

*The
Pembroke Undergraduate Research and Creativity
Center*

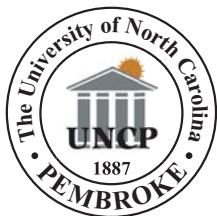


First Annual

UNC-Pembroke Undergraduate Research and Creativity *Forum*

Program with Abstracts

16 April 2007



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April 16, 2007

Dear PURC Forum Participants,

The UNC Pembroke Undergraduate Research and Creativity Center and the UNCP Composition Program cordially welcome you to our first ever campus-wide celebration of undergraduate research and creative endeavors. We are pleased to include 47 presentations, prepared by approximately 100 students and nearly 30 faculty mentors. Ten academic departments are represented in today's celebration.

The mission of PURC is to stimulate, support, and promote inquiry, discovery, and creativity in scholarship and the arts through mentored research experiences with faculty and other regional, national, and international scholars and professionals. The Center facilitates and coordinates preparation in research skills necessary for professional fields and graduate study.

Our PURC logo was designed by David Torres, II (Abstract #4). Dr. Tulla Lightfoot's Communication Design (ART 250) class was offered the chance to compete for our logo. The entered designs were fantastic, making our decision most difficult. We feel David's logo is representative of the PURC mission.

Many thanks go to all the students and faculty mentors, whose works are represented here today, to Lisa Smith, PURC's administrative assistant, to Vivianne Rotich, PURC's graduate assistant, to the PURC advisory council for all of the hard work they have done to help bring this event to you, to Heather Cagel for designing the promotional layout, to RISE, the Office of Academic Affairs, Provost Harrington, and Chancellor Meadors. Thanks also to our plenary speakers, Drs. Bob Duronio, Bill Kier, Leslie Lerea, and Carole Levin.

It is our desire that the PURC Forum will be a launching pad for student participation in research and formal presentation venues. So, please plan to take your works to local, regional, national, and international meetings.

Best wishes,

Lee Phillips, Ph.D.
Associate Director – PURC
Assistant Professor of Geology

Jesse Peters, Ph.D.
Director – PURC
Dean, University Honors College

Greeting from the Composition Program

For the past three years, the Composition Program has sponsored a Festival of Writing. The Festival invites students and faculty sponsors from across the university to showcase the writing that occurs in their courses, at any stage of its development, from the idea to final draft. Empowering students to go public with their academic writing not only encourages a professionalized articulation of and a deepened reflection on their academic prose, but the Festival participants also demonstrate to students across the campus that writing, in all its interdisciplinary forms and contents, does not end after the freshman composition sequence.

We're pleased to partner with the PURC Forum in recognizing student's research, creativity, and writing here on the UNCP campus.

Dr. Kim Gunter
Director of Composition
Department of English
UNC Pembroke
Pembroke, NC 28372-1510

PURC Council

Charles Beem, Ph.D., Department of History
Jennifer Bonds-Raacke, Ph.D., Department of Psychology and Counseling
Anthony Curtis, Ph.D., Department of Mass Communications
Thomas Dooling, Ph.D., Department of Chemistry and Physics
Tulla Lightfoot, Ph.D., Department of Art
Sivanadane Mandjiny, Ph.D., Department of Chemistry and Physics
David Oxendine, Ph.D., Department of Education
Jesse Peters, Ph.D., Dean – Maynor Honors College, Director – PURC
Lee Phillips, Ph.D., Department of Geology and Geography, Associate Director – PURC
Robert Poage, Ph.D., Department of Biology

Pembroke Undergraduate Research and Creativity Forum

Schedule

9:00 – Greetings

Chancellor Meadors
Provost Harrington

9:15 – Importance of Undergraduate Research and Creative endeavors when applying to Graduate School

Dr. Leslie Lerea, Associate Dean, The Graduate School, UNC-CH
Dr. Bob Duronio, Associate Professor of Biology, UNC-CH
Dr. Bill Kier, Professor and Associate Chair of Biology, UNC-CH
Dr. Carole Levin, Willa Cather Professor of History, University of Nebraska
Dr. Jesse Peters, Director of the PURC Center, Dean Maynor Honors College
Dr. Lee Phillips, Associate Director – PURC Center, Asst. Prof. of Geology

10:30 – 11:30 – Morning Poster Session

Noon Plenary Speaker

Biomechanics of marine invertebrates and musculoskeletal systems

-- Dr. Bill Kier Professor and Associate Chair of Biology, UNC-CH

1:30 – 2:30 – Afternoon Poster Session

3:00 – Afternoon Plenary Speaker

Princess Elizabeth Travels Across her Kingdom in Life, in Text, and on Stage

Dr. Carole Levin, Willa Cather Professor of History, University of Nebraska,
Lincoln.

