a height adjustable desk, designed to reduce sedentary workplace time. Background. Currently no study has tested the feasibility of LBS with sedentary full time employees. Sedentary work place occupations are on the rise with a positive correlation to chronic disease risk. The conceptual design of low intensity activity using LBS presents the opportunity for testing participants who are dependent on desk related tasks. Methods: Forty-five adults (42.9+10.5 years; body mass index=28.8 ± 7.4 kg/m2, 73% female) working in full-time (8.3+0.6 hrs/week), sedentary (sitting 79.5% working time) occupations used LBS for 30 minutes while performing usual work tasks (typing, mousing, speaking on telephone). Participants then completed a 24-item, 5-point Likert scale (1=Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree) feasibility questionnaire. Results. Participants reported LBS could easily be used in the typical office work setting (mean 4.4+0.7) and that they would be less sedentary at work if provided access to LBS (mean 4.6+0.9). Neither work productivity (2.0+1.0) nor work quality (2.0+0.9) decreased while using LBS. When asked How often would you use LBS if provided one in your private office space? 95.6% of participants reported they would use LBS daily. Conclu:ion. Outcomes suggest that LBS is a feasible option for full time desk dependent occupations which aids in reduction of sedentary work place time. With chronic disease risks and sedentary occupations on the rise, the concept of increasing physical activity at a low intensity at the work place warrants further health investigation of the LBS.	UP30
Measured vs. Predicted Energy Expenditure, Derval A. Hamilton, Jonathan M. Moore, Lindsey N. Ryan, Michael, M. McCammon, College of Health Human Performance, Department of Kinesiology, East Carolina University, Greenville, NC 27858	
Exercise is an effective strategy for weight loss. By varying intensity, duration and frequency it is possible to expend a sufficient number of Kilocalories to reach negative caloric balance, which results in weight loss. A common feature found in most commercial gym equipment is caloric expenditure prediction. With weight loss a desired outcome, it is important that individuals know their energy expenditure during exercise. Machines that predict energy expenditure use equations that can be readily found in many exercise physiology textbooks. These equations predict caloric expenditure based on the amount of oxygen required to do a specific amount of work. The accuracy of the equations depends largely on certain assumptions that include: the exercise equipment is calibrated, there are no differences in mechanical efficiency between individuals, and the exercise is at an intensity that can be easily maintained for a period of time. The current investigation was undertaken to determine the accuracy of predicted caloric expenditure compared to measured caloric expenditure. Six students (five males and one female) served as subjects. Average age was 22.3 years, height of 1.8 m, weight of 84.0 kg, and BMI of 25.8 kg/m2. To determine accuracy of the predicted equations, subjects walked on a treadmill at a pre-determined speed and elevation. Measured and predicted caloric expenditure	UP31

data were obtained for a pre-determined amount of time. Preliminary results show that at 0% and 10% grade, the treadmill prediction model underestimated caloric expenditure by 18.4% and 10.3%, respectively. Based on these limited data the prediction model on the treadmill used underestimated caloric expenditure for walking activities at different elevations.	
Organic Foods and Students' Opinions, Joshua Griffin, East Carolina University, Greenville, NC 27858	UP32
The purpose of this research project is to compare what students think about organic foods to what is actually true about them in order to dispel any myths students may believe. To do so, research on organically grown food will be conducted and organized into sections on a display board. Then, students will be polled anonymously to gather information about what they think about organically grown food. This will be consolidated and posted on the same board for comparison.The first step will be to use ECU's online databases and Joyner Library to find information about organically grown food. This information will be sorted into the following fields: What is considered to be organically grown, Benefits to the body, Benefits to the mind, What is avoided by not eating inorganically grown food. These sections will contain truths and myths about organic foods.The next step will be to poll the students at ECU to see what their opinions are of organically grown food. The students will be surveyed in the various dining facilities on campus anonymously and this data will be combined and the general consensus of the data will be posted on the display. Each subject matter will be discussed on the display and any myths will be explained properly.	
Mask vs. mouthpiece during metabolic testing at rest and during steady-state exercise, Catherine Dahl, Arra Azimi, Jordan Baker, Stephanie Butschky, Matt Dalgetty, Natalie Salovich, Kelly Schurtz, Jackie Varnum, Charles J Tanner, Department of Kinesiology, East Carolina University, Greenville, NC 27858	UP33
The use of automated metabolic measuring systems has been common for two decades. They are useful for quantify energy expenditure during both rest and exercise from expired gases. The standard breathing circuit begins with a mouthpiece and nose plugs that must be tolerated by the individual being tested. It comes in multiple sizes and textures but is usually regarded as uncomfortable by test subjects. Until recently face masks have been a comfortable but performance poor alternative due to large variations in facial structure uncompensated by the facemask materials resulting in leaks. The 7450 Series Silicone V2" Oro-Nasal Full Face Mask has recently been developed as an alternative to the standard mouthpiece. The purpose of this research was to compare the new face mask (FM) to the standard mouth piece (MP) during rest and steady state exercise. Ten college aged male and female subjects participated in the study. A stationary bike protocol was used and each subject was tested at 4 workloads; 0 (rest), 30, 80, and 130 watts. Expired gases were collected continuously and analyzed by the TrueOne 2400 Metabolic Measuring System. Each workload was maintained for 10 minutes with the mouthpiece or mask randomly alternated every 5 minutes. A questionnaire based on comfort and preference was completed by all subjects after testing. No statistically significant differences were found at any workload for expiratory volume (VE), volume of oxygen utilized (VO2) or volume of carbon dioxide produced (VCO2) ($P > 0.05$). Although not significant, the mask did tend to underestimate these variables compared with using the mouthpiece. At rest the mask provided a significantly lower respiratory exchange ratio (RER) compared to the mouthpiece ($P < 0.05$). Using the mouthpiece, subjects reported it being less comfortable and	

harder to breathe but the mask became less tolerated at higher workloads. The data support the 7450 Series Silicone V2" Oro-Nasal Full Face Mask as an accurate and more comfortable alternative to the mouthpiece at rest and during steady state exercise. It remains to be examined whether this mask is well tolerated and accurate during maximal exercise testing.	
Early Markers for Painful Diabetic Neuropathy in Rats Exposed to High Fat/ High Sucrose Diet, Shelley Burgess1, Justin La Favor2, Christopher J. Wingard PhD3, Sonja K. Bareiss PhD, PT1, 1 Department of Physical Therapy, 2 Department of Kinesiology,3 Department of Physiology, East Carolina University, Greenville, NC 27858	UP34
Painful diabetic neuropathy (PDN) is a debilitating side effect of type 2 diabetes. Research has shown hyperglycemia, a major complication of diabetes, results in peripheral nerve injury through oxidative stress and subsequent death of neural tissue. This process involves injury to the dorsal root ganglia (DRG), were cell bodies of sensory neurons are housed. On a controlled high fat diet, rodents develop diabetes in as little as 4 weeks. Exercise has been known to provide some protective effects against development of diabetes. Based on this information, we hypothesize that early markers of neuronal injury related to diabetic neuropathy may be prevalent in DRG tissue as early as 4 weeks on a Western diet consisting of high fat and high sucrose (HFHS), and that some of the effects of neuronal injury may be reversed with exercise. Rats were divided into the following groups: control diet (consisting of standard chow) (n=4), 4 week HFHS diet (n=4), 8 week HFHS diet (n=4), 12 week HFHS diet (n=4), 12 week HFHS diet + exercise (n=4). DRGs were collected from the lumber region of the spinal cord, fixed in 4 % paraformaldehyde, and cryosectioned for immunohistochemistry. DRGs were stained with ATF-3 (a marker for neuronal injury) and CGRP (a nociceptive/pain marker). ATF-3 showed increased expression in CGRP neurons with longer exposure to HFHS diet. This co-localization provides evidence for the onset of neuronal injury in pain mediating neurons following prolonged exposure to HFHS diet.	
Spinal Cord Injury Pain is Associated with Abnormal Growth of Sensory Neurons, Angela Korleski1, Martha Gwaltney SPT1, Kori L. Brewer Ph.D2 , Sonja K. Bareiss Ph.D, PT 1, 1 Department of Physical Therapy, 2 Department of Emergency Medicine, East Carolina University, Greenville, NC 27858	UP35
Neuropathic pain is a significant consequence that follows spinal cord injury (SCI). This pain is partially linked to abnormal sprouting of sensory neurons. Our previous results have demonstrated that SCI is associated with the inhibition of glycogen synthase kinase-3² (GSK-3²), a regulator of neuronal growth, which makes GSK-3² a possible target for SCI treatment. We investigated if SCI pain is associated with neuronal sprouting, and if activation of GSK-3² can attenuate the abnormal growth responses following SCI. Rats underwent excitotoxic SCI via an injection of quisqualic acid (QUIS, n=6) or an equal amount of saline (n=8). Rats were observed daily to record the presence of the over-grooming (pain) behavior. After two weeks, dorsal root ganglia (DRG) were extracted from the animals and isolated for cell culture. After twenty hours, cells were stained with neuronal (²-tubulin III) and analyzed for soma size as well as length of neuronal sprouts. QUIS injected animals demonstrated a significant ($p < 0.0001$) increase in neurite length (138.78 ± 23.8.5 ¼m) compared to saline-injected control animals (17.19 ± 1.9 ¼m). QUIS injected animals demonstrated a significant ($p < 0.001$) increase in DRG neuronal sprouting (46.2%) compared to saline-injected controls (20.6%). Interestingly, the enhanced neuronal growth state from SCI was observed in small, medium, and large	

neurons, proposing that both nociceptive (pain mediating) and non-nociceptive neurons might contribute to the pain state following SCI. Application of a GSK-3² activator (LY-294002) on DRG from QUIS injected animals resulted in a significant ($p < 0.0001$) decrease in the extent of sprouting in QUIS animals. Our results demonstrated that nonspecific sensory neuron sprouting correlated with pain behaviors following SCI. Additionally, our data shows that pharmaceutical activation of GSK-3² decreased neuronal sprouting to non-injured levels suggesting that GSK-3² may be a potential therapeutic target to alleviate SCI pain.	
Foodborne Illness Outbreaks and the Importance of Environmental Assessments, Victoria Sellers, East Carolina University, Greenville, NC 27858	UP36
My project was based on continuing research from a summer internship at the Centers for Disease Control and Prevention. The purpose of my research was to investigate environmental causes of foodborne illness outbreaks. Due to the number of cases of foodborne illness, it was necessary to approach food safety and foodborne illness investigations from a broad, systems perspective taking the food that carried the pathogen and following it on the food continuum to the farm where it was grown.This project was focused on outbreaks related to Escherichia coli and leafy greens, due to obvious fecal contamination on the leafy greens. Since fecal contamination of leafy greens should not occur, it is necessary to investigate the systemic problems that contribute to the contamination. Multiple theories currently exist on how the leafy greens become contaminated, but it was my hypothesis that there were irrigation water quality problems in leafy green producing areas. Data gathered from the National Outbreak Reporting System (NORS) administered by the CDC was the basis of my research. The data is compiled from voluntarily-reported foodborne illness outbreaks submitted by local, state, and tribal health departments. This data was used to do statistical analysis and further research on foodborne illness outbreaks, such as collecting outbreak investigation reports and environmental assessments to determine any present environmental antecedents. Research showed that there are multiple systemic problems with the growing of leafy greens as well as inconsistencies in how foodborne illnesses are investigated.	
Liquid Fluoride Thorium Reactors, Gibson Gillespie, East Carolina University, Greenville, NC 27858	UP37
Nuclear power using solid fuels such as uranium and plutonium is inefficient and has long-term environmental consequences. However, the use of thorium in a liquid fluoride thorium reactor (LFTR) is highly efficient, safer, and more eco-friendly than most other power sources. The LFTR reactors do not have to operate under high pressures and have no danger of a meltdown. Thorium is also four times more abundant than uranium on the Earth. We get less than 1% of the energy from solid uranium oxide fuel before it must be removed from the reactor and sent to cool. On the other hand, one can hold a lifetime supply of thorium in the palms of his hands. The LFTR reactors use molten salts that must only be heated to 400 degrees Celsius to operate. In the event of an emergency, the reactor has an emergency release valve that allows overheated salts to drain into a cooling tank underground. Many of the opponents of LFTR technology claim that there is a problem with using a solid graphite core, but this problem can be worked around by using graphite pebbles instead of a solid core. I intend to find out why money is not going into LFTR research and development if it is such an efficient and cost-effective technology.	

Roof-Top Gardens and Wastewater Recovery, Leandro Rodriguez, Jacques Ray, Brandon Hackney, Jay Sexton, East Carolina University, Greenville, NC 27858	
The purpose of this project is to demonstrate the essence of two energy-saving methods that are increasing in usage. The first of these technologies is called the roof-top garden. Simply put, it is a garden of simple fruits, vegetables, and plants, growing in soil on the roof of a building. A roof-top garden such as this has several advantages, the most important of which is the increased insulation the greenery and soil provide. It can also fresh fruits and vegetables, however this requires extra maintenance. It is necessary to construct a stronger roof than would normally be needed in order to take the extra weight, which will add to the cost. The return on investment will be cost of the roof and care of the greenery against energy savings produced by the extra insulation. Coupled with the rooftop garden there is a wastewater recovery system. This system takes rainwater and stores it in tanks, the water is then is used to water the garden and provide some of the water need for the some of the building utilities, such as flushing of toilets. The main cost will be installation of the tanks, which will be measured against water savings for the return on investment. These two together provide significant water and energy savings, while also reducing the energy needed to heat and cool the building, and reducing sewage water requirements.	UP38
Passive Solar Design, Scott Barber, East Carolina University, Greenville, NC 27858	
Passive solar design, an idea within the growing trend of green building, is a creative way to use the sun to our advantage, both for heating and cooling, based on the design of the building. As green building has continued to become more popular, many changes have been made to make the design and construction of our buildings more environmentally and economically sustainable. This research focuses on the development in passive solar applications, from its earliest appearances in ancient Greek buildings to current designs that take advantage of radiation convection or acrylic panels. There have been many passive solar developments that can be explored, and the innovative technology today has brought about great advancements in the past few decades alone. There are many books and studies regarding passive solar design, all of which provide a different aspect concerning passive solar energy use that contributes to the history of this design. This research presents a compilation of information from a variety of sources that provide knowledge regarding the history of passive solar. As the popularity of green building continues to grow, it is essential to develop an understanding of passive solar design, and other green building techniques, in order to be equipped for the years to come.	UP39

Plantar Flexion Device, Thomas Deaton, William James, Adam Stephenson, East Carolina University, Greenville, NC 27858	UP40
Research conducted on patients diagnosed with peripheral artery disease (PAD) has shown that it directly affects the motion of plantar flexion (Wang, 2008). Plantar flexion is the motion in which the angle between the top of the foot and shin is increased. PAD is a relatively common circulation problem that is caused when arteries are narrowed by a buildup of plaque. If the disease is caught early enough it can be treated through medicine and simple therapy. Otherwise severe and untreated cases can result in surgery or amputation. Our team is designing a device that can be used to effectively diagnose patients with PAD by stabilizing the leg causing only the calf muscle to generate the plantar flexion. With a pure plantar flexion motion occurring, the device will be able to use the force being applied by the foot to calculate the power a patient is capable of producing. A physician will be able to use the power data from this device and compare it to an established benchmark which will tell them whether the patient potential meets the threshold of being diagnosed with peripheral artery disease. Our device will be programmable through a computer system to enable the clinician to change the force applied to the foot while a test is being conducted. Several design alternatives such as a pneumatic cylinder; motorized weight system, variable spring, and an electromagnetic braking system have been evaluated for implementation. Based on the analysis of the design alternatives, currently our team believes that the electromagnetic brake design will be the optimal solution.	
DSM Dyneema Warehouse Logistics, R. Adam O'Connor, Jonathan C. Raynor, Leandro J. Rodriguez, Sean C. Tucker, East Carolina University, Greenville, NC 27858	UP41
DSM Dyneema, the client for this capstone project, requires a strategy to optimize warehouse storage and handling redundancy while assuring the minimum inventory of raw material vital for production remains on site. To do this, an accurate inventory of the current warehouse management system was completed, assigning costs to the the current baseline operations. Once this was done, several alternative solutions were produced, which detailed different methods of warehouse organization, including physical location of materials and different organizational systems, e.g. a barcode system. The goal for the fall semester of 2011 was to produce a conceptual design outlining several solutions; the goal for the end of spring semester 2012 is to present a detailed design including exact costs, quotes from vendors and contractors, and implementation of the chosen warehouse layout and material tracking system (barcode system) once a solution is chosen. A Dyneema board will review the solutions put forth by the team and will choose the final design.	

Queuing System For The Management and Scheduling of Defferable Work, Edward Robertson, Joshua Wheeler, Michael Waivers, Zachary Anderson, East Carolina University, Greenville, NC 27858	
The client for this project is a company that is a manufacturer and re-manufacturer of equipment and components. They are a job shop with no specific product of their own, machining a variable assortment of parts and components for several clients. This means that the workload will vary depending on customer needs. As a result, the weekly schedule for their employees will often have slack time. The client is employee-owned, and the incentive for the company to perform efficiently and productively is high among employees. Projects are assigned to employees on a day-to-day basis. Aside from the company's project work, the company has work that is deemed deferrable, which could fill the previously mentioned slack time in the schedule. Deferrable work is defined as tasks that are periodic, not project driven, that can be performed during slack time between projects, and are typically independent of one another. Depending on the task, the training and expertise required may vary. The client has no method for managing and scheduling this work for employees to complete during their downtime, and occasionally has to hire additional workers to complete these tasks. The client needs a system to manage deferrable work tasks. The proposed system for managing deferrable work will utilize Bigfoot Computerized Maintenance Management Software by Smartware Group in tandem with ALERE Manufacturing (WorkShop) by TIW. The Capstone team will design a queuing system for deferrable tasks, which will sort the tasks based on employee availability, task time, resources, priority level, employee skill level and training, and other attributes. KEYWORDS: deferrable, deferrable work, schedule, work schedule, Bigfoot CMM	UP42
SELEX Protocol Design to Isolate an Aptamer that Targets and Inhibits Kinesin Motor Protein Function, Brandon Jones, Dan Kelleher, Kelsey Long, Engineering Department, East Carolina University, Greenville, NC 27858	
Kinesin is a motor protein that interacts with microtubule tracks and converts chemical energy (hydrolysis of adenosine triphosphate or ATP) into movement and mechanical work to transport intracellular cargo to different areas of the cell. For example, kinesins are involved with the motility aspects of cell division, such as chromosomal separation and cellular separation to form two daughter cells. This kinesin-based mitotic activity is a focus for several strategies to control cell division. One strategy is to inhibit kinesin s mitotic functions by using techniques that interfere with kinesin's ability to bind to microtubules, or to inhibit kinesin's ATPase enzymatic activity. Our approach is to develop aptamers that bind to kinesin and inhibit motility. Aptamers are artificial nucleic acid ligands of single-stranded 20 to 80 base oligonucleotides (either RNA or DNA), that can be generated to specifically bind to a multitude of targets such as proteins, large molecules, whole cells, and metal ions. An aptamer's ability to bind to its target with high affinity is attributed to its unique 3-D conformation, based on a specific nucleotide sequence. This unique binding ability against virtually any target molecule creates many potential commercial and biotechnology research applications, such as biosensors, bio-hybrid devices, diagnostic tools, and therapeutic drugs. Aptamers are developed using the SELEX protocol. SELEX consists of several steps which include affinity binding, partition, elution, amplification, and conditioning. SELEX is an iterative process that isolates unique high affinity aptamers from an initial DNA aptamer library consisting of 10^15	UP43

different aptamers. The purpose of this capstone project is to design and implement a SELEX protocol to isolate an aptamer capable of binding and inhibiting the enzymatic activity of kinesin. The objective of the project is to develop the protocol and the conditions of each step to isolate the single aptamer with the highest binding and inhibitory characteristics to kinesin for use as a potential anti-mitotic bio-therapeutic.	
Smart Maintenance, Ashley Mercado, Matthew Cress, Michael Linzer, Dr. Eugene Dixon, Dr. Hayden Griffin, East Carolina University, Greenville, NC 27858	UP44
Predictive maintenance (PdM) is an alternative solution to preventative and scheduled maintenance. PdM can lead to shorter downtimes on rotating machinery as well as more efficient production schedules. Current PdM systems can require up to two years before producing accurate results and are too expensive for small businesses to implement. The current method of maintenance facilitated by most companies is scheduled maintenance (which can be ineffective and costly) and running a machine to failure. There is currently a need for a predictive maintenance system that is cost effective with a faster rate of return on investment. The Smart Maintenance Capstone design team has explored the areas of predictive maintenance, neural networking and sensors in an effort to design a system that meets these needs. Our current path forward for this project is to continue to test for baseline data as well as for near-failure data on a rotating motor similar to that of a waterjet.	
Hydro Power in the Home, Alan Mabe, Thomas Shreve, Jake Strickland, Edwin Black, East Carolina University, Greenville, NC 27858	UP45
In today's modern environment, attempts are being made to consider the ways buildings and residential structures can give back to our environment. There are many different types of technologies, and rules and guidelines for builders. Engineers have found different ways to use different forms of energy to power homes. One of the largest natural energy sources is nearly going untouched in today's race for green building. Hydroelectricity counts for only a small portion for all the energy used by our society. Hydroelectricity being the oldest form of power is described as the ability to convert moving or flowing water into useable energy to power homes and other structures. This project pushes the limits of hydroelectricity, and shows that a small scale hydro electrical power station can power a small residential neighborhood, and maintain a more ecofriendly livable state for the citizens in the neighborhood. This new aged modern neighborhood will be built close to a stream of flowing water, and has the water converted into electricity, and water for maintaining the land. This town will need no external power source, it will be ran by only the power the station generates, which will result in more concentrated power being supplied to the structures in the neighborhood. With the conclusion of this project, our group will have outlined how water, one of the largest elements in the world, can be converted to a safe and clean renewable energy source, that can become the future leader in the worlds race for green and ecofriendly living, and thus reducing the large amount of pollution that we as a society leave on our planet.	