4:15 – Reception hosted by RISE and UNCP Office of Academic Affairs

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*Poster #'s refer to display location.

Department of American Indian Studies

1. Carrying the Fire: AIS Students at the University of North Carolina, Pembroke, Respond to Native American Literary Elders

Rocky Alexander Locklear, Byron Brooks, Kindra Locklear, Stephanie Inness, QuinYon DeBerry, and Lauren Ashley Locklear

Faculty Mentor: Dr. Jane Haladay, Departments of English, Theatre, and Languages, and American Indian Studies

With an increasing diversity of indigenous literatures being published and taught at the university level, how do the texts of some of the acknowledged “Elders” of Native literary studies resonate with undergraduate students in 2007? How do the issues and themes around storytelling through printed text as an ongoing process of Native resistance, reclamation, and decolonization relate to student populations who are increasingly fluent in the immediate languages of iPods, internet, and instant messaging?

Our student panel shared responses to significant Native authors whose work we read for the first time this year in an introductory Native American Literature course at the University of North Carolina, Pembroke. UNCP is located in the heart of the Lumbee community, where residents wrangle on a daily basis with questions of self-determination, contested definitions of identity, and the colonial suppression of voice in communities of color. We six Lumbee and African American undergraduates shared our perspectives on the literatures of Native literary Elders in contemporary university curriculum at the annual Native American Literature Symposium (NALS), the premiere Native literature conference in the United States, which was held this year in the Saginaw Chippewa Nation, located in Mt. Pleasant, Michigan. In exploring the powerful writings of important Native writers before us, we created and presented dynamic literature of our own, demonstrating the ongoing connections between these authors’ stories and our own oral and written literary traditions.

Department of Art

2. What Da Vinci Couldn’t Do

Thomas Ard

Faculty Mentor: Prof. James Biederman, Department of Art

In my research, I have been expanding oil paint with other media as Leonardo Da Vinci did in his famous mural “The Last Supper.” Da Vinci’s combinations caused the paint to peel off of the wall over a period of time. Since Da Vinci many artists have been discouraged from mixing different media with oil. But in modern times we have a huge amount of new materials, many of which have been chemically altered. I am attempting to discover how oil paint will react to these new chemicals. I am also researching “action painting” and exploring how music affects the aggressiveness of the brush strokes.

3. PURC Logos

Thomas Ard, Jennifer Collins, Alex Roth, Scotty Thompson

Faculty Mentor: Dr. Tulla Lightfoot, Department of Art

Creating logo designs entails preliminary research. We researched fonts, and styles of logos. We also took into consideration formal elements of art such as positive and negative space. After that we researched undergraduate forums of other universities to see how they represented themselves. We then analyzed them for strengths and weaknesses. Taking the positives we individually created different logos that had some meaning to UNCP. We wanted to appeal to undergraduates, and to the UNCP community.

4. Creation of the PURC Forum Logo

David Torres II

Faculty Mentor: Dr. Tulla Lightfoot, Department of Art

The first thing to do when coming up with a logo is to research samples of what's out there. After this, I researched the actual event. Through research I decided that the most important aspect of the PURC forum was the idea of the forum. In ancient Roman times the "Forum" was a meeting place for the discussion of topics of public interest. I showed this by making puzzle pieces for each of the letters. The puzzle pieces coming together demonstrate my idea of what a forum should be like. Each color in each puzzle piece is different to represent how different people come together to share ideas. The challenge then is to not only have a good idea, but to make it look attractive.

Department of Biology

5. Toxic Shock Syndrome

Natalie R. Bullock

Faculty Mentor: Robert E. Poage, Ph.D., Department of Biology

Toxic Shock Syndrome (TSS) is a disease most commonly linked to tampon usage, although other contraceptive devices may play a role in the spread of the disease. TSS is most commonly associated with menstruating girls and women; however, it can be experienced by females outside of the menstruating range, as well as men. This poster will show the history, symptoms, causes, treatment, and prevention of TSS.