ABB Process Improvment, Evan Kyle Pierce, Alisha Holly Chandler, College of Technology, Industrial Engineering Technology, East Carolina University, Greenville, NC 27858	
Improvements can always be made in the manufacturing environment. We will be exploring the current processes at our client location and making improvement suggestions related to the production floor layout and positioning of equipment, as well as suggesting tool modifications for existing equipment, and justification for the purchase of new equipment. Our main focus for overall improvement will be on the transformer mold casting process for which will verify current tools and molds and ensure that they are adequate to sustain forthcoming production volume increases. We will also propose updated process layout designs that will allow the mold production process to be eliminated as the bottleneck, therefore improving the overall line balance and ultimately expanding overall production capabilities at this location.	UP46
Implementation of Direct Digital Manufacturing for Military, Ryan D Burk, Department of Technology and Computer Science, East Carolina University, Greenville, NC 27858	
Military and government organizations can minimize supply, development, and implementation lead times along with overhead by utilizing an organization wide rapid prototyping (RP) manufacturing process. Current regulations and practices rely heavily on vendors and subject matter experts (SME) to meet these needs which can hamper efforts to expediently supply and deploy requested products. This research focuses on the feasibility of implementing a rapid prototyping program as a supply method in forward deployed location(s) and at home station(s) which would allow for ingenuity, customization and standardization across all entities irrespective of their location.	UP47

A "Ball-and-Socket" Dimer that Recognizes Anions Relevant to Cystic Fibrosis, Danielle M. Jessen, Ber Xiong, Ashley N. Werchulok, Andrew L. Sargent, William E. Allen, Department of Chemistry, East Carolina University, Greenville, NC 27858	
Cystic fibrosis is a fatal genetic disease caused by a mutation in the cystic fibrosis transmembrane conductance regulator (CFTR). CFTR is a channel-forming protein that allows anions like chloride and bicarbonate to cross the membrane bilayer of epithelial cells. A defect in CFTR results in a buildup of thick mucus in the lungs leading to difficulty breathing and infection. Current treatments for cystic fibrosis are focused on removing the mucus and fighting infections, but do not address the underlying problem of poor anion transport. The goal of this research is to synthesize fluorescent lipid analogues which mimic the function of the CFTR protein and subsequently test their efficacy. Our lipid analogues have several key components which we believe make them both biologically relevant and effective. The analogues were designed to be the correct length to span one leaflet of the lipid bilayer. They contain a phosphocholine (PC) headgroup to ensure proper orientation within the membrane, and hydrogen bonding groups (e.g, urea) to aid in the transport of the anions either close to the headgroup (proximal) or far from the headgroup (distal). The analogues also contain a fluorescent portion which allows us to measure their anion binding via fluorescence quenching studies.Thus far, we have synthesized two fluorescent lipid analogues. We have performed fluorescence anion binding studies with several biologically relevant anions (bicarbonate, chloride, phosphate and nitrate) to determine the effects of the PC headgroup on binding. Preliminary results show that the presence of the PC headgroup increases the anion binding abilities of the lipid analogues compared to the control with no PC headgroup. Our current focus is to increase our understanding of the anion binding mechanism. We believe our lipid analogues form a dimer which opens for anion binding. We also predict the anion s countercation plays a role in the binding. We will test these hypotheses with additional fluorescence and NMR binding studies.	UP48

Reproductive isolation and genetic divergence in the Peruvian mimic poison frog Ranitomeya imitator, Laura Jackson, East Carolina University, Greenville, NC 27858	UP49
The Peruvian mimic poison frog, Ranitomeya imitator, has diverged to resemble unrelated poison frog species in a process known as mimetic radiation. This divergence is thought to give rise to mating preference transformation, ultimately resulting in reproductive isolation. Transect zones where two mimetic morphs come into contact allows for effective analysis of this isolation as well as genetic divergence. To assess genetic divergence, I am working with Evan Twomey who is testing whether different mimetic populations of this species have become reproductively isolated through divergence in mating preferences. For one transition zone in Peru, I will be addressing whether heterozygosity in populations near the transition zone is higher or lower than heterozygosity in populations distant from the transition zone. Reduced heterozygosity in transition zone populations may indicate population fragmentation; however, higher heterozygosity in transition zone populations could signify high levels of gene flow between divergent morphs. DNA extractions will be performed on 53 individuals from 5 populations, followed by DNA amplification and sequence analysis. Each individual will be scored at 9 polymorphic microsatellite loci, which we have optimized for this species. After genotyping each individual for each locus, the program GeneAlex 6.2 will be used to calculate heterozygosities for each of the 5 populations. The final population genetic analysis will allow us to assess whether mimetic divergence is in fact resulting in genetic divergence between populations.	
Metabolic Capabilities of Microbial Communities in the Serpentinite Subsurface Biosphere, Sarah Chowdhury, William Brazelton, Matthew Schrenk, East Carolina University, Greenville, NC 27858	UP50
The aqueous alteration of ultramafic rocks occurs through a process known as serpentinization which generates copious reduced compounds that may be utilized by microorganisms in the subsurface biosphere. However, exactly how organisms harness this geochemical energy remains uncertain. On Earth, serpentinization is common along continental margins where deep mantle materials have been uplifted through tectonic activity. Recent studies of Mars and Europa suggest that this process might be widespread throughout the solar system. To elucidate the relationships between energy and life in serpentinite ecosystems, metabolic activities of microbial communities across three terrestrial alkaline seeps in Canada, Italy, and the United States were investigated using anoxic microcosms. Ultrabasic (pH >11) fluids were amended with various combinations of carbon and nutrient sources and electron acceptors in a block experimental design. Microcosms were incubated for several weeks and compositional analyses of the headspace gases were conducted. Incubations showing evidence of growth were further characterized through terminal restriction fragment length polymorphism and used to obtain pure cultures. The experiments showed that microbial activities had little impact upon the headspace gas composition in the microcosms, perhaps due to low cell densities in the starting material. However, microcosms amended with ferric iron consistently showed evidence of microbial growth when coupled to diverse electron donors, and resulted in the deposition on insoluble iron oxide minerals in the culture medium. Iron reducing isolates obtained from these experiments were Firmicutes most closely related to the genus Clostridium. The results of these experiments provide further insight into common metabolic strategies by microorganisms in the serpentinite subsurface and provide tractable biochemical (sequence data) and geochemical (biomineral) signatures of life in such environments.	

Assessing Spatial Relationships between Sites for Natural Gas Development and Natural and Artificial Features in Pennsylvania, Jamie Wheeler, Alex Manda, Wendy Klein, Burrell Montz, East Carolina University, Greenville, NC 27858

UP51

The spatial relationship between natural gas wells and artificial and natural features (e.g. roads, rivers, groundwater wells, and natural gas pipelines) in the state of Pennsylvania was investigated. The hydraulic fracturing technique that has been used to develop natural gas wells has the potential to affect water quantity and quality, as well as other factors in the local environment where drilling takes place. Here we use Geographic Information Systems to assess potential effects of natural gas development on the environment.

Geospatial data layers of natural and artificial layers were gathered for the state of Pennsylvania. Roads were categorized as first order (i.e., Interstates, U.S. Highways and P.A. Highways), second order (i.e., non-Highway State roads) and third order (i.e., local roads). Using density plots and buffer analysis, the distribution of wells with respect to road and surface water bodies was investigated. Preliminary results show that the number of natural gas wells close to roads increases substantially as you move from first order roads to second order roads, and from second order roads to third order roads. Because millions of gallons of water are used in hydraulic fracturing a very large number of trucks must haul water and drilling equipment to wells and waste water away from the sites. Using the GIS and other data, we tested the hypotheses that the third order roads that had the largest number of nearby wells were the most severely impacted road systems in the state.

In relation to surface water bodies, Pennsylvania's buffer law states that no one may conduct earth disturbance activities within 150 feet of water bodies with exceptional value or high quality watersheds and within 100 feet of other water bodies. However, there are exceptions to this law and preliminary results show that there are natural gas wells within 100 feet of major rivers. We show the distribution of gas wells in the buffers. These wells and other operations may impact the quality of water in the major rivers.

Determining the Biodiversity and Microbial Load Associated with the Restoration of The Scourge of the Atlantic Coast, the Queen Anne's Revenge, Cody S. Cutler, Matthew Schrenk, Shanna Daniel, Jordan Lull, Shanley Church, East Carolina University, Greenville, NC 27858	
A shipwreck discovered in 1996 off the Beaufort Inlet of Beaufort, North Carolina is strongly believed to be the Queen Anne's Revenge, belonging to its more infamous captain, Edward Teach (Blackbeard). Currently, it is being restored at the West Research Campus of ECU so that it can be put on display in the North Carolina Maritime Museum. The extensive procedures associated with preserving the eclectic assortment of artifacts lends itself to microbial contamination and potential degradation of the wooden artifacts. The anoxic environment of waterlogged wood provide an excellent place for erosion bacteria the thrive. Their attachment leads to the formation of a trough in the cell wall, which leads to further degradation. To prevent this hazardous growth, QAR conservationists have placed the wood inside storage tanks with an added biocide (Proxel BD-20). This study seeks to evaluate the effectiveness of Proxel in controlling the microbial load during the restoration process, while at the same time evaluating any adverse effects it has on the waterlogged wood. For this study, the tanks have had water samples taken from them at regular intervals to gather cell counts of each tank over time as they are emptied and re-filled with new solutions of Proxel. Complementing this is the molecular work and genetic sequencing performed. PCR (Polymerase Chain Reactions) will indicate the presence of bacteria in all samples taken. Cultures with a specific growth medium will be used in attempts to grow the bacteria with and without Proxel. Another method will be used involving pine and oak 1cm^3 wood blocks. These sterilized wood blocks have been put in anaerobic tubes with varying solutions of sterile and non-sterile tank water, resazurin, and Proxel. The tube experiment is meant to see a direct correlation of the effects of waterlogged wood with and without Proxel. The outcome of this study will determine the effectiveness of Proxel BD-20 as a treatment method. The results will provide a basis to determine if bacteria are actually degrading the wood artifacts and possibly could be used to find alternative treatment methods to both the QAR project and other preservations.	UP52

On the validity of the Namib darkling beetle subspecies Onymacris unguicularis schulzeae: a molecular genetic analysis, Rachel M. Pollard, Trip Lamb, Department of Biology, East Carolina University, Greenville, NC 27858	
The genus Onymacris (family Tenebrionidae) is a dominant ecological form present in the sand dunes of the Namib Desert. One of the more intensely studied species, Onymacris unguicularis, has been subject to much ecological, physiological, and behavioral research. The northern population of O. unguicularis is isolated from central and southern populations by approximately 300 km of duneless land. The northern population has been described as a distinct subspecies, O. u. schulzeae, based on minor morphological variation, but whether or to what degree it is genetically distinct from the southern subspecies (O. u. unguicularis) has yet to be determined. We examined genetic sequence data for the mitochondrial genes cytochrome oxidase I and cytochrome oxidase II in five populations across the northern and southern Namib. We observed limited sequence divergence among populations within subspecies but substantial genetic divergence between subspecies. Moreover, phylogenetic analysis of our sequence data identified two well-supported groups corresponding with the northern and southern subspecies. Although species delimitation can, at times, be subjective, the observed sequence divergence and phylogenetic reconstruction suggest O. u. schulzeae should be elevated to full specific status. We plan to sequence nuclear genes and conduct morphometric analysis to determine whether additional data corroborate our mitochondrial findings.	UP53
Investigating locomotion behaviors and gene expression in C.elegans exposed to Nicotine, Joseph Polli, East Carolina University, Greenville, NC 27858	
The stimulant drug, nicotine, is profoundly addictive. Nicotine affects organisms nervous systems and alters certain behaviors. In mammals, nicotine will bind to the nicotinic acetylcholine receptors (nAChRs), stimulating the mesolimbic dopamine pathway, and neurologically altering behaviors. The model organism Caenorhabditis elegans (C.elegans), a nematode, has a simple nervous system as well as a fully sequenced genome that consists of 28 of these nAChR genes. The nAChR genes directly influence various behavioral phenotypes. We have been studying the nicotine-induced locomotion behaviors and selected gene expressions in this project. C.elegans were exposed to L-nicotine at concentrations ranging from 1 ppm to 100ppm for 24 hours. The locomotive behaviors of C.elegans were then tracked and analyzed using a Worm Tracker system. Selected genes related to locomotion and stress response were analyzed using qRT-PCR. The genetic basis of locomotion behaviors will be discussed.	UP54

Do male Eastern bluebirds adjust their level of nest defense in relation to the color of their mate's clutch?, Kimberly Wade, Susan B. McRae, East Carolina University, Greenville, NC 27858	
Recent studies investigating the function of blue coloration in birds' eggs have suggested that females in better condition may advertise this by depositing more pigment in their eggshells. We conducted an experimental study of Eastern bluebirds (Sialis sialis) to test whether male bluebirds are able to judge female quality by egg color and adjust their investment accordingly. We selected synchronous nests with similar clutch sizes, and swapped clutches with light blue eggs with clutches having brighter blue eggs (N=14). Egg color was measured in the field with a spectrophotometer. After the eggs hatched, we swapped the chicks back to their biological parents' nests to disassociate the male parents response to signals from the chicks. We also monitored 22 control nests whose eggs were not swapped for comparison. To assay parental nest defense, at both the egg and nestling stages, we presented on sequential days models of a cowbird (a threat mostly to eggs), a crow (a threat to both nest and parents), and a snake (a threat to eggs and chicks). We then scored both the male's and the female's responses individually. A relative measure of parental condition will be based on weight, tarsus and wing length. In general, avian nest defense increases over the course of the nesting period. Thus, we expect the level of nest defense to increase during the nestling period except in the case of the cowbird, that is not a threat to older nestlings. If males respond to the color of the clutch, then we expect that during the egg stage, the experimental males that received brighter blue eggs will have higher aggressive response times for all models than those that received the lighter eggs. This effect may be reduced during the nesting stage after swapping the chicks back to their original parents. We expect the intensity of maternal nest defense to correlate with female condition measures. Duration and intensity of parental responses will be compared between experimental and control nests, and between nest stages and model types, to elucidate whether or not males use egg color to inform their effort in nest defense.	UP55
The Integration of GIS and Ecology: Examining Plant Density of Packera tomentosa (Asteraceae), J.C. Paxton, L.D. Leverett, C.L. Jolls, Department of Biology, East Carolina University, Greenville, NC 27858	
Ecology is the scientific study of the distribution and abundance of organisms, often in relation to chemical, physical, and biotic factors. Geographic Information System (GIS) techniques allow us to visualize these distributions and spatial relationships of organisms on a map. These techniques include map modification through computer software, such as ArcGIS, that allow alteration, storing, querying, and analyzing geospatial data. There are many advantages of integrating GIS and ecology, including the ability to visualize spatial distributions of organisms and then ask relevant questions. At East Carolina University's West Research Campus (WRC), a 25 m by 50 m plot with 5 m2 subplots was established to examine the flowering plant Packera tomentosa and its spatial distribution. P. tomentosa, woolly ragwort, is a native member of the sunflower family (Asteraceae) found in the southeastern coastal plain of the United States. We used the ArcMap 10 program within the ArcGIS software (ESRI, Redlands, CA), provided by ECU, with an orthographic picture of the site location at WRC, to create maps of the sampling plot. GPS coordinates of the sampling plot provided the groundwork of the 5 m2 grid system used to visualize the density of P. tomentosa. Based on the maps created through ArcMap 10, we hypothesized a potential trade-off between total plant density and the proportion of plants flowering. The map suggested that 5 m2 plots with high numbers of plants showed lower	UP56

proportions of flowering P. tomentosa. Analysis of this relationship did not support a statistical correlation between total plant density and proportion of plants flowering ($r2 = 0.016$, $P > 0.05$). Although we did not detect a relationship between total plant density and the proportion of plants flowering, this study emphasizes the value in using GIS to visualize spatial patterns in ecology that may otherwise be hidden.	
Effects of Nitrogen Addition on Salt Marsh Plants, Sherer Etheridge, Brooke Costanza, Robert R. Christian, East Carolina University, Greenville, NC 27858	UP57
Salt marshes are coastal wetlands that are transition zones between the aquatic and terrestrial worlds. Salt marshes are one of the most studied wetlands in North America and are well known for their high productivity. They consist of a variety of plants, but the plants focused on in this experiment were Spartina patens and Distichlis spicata. This project was conducted to determine how salt marsh plants respond to different dosages of nitrogen addition. Our hypothesis was that higher dosages of N increase plant growth as measured by height, density, and biomass. The samples for this experiment were collected from the Virginia Coast Reserve Long-Term Ecological Research site at Upper Phillips Creek located on the Delmarva Peninsula. S. patens and D. spicata were collected in the high marsh area in the month of August 2011. In April 2011 three blocks of five 2m x 2m plots each were set up in the high marsh. Each plot received a dosage of urea monthly through July. Total amounts added per plot were 0 g N"m-2, 7.5 g N"m-2, 15 g N"m-2, 30 g N"m-2, or 100 g N"m-2. The plant samples were collected using a 0.25m x 0.25m PVC quadrat, and two samples were randomly chosen within each plot. Above ground biomass was collected using plant clippers and cutting the plants at the bottom of the stem as low as possible. Once the samples were cut they were put into labeled bags. In the laboratory, live S. patens and D. spicata were separated by species, and the dead material for both species was combined. The total number of live culms (all sizes) was counted for each group as well as the total number of live culms less than 15 cm. Also, the lengths of the ten longest live culms were measured. A drying oven was used to remove any moisture from the plant samples, and the dry biomass was determined. Plant height and biomass were positively affected by dosage of nitrogen with statistical significance, while density was not. Blocks 1 and 2 showed an increase in the total live biomass; however, block 3 showed no response. Plots in blocks 1 and 2 had proportionally more D. spicata than in block 3. Block 3 plots tended to be dominated by S. patens. Therefore, there may be geographic differences in the response to nitrogen in high marshes, and these are dependent on species differences.	

Emplacement of the Gupton Pluton: A lobe of the Alleghanian Rolesville Batholith, eastern Piedmont, North Carolina, E. Thornton, E. Horsman, East Carolina University, Greenville, NC 27858	
The Gupton pluton is a prominent lobe on the NE margin of the ~2000 km3, Alleghanian-age Rolesville batholith in the eastern Piedmont of North Carolina. Batholith construction is spatially and temporally associated with slip on regional shear zones, including the Macon fault zone on the western margin of the Gupton pluton. The intrusion consists of mostly fine- to medium-grained granite. Plagioclase (35%), potassium feldspar (31%), and quartz (30%) dominate the rocks, with the remainder composed of biotite (3%) and other accessory minerals (1%). Foliation, defined by biotite, is occasionally visible in the field. To test reliability of field observations of fabric, we compare field measurements with results of two laboratory fabric analysis techniques on oriented samples. Shape-preferred orientation analysis of slabbed specimens provides quantitative constraints on 3-d alignment of visible crystals. Anisotropy of magnetic susceptibility analysis of cored hand samples provides a measure of the alignment of all mineral grains by quantifying how induced magnetization perturbs a known magnetic field. Results from these two independent techniques are compared with one another and field measurements to provide a check on the consistency of fabric results. We hypothesize that the Gupton pluton was emplaced as an outward-flowing lobe from the main body of the Rolesville batholith. The Macon fault zone was active during emplacement of the pluton and likely influenced the location and growth of the intrusion. The Trawenagh Bay granite in northwestern Ireland and the magmatic flow lobes of the Tuolumne batholith in California provide analogous examples of the incremental batholith construction observed in the Rolesville batholith.	UP58
Modeling tropical disease migration as a consequence of climate change, Ashlee Perkinson, Enrique Reyes, Department of Biology, East Carolina University, Greenville, NC 27858	
This projects aims to assess the implications of climate change on dengue fever for coastal North Carolina using computer modeling. A niche modeling approach was applied to map present and potential distributions of dengue vectors by using disease epidemiological data as proxy for presence. The results of this project could help to plan and educate the public on the potential risks of tropical diseases in North Carolina. Appreciating the connection between ecological and climatological change in relation to tropical disease distributions could eventually facilitate improved preventative strategies. Dengue fever is a vector-borne disease spread by the mosquito, Aedes aegypti. Although still rare in the continental US, dengue fever is endemic to Puerto Rico and has been migrating north across Mexico in recent years. Evidence of this northern migration of dengue comes as recent as Aug 19th, 2011 with the first native case in Marion County, FL. Weather variables affect both disease transmission and their vectors in their distribution range and permanence. This project's hypothesis was that as changes in temperature and precipitation patterns occur, a more favorable environment will be created in the southeastern United States for dengue communication. To test this hypothesis, present and potential habitat distributions of dengue cases, as result of future climate projections, were mapped using two computer-based	UP59

simulation analyzes. First, a species habitat model (MAXENT) for confirmed dengue cases was used to visualize present mosquito distributions in Mexico; this model helped determined the environmental parameters that describe areas of disease transmission. Then, a range of temperature scenarios obtained from the IPCC were used to map probable dengue distribution in the southeast of the United States. There are serious public health implications associated with an extended geographic range of dengue fever, as it is likely that the results of this project will highlight North Carolina as a probable area for future dengue presence.	
Evaluating the Effects of Watershed Impervious Surface on Stream Biochemistry, M.H. Postma1, C. Humphrey1, M. O'Driscoll2, 1 Environmental Health Sciences Program, 2 Department of Geological Sciences, East Carolina University, Greenville, NC 27858	UP60
Urban stormwater runoff can pose significant environmental and public health risks by transporting microbial contaminants from impervious surfaces (streets, roof tops, driveways, etc.,) to streams and other surface waters. Some research has shown that watersheds with a high percentage (> 10%) of impervious surfaces are more likely to have impaired waters. This study aims to advance the understanding of the link between watershed impervious surface percentage and microbial concentrations in several streams in Pitt County, NC. Microbe (E. coli) concentrations and physical characteristics (pH, turbidity, flow, and temperature) of stream water will be measured and compared during base flow conditions for 6 months. The samples and readings will also be collected before, during, and shortly following at least two separate storm events. These analyses will be conducted on 6 watersheds with different percentages of impervious surfaces. The microbial concentrations and physical parameters of the streams draining areas with different % impervious surfaces will be compared. It is expected that urban areas with higher percentages of impervious surfaces will generate larger volumes of stormwater runoff and will have higher microbial (E. coli) populations than more rural watersheds. This study will help determine if there is link between percentage impervious surfaces and stream indicator microbial populations and stream water physical characteristics.	