6. Incidence Of E. Coli Among Hands Of College Students Living In Residence Halls

Mark A. Stevens, Andrea B. Filipkowski

Faculty Mentor: Marilu E. Santos, Ph.D., Department of Biology

The hands of 193 students living in five residence halls at the University of North Carolina at Pembroke, Pembroke NC were swabbed to determine the presence of the intestinal bacteria *Escherichia coli*. The cultures were grown on eosin methylene blue agar at 37 C for 24 to 48 hours. A survey questionnaire was administered among volunteers to establish correlations and distribution functions.

Our current findings show that 72% of the subjects had *E. coli* on their hands. A higher percentage of *E. coli* positive individuals were observed among males, among those living in coed residence halls, from subjects wearing rings and/or artificial nails and those who used regular towel as drying method. Statistical analysis (paired t-test, $p < 0.05$) showed higher *E. coli* counts from volunteers who wear artificial nails, those who washed their hands more than two hours before swabbing time and those who can not recall what washing product they used. Lower *E. coli* counts were obtained from those who used hand sanitizer and antibacterial soap. There was no statistical significant difference on *E. coli* counts by degree, gender, residence hall, wearing of rings and drying method used.

Future research will include determining the incidence of *E. coli* on hands of commuting students, staff and faculty of the institution. Findings of this research may provide a scientific base for risk assessment and the management of cross contamination via hand, and an initial framework from which hand washing policy in the campus can be promulgated.

7. Preliminary Population Study of *Chrysoma pauciflosculosa*: A North Carolina State Endangered Plant

Sarah Brown

Faculty Mentor: Dr. Lisa Kelly, Department of Biology

Chrysoma pauciflosculosa is a state endangered shrub in North Carolina, its range limited to three counties. Four subpopulations of *C. pauciflosculosa* on Big Sandy Ridge (Columbus County, NC) were surveyed in transects (two at 1 x 25 m, one at 1 x 24 m, and one at 1 x 19 m) in fall 2005. All plants in seven size classes (0-2, 2-5, 5-10, 10-20, 20-30, 30-40, and ≥ 40 cm) were counted in 1-m² plots throughout the transects. In spring 2006, the two longest transects were resurveyed; all cotyledon-bearing seedlings were counted in one transect. Seeds were collected from several subpopulations in October 2005. Preliminary germination tests were later performed in ambient room conditions and in a 24⁰C tissue culture chamber. Population density in the fall ranged from a mean of 0.2 plants/m² (≥ 40 cm size) to 3.5 plants/m² (0-2 cm size). The four smallest size classes had a clumped dispersion pattern; the three largest classes had random dispersion. Germination in the spring recruited many plants to the 0-2 cm size class, averaging 6.4 seedlings/m². Proportionally fewer seeds germinated inside the culture chamber versus in ambient conditions. Seed germination may not limit population size on Big Sandy Ridge. (Funding provided by the Beta Beta Beta Research Scholarship Foundation.)

8. Controls to Assay Cell Cycle and Apoptosis in Yap ^{-/-} Embryonic Cells

Brian McMullen

Faculty Mentors: Dr. Robert Poage, Department of Biology
Elizabeth M. Morin-Kensicki, Ph.D, Sharon Milgram, Ph. D, Department of Cell and Developmental Biology, University of North Carolina at Chapel Hill

In cancer, there is an uncontrolled proliferation of cells and failure of cells to undergo cell death despite DNA damage. Our lab noticed that mouse embryos developing in the absence of Yes-associated protein (YAP) were smaller than wild type mouse embryos. In addition, preliminary data suggested that Yap ^{-/-} embryos may have a reduced mitotic index and a reduced apoptotic index. We hypothesize that Yap regulates cell cycle progression and apoptosis in mouse embryos. To learn if Yap plays a role in these processes, we plan to use scanning cell cytometry to assess cell phase profiles and western blot analyses of proteins specific to cell proliferation and cell death. I had four primary research goals: 1) Identify the optimal plating density for primary mouse embryonic fibroblasts (PMEFs) for scanning cytometry, 2) Determine how much Fetal Bovine Serum (FBS) should be used to put the PMEFs in a quiescent state, 3) Establish what amount of UV-irradiation should be used to induce apoptosis in PMEFs, and 4) Demonstrate by western blot that cleaved caspase 3 correlates with apoptosis in PMEFs. We found the optimal PMEF plating density for the Lab Image Cytometer IC 100 software to be 9,000cells / 200mm². We induced apoptosis in PMEFs using 200mJ / cm² UV-irradiation (Stratalinker 2400). We also found that under these conditions, we had to fix cells within 24 hrs. We determined that the amount of FBS is most favorable no lower than 3%. We also found that for cleaved caspase 3 to be used to mark apoptosis in embryo derived cells requires more than 50ug total protein. We have, therefore, established the necessary controls for making a comparison between Yap mutant and wild type embryonic cells. By gaining a better understanding of Yap's role in the cell cycle progression and apoptosis, we will be one step closer to understanding the cellular basis of cancer.