Calorimetric Investigation of Copper (II) Binding to A² Peptides: Thermodynamics of Coordination Plasticity. Journal of Biological Inorganic Chemistry, J. E. Dwulet, C. Sacco, R. A. Skowronsky, S. Gade, J. M. Kenney, A. M. Spuches, East Carolina University, Greenville, NC 27858	
Alzheimer's disease is a fatal neurodegenerative disease that has claimed as many as 5.3 million Americans. One of the characteristic hallmarks of Alzheimer's is the amyloid plaques that build up around the neurons. The aggregated amyloid-² (A²) peptide is one of the main components of the amyloid plaques found in the brains of individuals with Alzheimer's disease. Interestingly, high concentrations of metals (copper, zinc and iron) have been found inside these amyloid plaques. The A² peptide can be either 40 or 42 residues in length but studies have shown the metal binding site is within the first 16 residues. Copper interactions with A² have been studied extensively via various spectroscopic methods and the residues suspected in binding are the N-terminus (N-terminal amine or aspartate group), and the histidines in positions 6, 13, and 14. The purpose of this research is to study the thermodynamics of copper binding to truncated forms of the A² peptide using isothermal titration calorimetry (ITC) and ACES as buffer and weakly coordinating ligand. Data recently published in the Spuches lab [1] revealed that the overall free energy of Cu2+ binding to three A²28 mutants where a potential histidine ligand was replaced by a non-coordinating alanine is very similar to that of wild type A²28. Furthermore, the data revealed that this is the result of entropy/enthalpy compensation where the removal of a histidine ligand resulted in an increase in entropy upon binding and a decrease in the enthalpy of Cu2+ binding. To investigate this effect further, the thermodynamics of Cu2+ binding to a double mutant peptide, A²28(H6AH13A), will be obtained to determine the effect of removal of two histidine ligands. The second experiment will be the determination of heat capacity (Cp) of Cu2+ binding to the single mutant, A²28(H6A). The heat capacity data will be compared to that of the wild-type peptide. 1. C. Sacco, R. A. Skowronsky, S. Gade, J. M. Kenney, A. M. Spuches. Calorimetric Investigation of Copper (II) Binding to A² Peptides: Thermodynamics of Coordination Plasticity. Journal of Biological Inorganic Chemistry. In Press. 2012. DOI 10.1007/s00775-012-0874-3	UP61

Spatial and Temporal Variation of Water Quality in North Carolina's Coastal Rivers, Evan Knight, Roger A. Rulifson, Coley Hughes, Jeffrey Dobbs, East Carolina University, Greenville, NC 27858	
The rivers of eastern North Carolina are very dynamic and water quality can change dramatically within hours. In our study we are quantifying water quality in coastal watersheds and comparing our results to prevailing environmental conditions. Water quality readings were taken measuring water temperature (C), salinity (ppt), conductivity (mS), dissolved oxygen (mg/L), percent saturation of oxygen, pH, and water clarity (Secchi visibility, cm). Environmental factors such as cloud cover and wind speed were taken to see how the environment can change water quality. Upstream and downstream water quality measurements were taken in the North, Pasquotank, Little, Perquimans, Chowan, Roanoke, Scuppernong, Alligator, Pungo, Pamlico, Neuse, and Cape Fear rivers. We began taking these measurements in May 2011 and have taken one round of measurements per month in each river through the present day. Some of the most dramatic changes occurred after Hurricane Irene came through eastern North Carolina, when we found that dissolved oxygen levels and salinity levels dropped considerably in the majority of these coastal rivers. This drop in dissolved oxygen resulted in several fish kills in these rivers.	UP62
Synthesis and Reactivity of 4,4'-Methylenebis(N-alkylaniline)s, Rory O'Brien, Timothy J. Romack, Department of Chemistry, East Carolina University, Greenville, NC 27858	
In order to further understand the stability and reactivity of urea linkages formed between aromatic isocyanates and aromatic amines we have undertaken the synthesis of selected N-alkyl substituted anilines and 4,4-Methylenebis(N-alkylaniline)s. These compounds will be employed in reactions with isocyanates to prepare model compounds to study urea linkages of interest and to synthesize new polyurethanes. Synthetic pathways currently being pursued are 1. Beginning with 4,4-methylenediphenyldiisocyanate, react with a Grignard reagent to make the corresponding amide. Subsequent reduction with LiAlH4 will provide access to the secondary aromatic amine(s) of interest in high yield. 2. Beginning with aniline or 4,4-methylenedianiline, react with an aldehyde or ketone to form the corresponding imine, then treat with LiAlH4 to provide the corresponding secondary aromatic amine(s) of interest. Products are being characterized using 1H NMR spectroscopy and mass spectrometry.	UP63
Benefits of Urban Agriculture, Danny Franch, East Carolina University, Greenville, NC 27858	
Since the Industrial Revolution, people around the world have been leaving rural farm and graze lands, where people grow their own food, and moving to cities. This great migration to the cities has led to overcrowding in many cities and an increase in the amount of energy used to harvest and deliver food to consumers. The general trend of people moving to urban areas has also led to pollution and a decrease in quality of life for many residents. Up until the past few decades, most people did not think of growing crops and plants in the city in places such as parks, community gardens, and rooftops. Urban agriculture can be used as a tool to help improve the overall health and quality of life of city dwellers and have many positive environmental benefits. In order to investigate how urban agriculture affects the health and well being of city residents, increases green space, and reduces high temperatures, five cities in which urban agriculture is practiced were examined.	UP64

Professional Web Design and The Effects on Business Perception, Heather Burks, East Carolina University, Greenville, NC 27858	
I have been studying the effects of a professionally designed website on the perception of a company. A professional designed website was defined as a website that was either a custom designed website or a significantly customized template that was done by a professional web designer being paid for the job. I put together a survey that was given to professional photographers on a forum called SWPB. The photographers were asked some basic business questions such as how long they have been in business, how many weddings they photograph per year, and how much their average wedding costs. They were then asked to answer questions about their current website such as if it was professionally designed or not. The last questions were about their most recent website change. This was to measure if there was any significant change in their business performance or perception based on the change in the website. I also measured if there was any significant difference in the amount of business a photographer got with a professionally designed website versus the non-professionally designed website. I predict that the companies with professionally designed websites will have significantly more business and a better perception of their companies than the companies that did not have their website designed by a professional.	UP65
North Carolina Science Olympiad Coaches Attitudes Towards Nutrition Science Content, Melissa Davis, East Carolina University, Greenville, NC 27858	
North Carolina Science Olympiad is a non-profit organization that hosts yearly K-12 competitions on university, community college, and public school campuses across the state. The competitions consist of rigorous academic interscholastic events in the fields of science and mathematics that combine hands-on, interactive and inquiry-based activities. Department of Nutrition Science researchers at East Carolina University were asked to develop the elementary school grade competition for nutrition science and to conduct a coaches training clinic. This was the first year a nutrition science competition was a component the event. A researcher developed survey using a Hedonic Scale (1=strongly agree; 5=strongly disagree) was created to measure the coaches (n=22) attitudes about nutrition science and opinions of the training. Data indicated coaches believed students do not have adequate nutrition knowledge (1.8 ± 0.59). They only somewhat agreed that they possess the knowledge (2.4 ± 0.86) and skills (2.7 ± 0.78) necessary to effectively teach nutrition to their students. The coaches also strongly agreed that unhealthy food habits will affect a child's health into adulthood (1.2 ± 0.39), and that nutrition education should begin before elementary grades. The survey also included an evaluation of the training, where all 22 participants agreed that the training was interesting and that the materials, resources were useful to their practice. Ascertaining teachers' attitudes and opinions will be important in guiding the development of future events.	UP66

Determining Sense of Place and Attachment Among International Students in a Study Abroad Setting, Meagan O'Keefe, East Carolina University, Greenville, NC 27858	
The studies of sense of place and place attachment are of rapidly growing interest in the social science and humanities communities. These studies deal with how people relate to their interior and exterior environments and how these environments shape their identities. The purpose of this project is to look at an aspect of sense of place that has been debated among different researchers how globalization of the modern world affects people's sense of place and attachments. The project looks to see how people create attachments in settings other than their primary homes and how these other attachments influence their sense of identity. This will be done by examining a sample of international students who have engaged in a study abroad experience. The students all came from different countries to study in Manchester, England. Through the use of participant-generated photography and opened ended survey questions, the researcher aims to find ways in which the students created attachments in Manchester that have influenced a sense of place and identity. The photographs and responses will be analyzed for similarities, differences, and themes among the students as individuals, as well as potential similarities and differences based on their country of origin. Finally, the researcher will analyze how the international students as a whole may have created a sense of attachment to each other as their own community within Manchester. The researcher predicts that the students will all be able to identify a new found sense of place after their time spent in the exchange program that has meaningfully impacted their sense of identity. The results of the study will add to the expanding knowledge of how people in the modern world create sense of place in a more globalized context.	UP67
LGBT Employees: The Effects of Race and Age on Performance Evaluations, Alexandria Caple, Lisa Baranik, PhD, East Carolina University, Greenville, NC 27858	
The lesbian, gay, bisexual, and transgender (LGBT) community is one of the most discriminated groups of people in the United States and throughout the world. In the LGBT community, discrimination can come in many forms, from stereotypes and microaggressions, to heterosexism. However, the degree to which this discrimination affects performance evaluations in the work environment is an understudied area. The current study examines the discrimination in performance evaluations of LGBT individuals, while looking at generational differences between the Baby Boomers (with an average age of 42.47 years) and Generation Y (with an average age of 19.55 years) as well as ethnicity variances of the raters. I hypothesize that individuals from the Baby Boomer generation will be more likely to assign a lower performance evaluation score to masculine gay men than individuals from Generation Y. I also hypothesize that minority status individuals will be more likely to assign a lower performance evaluation score to masculine gay men than majority status individuals.	UP68