9. Comparison Between Traditional Taqman™ Probes and Short Exiqon™ Probes in Real Time RT-PCR

Valerie M. Poole

Faculty Mentor: Dr. Velinda L. Worix, Department of Biology
with: Shelby A. Gorman, GlaxoSmithKline, Inc, RTP, NC,

Synthesis of traditional Taqman™ oligonucleotide probes for the purpose of Real-time RT-PCR is costly and time consuming. Exiqon™ short probes allow for an inexpensive and versatile method of measuring gene expression through RT-PCR. Previous experiments suggest Exiqon™ short probes show the same expression patterns in transformed tissue compared to traditional Taqman™ probes. In this study, both traditional and short probes were mapped to the same region of a gene with a total of thirty-five (35) different genes being selected. These probes were assayed against a mouse normal whole body profile plate. Results confirmed that similar expression patterns were produced between probe types. Additional assays comparing probe types examining PCR reaction volume and plate storage temperature over a 48-hour time period indicated that similar cDNA abundance patterns were generated. These results indicate that short Exiqon™ probes can be effectively used in disease studies.

10. The Cytotoxic Effects of Herbal Preparations on *E. coli* and *M. luteus*

Hannah E. Worix

Faculty Mentor: Dr. Velinda Locklear Worix, Department of Biology

In an effort to obtain scientific merit in the usage of home remedies for the treatment of medical ailments, the response of *Escherichia coli* (*E. coli*) and *Micrococcus luteus* (*M. luteus*) to exposure herbal preparations of garlic, sage, and goldenseal was investigated. Using the Kirby-Bauer test, herbal challenges were compared to commercially prepared ampicillin and kanamycin in these bacterial strains. Herbal potency was observed to be effective for 12-36 hours upon refrigerated storage with sage or goldenseal preparations but more than 720 hours (30 days) with garlic tinctures. All three herbs yielded zones of inhibition when bacteria were grown over various time periods before the herbal disks were applied. The data indicate that these herbs can function from 6-18 hours after prior exposure with each bacterial strain respectively, suggesting that the herbs are effective in inhibiting growth of established cultures. The commercial antibiotics display a similar pattern of inhibition. Since the components of herbal preparations responsible for eliciting antibiotic potency is unknown, temperature stability of herbal extracts was determined. Zones of inhibition indicate that exposure to temperatures of 60 degrees Celsius has a negative effect on potency; these results are confirmed by increased bacterial growth as indicated by spectroscopic analysis. Lastly, using light and epifluorescent microscopy, changes in the morphology of *M. luteus* is observed with all three herbs, but no alterations were observed with *E. coli*. Collectively, these results imply that garlic, sage, and goldenseal induce varying antibiotic effectiveness affected by time of storage, temperature conditions, and alterations of bacterial morphology as compared to commercial preparations, thus contributing to usage of these herbs in homeopathic medicine.

Department of Chemistry and Physics

11. Toward Development of a Fiber Optic Spectroelectrochemical Fluorescence Sensor for In-situ Metal Ion Determinations

Kristen Arnett

Faculty Mentor: Dr. Paul A. Flowers, Department of Chemistry and Physics

Optic spectroelectrochemical (FOSEC) fluorescence sensor for the detection of heavy metal ions for in-situ natural aqueous mediums. The flow cell used to analyze solutions was modified by placing small reference,

working, and auxiliary electrodes directly into the cell, closer to the optical sensing region of the cell. The electrochemical properties of the cell were confirmed by cyclic voltammograms using aqueous ferricyanide. Aqueous copper was chosen for analysis in a system involving cathodic electrodeposition, followed by anodic stripping of the analyte into a flowing aqueous solution containing calcein. Based on the calibration curves, the limit of detection (LOD) for calcein fluorescence was found to be 0.018 μM and 0.036 μM for copper's quenching. The results from the 5 minute electrodeposition time indicate a LOD of 0.2 mM for this method.

12. Applications of Two-Dimensional NMR to the Study of Cobalt(III) Complexes Containing Tris(2-aminoethyl)amine and Propylenediamine

Stephanie Baker

Faculty Mentor: Dr. Mark McClure, Department of Chemistry and Physics

This research involves the application of two-dimensional NMR spectroscopy to the study of cobalt (III) complex $[\text{Co}(\text{tren})(\text{pn})]\text{Cl}_3$ where *tren* represents the tripodal tetradentate ligand tris(2-aminoethyl)amine and *pn* represents the bidentate ligand propylenediamine.

The two-dimensional NMR techniques employed included COSY, NOESY, and HETCOR. Through the COSY experiment, were able establish general correlations between different regions of the spectrum, particularly those arising from the propylenediamine ligand. The NOESY experiment was used to establish through-space correlations between the *tren* ligand and the propylenediamine ligand. Lastly, a HETCOR experiment was used to establish connectivity between the proton and carbon spectra.

Overall we determined that the inclusion of the propylenediamine ligand did cause the spectrum to be spread into a wider spectral width in comparison to $[\text{Co}(\text{tren})(\text{en})]\text{Cl}_3$. In this complex, the spectrum for the propylenediamine ligand was divided into three sets: a multiplet appearing as a triplet at approximately 2.7 ppm, a multiplet appearing as a triplet at approximately 2.5 ppm, and a complex multiplet at approximately 1.9 ppm. The COSY spectrum revealed that these two triplets were actually pairs of overlapping doublets. However the lack of cross peaks between the two triplets indicates that they must arise from carbons on opposite ends of the propylenediamine ligand.

13. The detection of radioisotopes using a thin scintillating fiber in a spiral

Adam William Jernigan and Eric Blue

Faculty Mentor: Dr. Thomas Dooling, Department of Chemistry and Physics

The purpose of this experiment was to develop an inexpensive detector, for radioactive isotopes, that could be used in fieldwork. This experiment required the use of a thin, long, inexpensive, plastic scintillator fiber, cardboard tube, aluminum foil, multi-channel analyzer, voltage source, and a computer. The sources used for the experiment were Sr-90, Tl-204, Cs-137 and Co-60 allowing for studies of both gamma and beta radiation. These source types are the most prevalent in the biomedical and chemical fields. Through this process a simulation of the apparatus was designed in a Monte Carlo program using C++. Initially the scintillator cable was placed into a dark box through which readings were taken, to determine the attenuation of light in different positions on the cable. This attenuation curve was used, in the Monte Carlo program, to simulate the experiments and account for the attenuation of light as it propagates through the cable when it is spiraled around the cardboard tube. The cable was then tested in a spiral configuration wrapped around a tube. Small radioisotope samples were passed through the center of the tube, allowing detection of the source by the cable. Experimental and Monte Carlo results are compared and the sensitivity of the detector, to source type and location, are reported.

14. Synthesis Of A Novel Organic Ligand From Citric Acid To Chelate Copper Ion

Alex Britt

Faculty Mentor: Dr. Cornelia Tirla, Department of Chemistry & Physics

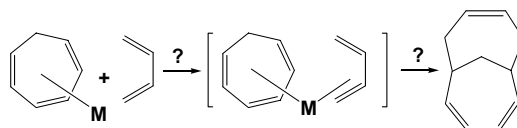
In literature, several organic ligands have already been used to chelate heavy metal ions. This study focuses on synthesis of a novel ligand based on citric acid for copper chelation. This study seeks to optimize the conditions and yields of several citric acid based reactions in order to determine the most efficient means of producing the desired ligand. All products are characterized by NMR spectroscopy studies. When ligand synthesis is complete, the second step will be to immobilize the ligand on an epoxide membrane using acidic conditions. This immobilized ligand membrane will then be tested to determine its efficacy in chelating copper from drinking water.

15. Study of the [6+4] cycloaddition reaction

Kalyn Dukes and Brian McMullen

Faculty Mentor: Dr. Cornelia Tirla, Department of Chemistry and Physics

The [6+4] cycloaddition reaction (Scheme1) is a potentially powerful tool for natural product synthesis. Relatively few synthetic efforts have utilized the [6+4] cycloaddition strategy due to low yields and poor periselectivities, that are observed in these reactions.