The Impact of Perceived Inequality and Trait Aggression on Workplace Aggression, John Granecki, Mark Bowler, East Carolina University, Greenville, NC 27858	
The objective of the current study was to explore the relationship between trait aggression and perceptions of inequality, or injustice, as it relates to the endorsement of active and passive workplace aggression (WPA). Specifically, participants' implicit aggression was measured via the Conditional Reasoning Test of Aggression (CRT-A) and their explicit aggression was measured via the anger-hostility scale of the NEO PI-R. After completing these measures, participants responded to a series of 12 counterbalanced vignettes detailing situations of workplace inequity for which they rated the justification of active and passive aggressive responses, as well as the overall fairness of the situation. This allowed for the determination of the relationship between perceptions of inequality and endorsement of workplace aggression. Moreover, first measuring for implicit and explicit aggression facilitated analyses that differentiated the interaction of traits and situations on aggressive behaviors (Kennedy, Homant, & Homant, 2004). Overall, we expected to find that individuals who scored high on both measures of aggression will endorse the overtly aggressive acts, whereas those who scored high on the implicit measure of aggression but low on the explicit measure of aggression to only endorse the only passive aggressive acts. We also predicted that those who score low on both implicit and explicit measures of aggression would endorse neither the overt or covert acts of aggression.	UP69
The Effects of Paternal High Fat (HF) Diet on Neurobehavioral Function in Mice, Joshua E. Hauserman1:3, Iola D. Conchar1, Tiffany Phasukkan1, Jeremy Edwards1, Elena Pak2, Alexander Murashov2, Tuan D. Tran1;1 Multidisciplinary Studies Program in Neuroscience, 2 Department of Physiology, Brody School of Medicine, 3 Department of Psychology, East Carolina University, Greenville, NC 27858	
Obesity is an increasingly important global public health problem and a risk factor for morbidity and mortality. Many studies have examined the maternal contributions of transgenerational epigenetic effects, showing that epigenetic mechanisms of a high-fat diet may contribute to negative impacts on glucose regulation which demonstrate neurobehavioral impairments and cognitive dysfunction (Greenwood et al., 2008, 2005, 1996). Interestingly, some evidence shows that obese and diabetic fathers are more likely to have obese offspring predisposed to diabetes (Harjutsalo et al., 2006; Loombda et al., 2008) and more recently, it has been shown that the offspring of obese fathers have higher body fat composition and lower glucose tolerance (Parker et al., 2010), further bolstering the notion that nongenetic transgenerational effects may be contributing to enduring physical and metabolic deficits in affected offspring. Yet there is paucity of information about whether paternal contributions may also underlie some of the neurobehavioral deficits in offspring. The present study examined the effect of paternal high-fat (HF) diet on susceptibility to brain and cognitive deficits in adult offspring. Adult male C57BL/6J mice were placed on a diet regimen for 12 weeks: (1) 60% fat chow (high-fat, HF); (2) 10% fat chow (control); or (3) a motor exercise group on 10% fat chow. The males were mated with normal C57BL/6J females and their adult offspring were examined for changes in physical, glucose, and neurobehavioral measures. Each mouse will undergo two well-studied learning paradigms (1) spatial learning in the Morris water maze and (2) trace eyeblink classical conditioning (TECC), both of which assess hippocampal function. Afterwards, their hippocampi will be examined for cell loss in key populations essential for	UP70

spatial learning and TECC. Data generated from this study may elucidate transgenerational effects of HF diet on offpring susceptibility to neural and cognitive deficits. This research was supported by ECUDOI Pilot Grant to AKM and internal funds to TDT.	
Does Survival Processing Enhance Recognition by Establishing Highly Distinctive Memory Traces?, Samuel Yeboah, Department of Psychology, East Carolina University, Greenville, NC 27858	UP71
Understanding the factors that influence normal remembering and forgetting has been central to cognitive psychology from its beginning. A recently discovered memory phenomenon is called the survival processing effect. The effect involves enhanced memory for information that is thought about in relation to a wildness survival situation. The current study is design to explore the proximal mechanisms of the survival effect. In particular, the criterial recollection task is used to assess memory trace distinctiveness in order to test the hypothesis that the survival effect reflects the memorial benefits of establishing especially unique memory traces.	
The Relationship between Cognitive Complexity and Person Perception, Anna M. Gaddy, East Carolina University, Greenville, NC 27858	UP72
This study examines the impact of an individual's personality (i.e. cognitive complexity) on one's perceptions of others. The term cognitive complexity refers to the dimensionality of a person's thought, or the degree to which an individual differentiates and incorporates multiple elements of his or her environment. The present study is designed to test whether differences in cognitive complexity create differences in a person's perception of others. Previous research indicates that people with lower levels of cognitive complexity exhibit personalities that may be described using only three distinct factors, whereas people with higher levels of cognitive complexity display personalities that are indicative of seven factors (Bowler, Bowler, & Phillips, 2009). The current study will investigate whether people with differing levels of cognitive complexity view others in terms of differing numbers of personality factors. We predict that individuals with lower levels of cognitive complexity will view others using fewer personality factors, while individuals with higher levels of cognitive complexity will view others using a greater number of personality factors.	

Khaled Said's Death as a Catalyst for the Egyptian Revolution, Hannah Potter, East Carolina University, Greenville, NC 27858	
In the summer of 2010, Khaled Said was brutally attacked by police in Alexandria, Egypt. He was beaten until his death, but the police claim other wise. They stated that he died from asphyxiation from swallowing a bag of drugs that were on him. His mother found this unbelievable, and said that he did not even smoke tobacco. A picture taken at the morgue reveals that simple asphyxiation could not have been the cause of his death. Khaled Said's face was unrecognizable, grotesque, and clearly beaten badly. Several people witnessed the brutality of the event saying that the police banged Said's head against a rail and beating him severely for over twenty minutes. His family and friends shared the picture of Khaled Said in hope that it would be a signal that action needed to be taken. A local Google executive, Wael Ghonim, started a Facebook group in memory of the twenty-eight year old Khaled Said, whose life was brought to an abrupt end. This group was entitled We Are All Khaled Said, and its purpose is for others who had experienced police brutality to share their stories, and to spread awareness to the outside world of the problem. The rapid spread of the information and images of Khaled Saids brutal death gave others courage to step forward, and share information about their experiences with the police. If his family had simply accepted the polices claim that Said had died of asphyxiation, the spark or inspiration that other local people needed to finally come forward and tell their stories would have been absent. There has been a transformation in Egypt because of Saids death. Khaled Said's story and image that quickly spread throughout Egypt has not only inspired social and political change, but has also given courage to the everyday people to share their experiences and stand up to the police. In researching this process of the information of his death and the events that followed I used the group on Facebook, We are All Khaled Said, as a primary source. For secondary sources I used online versions of Al-Masry Al-Youm, Al-Ahram, Jadaliyya, and MERIP to further understand the continuing impact of Said's death.	UP73
Parent's Perspectives of Their Child's Participation in Youth Soccer, Melissa Teresak, Ember McKown, East Carolina University, Greenville, NC 27858	
Numerous studies have been done on parental perceptions of their supportive behaviors in their childrens development. However, limited attention has been given examining specific supportive behaviors in activities children are involved in. With over 20 million children ages 6-18 playing community soccer in the U.S., very little is known regarding the parental supportive behaviors as they relate to their childrens soccer participation/involvement. The purpose of our study was to identify specific actions parents undertake in supporting their children s soccer involvement. In addition, we examined how youth sports (soccer) influences various components the parent-child relationship. Our sample consisted of 148 parents who have a child participating in an Eastern Carolina county recreation soccer league completing an online survey of 34 multiple choice and matrix questions. Our most significant portion of the questions examined what parents identify to be supportive, by means of communication and behavior, in regards to their childs involvement with soccer. In ranking the sources of support perceived by parents we found that the number one source was attending the games. In addition, parents showed support of their children's soccer involvement by purchasing and providing necessary soccer equipment and attending the practices. Furthermore, when asked if the child's involvement in playing soccer has affected the parent-child relationship and made it stronger, more than half responded yes. The significance of this study is to provide parents,	UP74

coaches, and professionals with an understanding of parent's perspectives regarding their supportive characteristics and influence on their child's participation in youth soccer on and off the field.	
Aggregation and Persistence in Economic Indices, Cristian Potter, East Carolina University, Greenville, NC 27858	UP75
This study aims to explore whether the fast adjustments of the average of the sub-industries that compose the industrial productivity series are in line with the slow adjustment of the average of the aggregate productivity series. In particular the study focuses on the aggregation process and its effects on the link between the volatility and the persistence that is prevalent amongst the sub-industry series and those of the aggregate productivity series. The data is the 1958-2005 NBER-CES manufacturing Industry Database, which is broken down into 473 industries. Statistical simulations will be run using SAS statistical software package, and the results will be analyzed and compared to existing theory. We expect that the results of our analysis will be able reconcile the volatility and low persistence (or fast adjustments) observed on the average disaggregate series with the smoothness and persistence (or slow adjustments) of the aggregate series.	
Young Adult's Perspectives on the Difference Between Grandmother and Grandfather Involvement, Elizabeth N. Drew, Jessica E. King, East Carolina University, Greenville, NC 27858	UP76
The purpose of this study is to examine the amount and types of contact emerging adult grandchildren have with their grandparents. While many studies examining satisfaction and closeness often present their findings without differentiating between grandfathers and grandmothers, some research has found that grandchildren are more involved and emotionally closer with grandmothers than grandfathers (Eisenberg, 1988). Two questions were used in this research study: How do young adult grandchildren contact and communicate with their grandfathers and grandmothers? Are young adult grandchildren emotionally closer and more satisfied with grandfathers or grandmothers? Subjects were 138 young adults 18-25 years of age who completed an online survey regarding their relationship with a set of grandparents that were currently living together in the same household. Preliminary findings show that over half of the young adult grandchildren (58.7%) talked to their grandmothers and grandfathers at least monthly. A Chi Square analysis indicated that young adult grandchildren were more likely to call and talk to their grandmothers compared to grandfathers. In addition, grandchildren reported that they were more likely to send and receive letters from grandmothers than from grandfathers. The data suggests that technology use (e-mail, texting, Facebook correspondence and Skype) within young adult grandchildren-grandparent relationships were not as common as expected, as less than 10% of participants used any of these methods monthly. Results also indicate that grandchildren were significantly closer emotionally to their grandmothers compared to their grandfathers. However, most grandchildren were extremely satisfied with both their grandmother and grandfather relationships. The significance of this study shows that young adult grandchildren have different means of contacting and communicating with their grandfather and grandmother. Even with these differences, they are overwhelmingly satisfied with their intergenerational relationships.	

Creating a Culturally-Tailored Adherence Intervention for African Americans with Type 2 Diabetes, Heather Wiles, Alyse Bone, Taylor Rush, Christyn Dolbier, East Carolina University, Greenville, NC 27858	
Background: Over the past 20 years Type 2 diabetes (T2DM) prevalence has steadily climbed, with African Americans (AAs) experiencing higher prevalence rates than Caucasians. Specifically in rural Eastern North Carolina (ENC), T2DM prevalence and racial disparities are even greater. Additionally, adherence to treatment plans (medication, healthy diet and exercise) has been problematic, especially among AAs. Behavioral interventions that focus on increasing adherence by enhancing problem-solving and coping skills have shown to be somewhat effective. However, there is a lack of research focused on the role of theoretically informed behavioral interventions that are culturally-tailored to rural AA populations, addressing specific barriers they may face. Purpose: The proposed study aims to develop a theoretically-based, culturally-sensitive intervention intended to significantly increase treatment adherence in low income, rural AAs with T2DM in ENC. Method: Recruitment will take place at ECU's Family Medicine Clinic, where over 2400 patients with T2DM are seen each year. There will be two phases for this study. In phase 1, we will conduct a focus group consisting of AAs who currently have trouble with adherence, or who have experienced trouble in the past. These data will be used to help inform us of barriers to adherence rural AAs with T2DM are experiencing. This information will be incorporated with a theoretically-based group intervention aimed to increase behaviors associated with treatment adherence, which will be pilot tested in phase 2. Participants must be 18 years old, AA, diagnosed with T2D and currently have elevated blood sugar levels (HbA1c > 8%). Participants will be randomly assigned to an active control (AC) group (4 weeks of diabetes education only) or intervention group, which will involve a four-week group intervention to address barriers to adherence. Pre- and post-intervention data will be obtained to measure diabetes knowledge, efficacy over disease management, medication adherence, and psychological distress. Pre- and post-intervention levels of blood sugar levels (HbA1c) will also be compared. Hypotheses: We hypothesize that those in the intervention group will show greater rates of adherence, more knowledge and confidence about treating T2DM, greater decreases in emotional distress, and lower HbA1c levels than those in the AC group.	UP77

The Effectiveness of Assistive Technology with PreK Children with Autism, Lindsay Stump, Dr. Melissa Engleman, Dr. Linda Crane Mitchell, East Carolina University, Greenville, NC 27858	
It is known that young children with autism require specialized support to make educational progress. It has been reported that children with autism are also visual learners and that their interactions with technology are sometimes more motivating than interactions with teachers. The interactive computer used for this study is the TAPit® (Touch Accessible Platform for Interactive Technology) and the visual learning software used in conjunction with this technology is called VizZle. The TAPit® is a portable and adjustable learning station that allows children to navigate the screen using the touch of a finger. VizZle uses simple pictures and positive reinforcers to keep children engaged. This study focuses on the use of both of these new technologies by comparing rate of progress in achieving individualized learning goals of one randomly selected preschool child with autism against a previous rate of attainment without the technology tools. This child was selected from a larger research study already being conducted at a preschool center. The investigators reviewed the Individualized Education Programs (IEPs) for each child and selected two learning goals to evaluate. Personal information i.e. favorite color, favorite activities, etc. was collected in the beginning from the teachers and the parents of each child. Baseline findings were noted on the child's progress on the two objectives during the school year to that point. Ten individual sessions were administered using the treatment. Each session was once a day for 10-15 minutes over a two-week period. During each session, the child participated in a warm-up activity followed by carefully selected lessons appropriate to the child's individual learning goals. VizZle's data tracking feature was used as a permanent record, and informal, anecdotal comments were made using pencil and paper. Further, reliability checks were conducted using video recordings of each session. Although not yet formally analyzed, preliminary findings indicate progress beyond the target goals, and that the rate of attainment will be higher than that of growth without the treatment condition. The summarized results will be shared at the end of March. Although the results of this study will not show conclusively that children with autism respond better to visual technologies than to sessions with their teachers, it will add to this knowledge base.	UP78
Healthcare Clinic Design in Eastern North Carolina, Alexandria Booker, East Carolina University, Greenville, NC 27858	
Healthcare clinics in are the only source of medical care for many eastern North Carolina residents. There is a clear need for more because those currently in existence always have full schedules. Despite this, in the past few years, new health clinics have closed their doors. Through anthropological methods, this study was done to understand what characteristics clinics that remain open have in common. It is important to understand what difficulties clinics in all stages have struggled with, and how they managed to deal with them. By identifying clinics that are recently opened, those that have been opened in the last five years, and those that have been open more than ten years, this study identifies key problems in each developmental stage of a healthcare clinic. These issues and how they were handled, were uncovered through the use of questionnaires for the clinics, interviews with key informants working in the clinics, and a key informant in the community that receives care from the clinics. This study will contribute to the success of healthcare clinics in eastern North Carolina.	UP79

Attitudes Towards Help-Seeking For Gambling Problems Among University Students, Daniel Fischer, Tony Cellucci, Ph.D, East Carolina University, Greenville, NC 27858	
Gambling has increasing been recognized as a behavioral health problem among college students resulting for some in negative consequences. However, few affected students seek help for such difficulties. The goal of this study is to explore attitudes toward help-seeking for gambling among college students. The study was modeled after a similar alcohol study by Krogh (2005) in measuring future help-seeking intentions if one were to experience various specific gambling related problems as well as general help-seeking. This study examined both positive and negative predictors of such intentions (i.e., approach and avoidance factors), such as positive attitudes toward treatment, various clinical factors, and perceived stigma. One hundred ECU university students (age 18-25) completed an anonymous online survey including sections on demographics, gambling experiences and possible problems, and clinical factors such as alcohol use and emotional concerns. They also responded to questionnaires on related social and attitudinal factors (e.g., social support, self-concealment) and indicated their likelihood of help-seeking. Descriptive information will be provided on the frequency with which various gambling activities are reported within this population. The planned data analysis includes checking on the internal consistency (i.e., alpha) of the various scales and conducting independent t-tests to check for various gender differences. Correlation analyses will then be run to examine the interrelationships between the various variables and their associations with help-seeking intentions for gambling. Significant correlations will be further analyzed with the use of a regression model to identify the best predictors of help-seeking intentions.	UP80
Hippocampal-Based Learning Impairments in a Triple-Transgenic Mouse Model of Alzheimer's Disease Across Developmen, Lily M. Medina1, Iola D. Conchar1, Mark Mannie2, Qun Lu3 and Tuan D. Tran1,4; 1 Department of Psychology, 2 Microbiology, 3 Anatomy and Cell Biology, 4 Multidiscplinary Studies Program in Neuroscience, East Carolina University, Greenville, NC 27858	
Alzheimer's disease (AD) is characterized by severe cognitive dysfunctions, including memory loss and difficulty with spatial awareness, severely hindering everyday performance for those it affects. AD is the primary cause of dementia and contributes to 60-70% of cases (Barker et al., 2002). About 5.3 million Americans (roughly 12.5%) over 65 are afflicted with AD (Holtzman et al., 2011). Although AD generally plagues the elderly, brain degeneration and cognitive dysfunction can occur 10-20 years before dementia onset. An alarming number of individuals are affected by AD worldwide (~30 million) and by extension, the burden of this disease is encumbered by patients' families, caregivers, and society at large, prompting tremendous efforts by researchers and clinicians to translate their findings into developing efficacious therapies. AD is thought to be a disorder involving multiple genetic abnormalities and cellular pathways (Holtzman et al., 2011), and current studies using genetic methods may lead to new insights into its pathogenesis. Indeed, present studies using triple-transgenic (3xTg-AD) mice expressing APP-Swe, PS1-M146V and tauP301L mutations are helping to this end. In this study, we will examine whether 3xTg-AD mice exhibit cognitive deficits across the lifespan, thus modeling disease progression in humans. At 3, 6, 9, and 12-months of age C57BL/6J and 3xTg-AD mice will be exposed to 10 days of water escape training using the place version of the Morris maze (7 acquisition; 3 probe). Afterwards, they will be trained to the "trace" version of eyeblink classical conditioning (ECC) for 6 consecutive days. Learning in both tasks is mediated by an intact hippocampus, a primary target of AD pathology. Because the 3xTg-AD	UP81

mice bear all three hallmark features of AD seen in humans, we hypothesized that they will exhibit impairments in acquiring both tasks successfully, particularly as they age. It is hoped that data gathered from these assessments will provide greater insight on the types of cognitive impairments resulting from AD, thus opening possibilities for developing experimental therapeutics that minimize its pathogenesis. Funding: Wooten Foundation grant to MM.	
Social Equity in Managing and Marketing Mass Tourism Gatherings in Myrtle Beach, South Carolina, Sierra Plato, Bob Edwards, Center for Sustainable Tourism, Department of Sociology, East Carolina University, Greenville, NC 27858	
The Center for Sustainable Tourism's RESET Initiative (Race, Ethnicity and Social Equity in Tourism) is researching the long-standing controversy in Myrtle Beach, South Carolina over claims of racially discriminatory treatment of Black Bike Week and the predominantly white, Harley Week. For decades, these two mass gatherings have been held on successive weekends in May and kicked-off the summer tourism season in Myrtle Beach. Recently, the city's efforts to de-market both biker events and re-brand itself to attract a different visitor profile have led to claims of inequitable treatment by participants in both biker week events. The exploratory research proposed here will rely upon several sources of data including field observations, newspaper coverage, legal filings and stakeholder websites to investigate the following questions. What steps are being taken to de-market both biker events in order to attract a different visitor profile? How does Black Bike Week differ from the predominantly white, Harley Week, in terms of number of number of participants, law enforcement officials, and marketing? Is there any evidence of unequal treatment towards Black Bike Week versus Harley Week? How is the residential community responding to this change and under what circumstances?	UP82

Consumer Acceptance of a Pizza Sauce Made With a Variety of High Fiber Vegetables, Caroline Knauss, Samantha Walters, Ashley Roseno, Melani W. Duffrin, PhD, RD, LDN, East Carolina University, Greenville, NC 27858	
Cardiovascular disease is the leading cause of death in both men and women in the United States. Many risk factors for CVD, like obesity, type 2 diabetes, hypertension, and hypercholesterolemia, are significantly influenced by various dietary factors, including antioxidants, phytochemicals, folate, and fiber. The purpose of this study was to develop a product that was higher in a variety of high fiber vegetables and easy to incorporate into the everyday American diet. Pizza sauce was chosen as the food of interest because of pizza's common consumption in the United States. A convenience sample of untrained, volunteer panelists (n=60) was recruited from East Carolina University. Three types of sauce were tested, one generic pizza sauce, one semi-homemade that included generic sauce with added vegetables, and one sauce that was homemade to include a variety of high fiber vegetables. A scorecard with a hedonic scale was used to rate the sauce samples for sensory characteristics. Total, 70% of the panelists agreed or strongly agreed that they were concerned with how much fiber they ate per day, while 81.7% of the panelists agreed or strongly agreed that they would be more likely to buy sauce that was higher in fiber. There was a significant difference between the higher fiber sauce and the other two sauces in every sensory characteristic. Overall, the analysis of variance indicated the higher fiber pizza sauce was less acceptable than the generic pizza sauce with the least fiber and the semi-homemade pizza sauce with less fiber. The mean overall acceptability of the higher fiber, semi-homemade, and generic sauces on pizza were 5.47±1.60, 6.55±1.11, and 6.71±1.05 respectively. Further research to aid in pizza sauce development is needed.	UP83
Areas of Executive Functioning that May Impact Weight Loss in Adolescents Using a Small-Change Approach, V. Buonopane, A. Martir, L. Lutes, Department of Psychology, East Carolina University, Greenville, NC 27858	
It is estimated that over 17% of US adolescents are considered obese. In rural eastern North Carolina, where there is less access to care, almost twice as many adolescent are considered obese. This is particularly concerning given that childhood obesity is clearly linked to adult obesity, morbidity, and early morbidity. While much progress is being made in developing effective interventions to help adolescents lose weight, there is a paucity of data examining factors that could impact treatment success. The present study examined the potential impact of executive functioning in 13 treatment seeking obese adolescents. The Behavioral Assessment System for Children, 2nd edition (BASC-2) was used to determine the following areas of functioning, including 1) attitude to school, 2) attitude to teachers, 3) sensation seeking, 4) atypicality, 5) locus of control, 6) social stress, anxiety, 7) depression, 8)sense of inadequacy, 9) somatization, 10) attention problems, 11) hyperactivity, 12) relations with parents, 13) interpersonal relationships, 14) self-esteem, and 15) self-reliance. Baseline levels of functioning in all areas will be examined in this treatment seeking population, as well as correlates with treatment outcomes will be presented.	UP84

Down East Communicator: A Guide and Showcase of East Carolina University School of Communication Internships, Christie J. Church, Catherine Ibanez, Ashley Adams, Dr. Todd Fraley, Kelsey Brosi, Jillian Morrow, Corinne Gretler, Amy Mangus, East Carolina University, Greenville, NC 27858	
OBJECTIVE: To produce a quality print and online booklet that informs students of the internships available to them through the School of Communication and encourage networking opportunities which in turn results in job placement. METHODS: This booklet was created through social media databases such as Flickr and Facebook which were used to collect the photographs utilized as well as blackboard which content such as the articles and information from power points were also implemented. Various current students and alumni voluntarily consented that their information be used by the School of Communication. RESULTS: The booklet highlights internships that have previously been accomplished to motivate and inform students of the opportunities available to them at an international, national as well as local level. The book also gives information detailing how to initiate the internship process. The use of creative design to highlight these experiences is what brings the piece to life and inspires students to apply themselves in a professional setting. CONCLUSION: Students become more aware of the opportunities presented to them and strive for higher learning processes that are becoming so important in the competitive world of communication. Students accomplish more and obtain better jobs due to the experiences they have for the duration of their time at East Carolina University. Article 1 by Ibanez, Catherine, Article 2 by Adams, Ashley, Closing Letter by Dr. Fraley, Todd. Pictures courtesy of Christie Church, Ashley Adams, Kelsey Brosi, Jillian Morrow, Corinne Gretler, Amy Mangus	UP85