Scheme 1

This lack of selectivity and low yields is a significant barrier to developing catalytic reactions and an enantioselective version of the reaction. Recently the Lewis acids $ZnCl_2$, Ti (IV) and Fe (III) were discovered to catalyze higher order cycloadditions reactions and to induce modest asymmetry in the resulting [6+4] cycloadducts. This research will attempt to develop a new methodology for [6+4] cycloaddition reactions using different Lewis acids.

16. Learning CCD Photography in a Small College Observatory

Jason York and Michael Everhart

Faculty Mentor: José D'Arruda, Department of Chemistry and Physics

We will describe the early states of the systematic observation and photography of the night sky using our 16" Meade LX200 GPS telescope and several CCD cameras. We will describe several of the different software packages used and display some of our first pictures taken recently. We use the Sky 6 software to talk to the telescope and the program moves the telescope to the object we want to view.

Using the DSI, LPI and SBIG CCDs, we take monochrome pictures of galaxies, nebulae and star clusters. Once these pictures are taken, we combine them using the CCD software and Maxim DL in a process of piecing the individual filtered pictures together into a colored finished product.

17. HPLC DETERMINATION OF METFORMIN AND PIOGLITAZONE IN HUMAN SERUM USING SOLID-PHASE EXTRACTION

Joshua D. Locklear and Jamie R. Harris

Faculty Mentor: Dr. Meredith L. Storms; Department of Chemistry and Physics

Metformin is a drug used to help regulate blood sugar levels. It may be used alone or in combination with other diabetic medications such as pioglitazone. It is important to monitor the concentration of metformin in serum since high concentrations have led to metformin-associated lactic acidosis (MALA) especially in people who have poor kidney and/or liver function. This condition may be lethal, thus, when metformin is used in the treatment of diabetes, its concentration in plasma should be monitored. The focus of this project is to be able to monitor metformin and pioglitazone in serum via HPLC.

A high-performance liquid chromatography method has been developed for the simultaneous determination of metformin and pioglitazone in human serum. The separation and quantitation are achieved on a 150-cm Luna C18 column using a mobile phase of 50:50% v/v 10 mM sodium phosphate buffer containing 10 mM SDS (pH 5.0) and acetonitrile at a flow rate of 0.5 mL/min with detection of both analytes at 226 nm. Recoveries found from a solid-phase extraction (SPE) method for metformin in human serum ranged from 92-98.6% using a StrataTM SPE cartridge while other cartridges yielded much lower recoveries.

18. Transesterification of Waste Vegetable Oil to Produce Biodiesel

Tashina Harris, Shannon Moynihan, Jessica Ortiz, and Melvin Woodland

Faculty Mentor: Dr. Siva Mandjiny, Department of Chemistry and Physics

The energy crisis presents a great need for alternative energy sources. Therefore, at this juncture we are planning to produce biodiesel from waste vegetable oil. In this project the waste vegetable oil is collected from various restaurants located in Lumberton. The quality of the oil has been checked for moisture content before the transesterification because it influences the production of soap. The transesterification has been done with methanol, ethanol, and isopropanol. The parameters such as temperature, the quantity of potassium hydroxide are optimized. Also, the number of washing has been optimized for better quality of the biodiesel.

19. SORPTION STUDY OF Cu²⁺ AND Zn²⁺ USING ALGINATE AS GEL MATRIX

James C. Sibbett

Faculty Mentor: Dr. Siva Mandjiny, Department of Chemistry and Physics

In this study it is intended to decontaminate Cu²⁺ from drinking water. Simple chromatographic experiments were conducted with alginate gel to see if this could chelate Cu²⁺. Alginate is a natural polymer found in seaweed. The results are comparable with Sepharose-IDA, a commercial gel. The encouraging positive results lead this project to see if some of the possible chelating free ligands could be encapsulated within the alginate gel to augment the adsorption of Cu²⁺. Also the affinity constant K_D was determined experimentally using adsorption isotherm.

20. Microgravity Research on NASA's "Weightless Wonder"

Samantha Schrock

Faculty Mentor: Dr. Tim Ritter, Department of Chemistry and Physics

For the past five years students from UNC-Pembroke and UNC-Charlotte have participated in NASA's Reduced Gravity Student Flight Opportunities Program. This program allows select undergraduate teams to design, fabricate, fly and evaluate a reduced gravity experiment over the course of approximately ten months. The program emphasizes scientific research, experiment design and educational outreach activities. Past projects have focused on liquids in a microgravity environment and the effects of gravity on biotechnology related reactions. The 2007-08 team will study molecular reactions of antigens and anti-bodies found in the human immune system and combustion science. Clearer understanding of combustion processes in microgravity will aid in the design of effective fire detection and suppression systems. The outreach portion of the program is designed to stimulate the interest of local youth in the space program and in science and engineering disciplines. "The Weightless Lumbees," the name chosen by the first team to reflect their Native American heritage, have participated in a vigorous outreach program sharing their experiences nationally and globally. The team has presented to a diverse group of listeners ranging from elementary school students to college students to professional researchers. To date, the teams have presented in eight North Carolina counties, four states and three countries! An overview of UNCP/UNCC's involvement with this program, as well as some of the science and outreach experiments, will be presented.

Department of Criminal Justice

21. The Efficacy of a Faith-Based Non-Profit Organization in Southeast Asia

Jennifer N. Vchulek

Faculty Mentor: Dr. Timothy C. Hayes, Department of Criminal Justice

This research analyzes the internal efficacy of a Christian non-profit organization working in Southeast Asia to end prostitution. The organization functions by sending volunteer teams to a location in Southeast Asia to conduct outreach to the females working in the sex trade at local bars and other establishments. Females who choose can enter a twenty-week class teaching the English language, and later a six-month job-training program. The goal of this research is to provide a description of the day-to-day workings of the organization as well as the experience of a volunteer team as they work with the organization. Measuring and observing those with inside knowledge and having direct access to the group provides the most reliable data for analysis. Thus, the research is based on participant observation as well as a survey of the localized staff that are responsible for assisting short term teams, as well as working with the females that have given up the sex trade and are receiving job training and other education through the organization. This research shows that women can successfully leave prostitution to become viable members of society. The research will also show that through staff evaluations of the group, it is considered effective. However, there are areas which need improvement, and those will also be assessed.

Department of Education

22. Does Political Orientation Predict Modern Racist Attitudes and Beliefs?

Cedric Turner

Faculty Mentor: Dr. David Oxendine, Department of Education

This study examined the Political orientation opinions and attitudes of students attending an ethnically diverse university. The intention of the study was to view if political orientation and ethnic identity affect and forecast modern racist attitudes and ideas. The study was comprised of 225 undergraduate and graduate students (152 females and 73 males) that were sampled and expressed their ethnic views and ideas by way of a self-report survey. The results suggested that ethnic identity was stronger in Ethnic Group participants than Non-Ethnic Group participants. Results from the study also suggested that modern racism was predicted by political orientation. Men and Non-Ethnic Group participants received higher scores on the modern racist scale than female, ethnic participants.

Department of English, Theatre and Languages

23. The New Woman at the Fin-de-Siècle

Kristin Meurer

Faculty Mentor: Monika Brown, Department of English, Theatre and Languages

In my presentation I plan to demonstrate how the roles of women shifted in America and Europe towards the end of the nineteenth-century. I plan to show how up until the turn of the century social expectations for women were harsh and unyielding, but during the Fin-de-Siècle movement the “Cult of True Womanhood” began to diminish and the “New Woman” ideal was ushered in. In my presentation I will define and explain what the “New Woman” represented. I will also use textual evidence from nineteenth-century British literary texts to demonstrate the reactions and responses to this highly debated and often criticized cultural ideal. My goal for this presentation is to shed some light on what is, perhaps, the earliest of all women’s movements and to demonstrate the role that literature takes in political and social movements. In the future I hope to expand my knowledge regarding the “New Woman” as well as the many other social and political movements which took place at the end of the nineteenth-century. In doing so, I hope to read further literary texts, both American and European, that deal with these subjects in order to develop a better understanding of history.

24. The Secret War in Laos

Naly Yang

Faculty Mentor: Dr. Monika Brown, Department of English, Theatre and Languages

Over shadowed by the Vietnam War, the Secret War in Laos, often referred to as “Operation Momentum,” became a way for the U.S. to use the anti-Communist Hmong as secret foot soldiers to help defend the Ho Chi Minh trail and later to leave them behind to face bloody genocide. The Secret War is over; however, thousands of Hmong refugees that were placed in refugee camps in Thailand have been forced to return to Laos—where they undoubtedly faced death. The Hmong are still now in danger, hiding from the killing Communists, in the jungles of Laos.