The Riviera Maya Day Spa, Lauren Watts, Susan Meggs, Department of Interior Design, East Carolina University, Greenville, NC 27858	
The objectives for the course "Color and Light in Interior Design" were met with the project concerning a design of a spa in a global context.The design process began by identifying the problem with an assignment in which each student randomly selected a global location for a spa that focused not only on the specific culture/environment of the chosen location, but, also fulfilled the wants and needs of the client.Since the goal of the global aspect of this project is to understand the implications of conducting the practice of design within a global context, locations such as India, Switzerland, and Egypt were options.Each design was unique to the specific location.After choosing a location, research was conducted on the chosen culture and environment;I chose the Riviera Maya which is located on the coast of the Caribbean on the Yucatan Peninsula in Mexico.I learned that along the Yucatan Peninsula there are many underwater caves called cenotes, which are formed under the collapse of cave roofs.These cenotes became my design concept, which is the next step in the design process.Incorporating the concept of a cenote into my design would create a tranquil and distinctive overall design.One of the main objectives of the course is to understand the use of color in light within interior design - how light and color are related, and how each one affects an interior space. A color palette was chosen that best suites the design, and lighting was proposed that would be useful within the space.The analogous color scheme I chose for my spa consists of blue, blue green, and green with an accent color of dark brown.The scheme, inspired by the colors of a cenote, provides a cool escape for visitors from the overwhelmingly hot, tropical, and sunny Mexican climate.By incorporating the greenery, vegetation, and rock formations found in these cenotes, a natural feel, along with natural oxygen, is evident.In my floor plan I carried out the concept of a cenote by creating a plan that radiated from the center of the space, which is the reception desk.Down lighting around the desk represents the lighting of a natural cenote.Rock walls surround the desk, as well as entrances to the spa waiting rooms that contain lavish seating and natural vegetation.Finally, the perspective drawings illustrate the whole space for the client, where the concept, color scheme and lighting coalesce.	UP86
Ecology, Nature, Art: Environmental Influences And Ramifications Of Twentieth And Twenty First Century Design As Relevant Today, Lauren Heather Helms, Art History Department, East Carolina University, Greenville, NC 27858	
This research focuses on today's green architecture with an emphasis on design as well as the environmental ramifications that always follow any artifact. In an era dominated by the globalization of western ideals, the architectural paradigms we look to today have a major impact on how we build our children's future (or lack there of). With this in mind, I compared and contrasted currently well-known green architecture to see how well our current models hold up to improving our relationship with our environment and also have shed light on some areas we need to improve upon. I have investigated how much of what we build claims to be green but instead follows art-for-art's sake ideals instead of art-for-sustainability ideals. Part of this process involved an analysis of the politics in the dominant theories that each architect used to design the buildings by. After all, good practice is driven by good theory. Such methods as carbon foot printing are used to give statistical information about the impact of the chosen buildings. To make this data relevant today, I considered our current ecological state of affairs as impacted by today's architectural design, especially in its use of space and resources. How we interact socially in our environments dramatically affects how we live ecologically. This is	UP87

especially important, as we are growing to live more and more within urbanized settings. As result of work demands we spend more of our time in office buildings and homes than the outdoors. This socio-cultural reality places heavier weight on the architecture of our daily lives. With this in mind, the data that I have collected considers the effectiveness of current eco-design and how best we might want approach architectural design in the future, all theories considered, in a capitalist economy.	
Going Green in Greenville, Justin Couch, Kenzie Hanks, Chris Manning, Cory Shank, East Carolina University, Greenville, NC 27858	UP88
Our goal is to reuse the steel and concrete structure located on Clark Street in Greenville North Carolina, and design a community building that can be used for public and private functions. We wish to incorporate sustainable design into the new plan of the location so that it works both for the users and the environment. The plan is to completely gut the interior of the site and also to remove an old brick section from the south side of the structure that is unable to be renovated. The structure that we then wish to create would be one that is able for large public or private community functions and capable of holding approximately 200 guests. The design will include a spacious great hall that will be able to be divided if needed, and that will include up to date multi-media accommodations along with WiFi. The design will also include a large lobby, and also a warming kitchen in which to prepare food for gatherings. Along with our structure we also plan to use design and art elements to create a more artistic and aesthetically pleasing space for all that gather. We intend to use native plants for decoration and landscape on the exterior of the structure so as for minimal maintenance to the external design. This will allow for our structure to make as small of a carbon imprint as possible. By using natural and native elements, we wish for the upkeep of the structure to be minuet. We also plan to incorporate natural power and power saving elements to insure the building to be as efficient as possible.	
Multilingualism in Clinical Practice: A Survey of Speech-Language Pathologists, Jacqueline K. Dolan, Heather Ramsdell, PhD, CCC-SLP, Department of Communication Sciences and Disorders, East Carolina University, Greenville, NC 27858	UP89
As part of an undergraduate research project, I conducted a survey with the help of my mentor, Dr. Heather L. Ramsdell, PhD CCC-SLP, to explore multilingualism in clinical practice. The purpose of this study was to survey the most commonly encountered languages in clinical practice throughout the country. We wanted to determine the nature of and extent to which language barriers exist between clients and clinicians. Through this survey, we expected to gain more information about languages students of speech pathology would profit from studying at the undergraduate and graduate levels. Ultimately, we want to better prepare and inform students and practicing professionals for work with multilingual individuals. The survey was distributed to over 14,000 Speech-Language Pathologists across the nation. Responses were voluntary and all information provided by respondents remains anonymous. We obtained responses from 1,334 speech-language pathologists. This presentation will cover results obtained in the study, and discuss projections from the data.	

Undergraduate Distance Education Poster Abstracts	ID#
Benefits of Green Roofing, Camille Mauban, Riley Murphy, Paul Pritchett, Anthony Undag, East Carolina University, Greenville, NC 27858	UDP1
Sustainable development is defined as meeting the needs of the present while allowing future generations to meet their own needs. Sustainable design integrates the idea of "Green" buildings. Green building materials are composed of renewable, rather than nonrenewable resources. There are many different types of modern materials that are used to build a healthy sustainable building. The exploration of green roof tops is our main focus for this project. Green roof tops can be used to create an efficient and innovative structure while also benefitting the environment in a positive way. Some common values of green rooftops include: Aesthetic improvement, waste diversion, storm water management, moderation of urban heat island effect, improved air quality, new amenity spaces, and also new jobs. Native and adaptive plants reduce irrigation water demands, while also providing additional insulation for the building. A rainwater tank on the roof can utilize storm water to be used to water the gardens and for indoor plumbing. Depending on the plants and their growth, green roofs can retain 70-90% of the precipitation that falls on them during summer and spring while retaining about 25-40% in winter and fall months. These are only a few examples of the advantages of green roofs. Green roof technologies not only provide the owners of buildings with a proven return on investment, but also represent opportunities for significant social, economic and environmental benefits, particularly in cities. Our final presentation will include a return on investment analysis to show the economic benefits of constructing a green roof on a structure.	
Computer Recognition of Cancer Names, Samuel Scott, Dr. Qin Ding, Boya Xie, College of Technology and Computer Science, Department of Computer Science, East Carolina University, Greenville, NC 27858	UDP2
With the vast number of documents being published about the relationships between microRNA and cancers, it has become difficult to manually read each publication for the correlations that exist between the two. miRCancer, developed by Boya Xie, is a system used to extract these relationships along with providing other tools for cancer researchers to easily obtain this information by a simple search query. To contribute to this effort, Samuel Scott has been improving the cancer name recognition component of the miRCancer system. Technologies such as fuzzy logic were used to create a set of rules which a computer follows to determine if a publication contains a cancer name. This allows the computer to reason like a human would, automating the process. The computer reads every publication, finds words that might be cancer-related, and determines by these rules the significance of the cancer names. This can be implemented into the miRCancer system to efficiently find cancer names with accurate results.	

Thinking About Words, Leanne G. Brown, East Carolina University, Greenville, NC 27858	UDP3
This research was designed to test the hypothesis that survival-related words are more memorable than words that are not perceived as being related to survival. Participants studied a list of words that were rated on three levels of survival-relatedness and three levels of pleasantness. Words rated for pleasantness were used as a contrasting variable to form a comparison condition. In subsequent retention tests, participants showed the best memory for words which were 1) survival-related, especially if those words were also rated as unpleasant and 2) pleasant words which were moderately related to survival.	
Equity in Adventure Travel, Erin Pinnix, Paige Schneider, Department of Recreation and Leisure Studies, East Carolina University, Greenville, NC 27858	UDP4
According to the Adventure Tourism Market Report (2011) the value of the global adventure market is $89 billion USD. The report also indicated that the adventure travel market is resilient, trending upwards even in a difficult economic climate. Considering the resiliency of adventure travel, development of adventure tourism markets should be a strategic focus. The United Nations supports adventure travel, in conjunction with ecotourism or sustainable tourism, as a means to sustain local economies in the world's least developed countries as well as rural U.S. economies. Although adventure travel is recognized as an important and growing segment of the tourism market, research on the topic remains limited (Schneider, 2010). Existing research suggests participation has been limited to white and affluent travelers. Statistics from the Outdoor Industry Association's (2011) Outdoor Recreation Participation Report highlights the limited participation in outdoor recreation by minorities. Engaging diverse populations in outdoor activities is increasingly important as minority groups make up a large share of the population. Are these groups not participating because they don't feel welcome? Understanding the extent and quality of participation and non-participation among the diverse groups in the United States is critical to reaching these underrepresented groups. The current study will examine representation of race, ethnicity, and socioeconomic status in the context of adventure and ecotourism from a supply side perspective. A content analysis visual media will be conducted. A random sample of U.S.-based adventure and ecotourism based tour operators will be collected. Preliminary results will be presented. The results will assist the tourism industry in better understanding the role they play in determining who participates in adventure and ecotourism and whether the images of participants presented in the mass media may construct or shape the nature of who participates.	

Snooping in Romantic Relationships, Kelly Derby, David Knox, East Carolina University, Greenville, NC 27858, Beth Easterling, University of Tennessee at Knoxville	UDP5
A 42 item Internet questionnaire was completed by 268 undergraduates at a large southeastern university to assess the frequency, motivations, and outcome of snooping in romantic relationships. Almost two thirds (66%) reported that they had engaged in snooping behavior, most often when the partner was taking a shower. Primary motives were curiosity and suspicion that the partner was cheating. Being female, jealous and having cheated were associated with higher frequencies of snooping behavior. Uncertainty reduction theory was used to explain snooping behavior. Implications of the data suggest that the decision to snoop should be considered with great caution as almost twice as many relationships were worse (28%) as improved (18) as a result of the snooping. Limitations of the data are identified.	