Since 1975, when the very last C.I.A. agents were deployed from the Secret War in Laos, the Hmong left in Thailand and Laos have been savagely and brutally killed. Even in 2007, the Hmong now residing in the U.S. tune in to the Hmong radio stations played across the U.S. with news of surviving men, women, and mostly children who are hungry, hiding, and dying in the forests due to their direct cooperation with U.S. C.I.A. In

the U.S., the “land of a million opportunities,” the Hmong suffer from Americanization, poverty, and the lack of American understanding for them being here. What’s worse is that thousands of petitions by the Hmong living in the U.S. and various organizations have failed to gain U.S. government support to save the Hmong remaining in the jungles of Laos.

As a nation without a state, the Hmong managed to become one of the most important alliances that the C.I.A. used during the years of the Vietnam War. And in return, the U.S. has managed to successfully ignore the efforts of saving the Hmong, and keep it a secret from the citizens of the U.S. As a Hmong American myself, I feel the need to make this issue a top priority—let us stop the post Secret War from continuing and free the Hmong in Laos from freeing the U.S. during the years of the Vietnam War.

Department of History

25. The Viking Invasion

Garrett Adams

Faculty Mentor: Dr. Charles Beem, Department of History

In my presentation I will be discussing and examining the evolution of the Viking Invasions from the 8th to the 11th centuries. I will give examples of several of the key raids that occurred along the coasts of the British Isles all the way to the Middle East and will address the progression of these raids and invasions in an attempt to understand the motive for their actions. In doing so the viewer will be able to see that while these people were fierce warriors they were also the first Modern Europeans. With their advanced navigational skills not only did these Scandinavian warriors raid and explore most parts of Europe, south-western Asia, northern Africa and north-eastern North America but they also opened new trade routes that existed centuries before the European explores of the Renaissance.

26. Tobacco, Film, and Warfare

Terry Carter

Faculty Mentors: Dr Charles Beem and Dr. Louis Kyriakoudes, Department of History

Throughout history of America’s military, there has always been a strong use of tobacco. This fact can be seen by viewing old war films which portray soldiers fighting with cigarettes in their mouths or standing on the deck of a battleship with a corn cob pipe stuck in their teeth. The question can be asked, why has their always been a strong connection with fighting in warfare connected to tobacco usage?

It could be the simple fact that combat is a very stressful reality. It is true that under certain stressful conditions, that a cigarette is a great stress relief. A normal day at the office is stressful enough, however soldiers are being shot at. Their stress levels make small time business look tiny. It could be the simple fact that American cigarettes are like a small piece of home. Soldiers are sometimes so far away that they forget what home even looks like. Just knowing that the cigarette they are smoking is made from tobacco grown in the homeland may give comfort to a soldier that is far away from home.

There are many questions which could be asked concerning why tobacco has a strong relation in warfare. Perhaps films just make up the fact that cigarettes were a part of warfare? Film directors could simply put cigarettes in the mouths of actors simply to make them look tougher or more American. Perhaps movie companies are getting a cut from the cigarette companies for having their brand of cigarettes portrayed in their movie?

The simple fact is, none of us have been alive long enough to know the truth to these questions. However, through the use of technology using journal articles, books, and internet web pages, an attempt will be made to answer these questions. This paper will find the truth as to whether or not tobacco usage plays a great part in combat, or is it just some elaborate money making scheme from the tobacco and film companies to make some extra money? A variety of sources will be consulted to shed some light on the argument.

27. Timeline of the French Revolution Plotted in Art and Word

William Crockett

Faculty Mentor: Dr. Charles Beem, Dept. of History,

The French Revolution has been studied from many different angles. Some have studied it from the point of view of the Jacobins and others have examined it from the perspective of the fallen aristocracy. Men like Robespierre and Marat have become synonymous with the terrors and passions of an age long gone when the oppressed rose up against monarchical and aristocratic institutions to take those things to which they believed themselves entitled. It was an age of terror and transition when French society metamorphosed from that which it had been into what many believed it was meant to become. Those defining events of the French Revolution have been captured and forever immortalized in art and word. The purpose of this project is to use these varied examples of artistic expression to illuminate some key events of this tumultuous time. Outlining all the events of the French Revolution cannot be done in this limited project, but a partial chronology and timeline of events from the meeting of the Estates-General in 1789 until the end of the Reign of Terror in 1794 can be constructed.

28. Perception vs. Documentation

Quinta Ellis

Faculty Mentor: Dr. Jeff Frederick, Department of History

Our perception is ultimately our reality, which can distort and re-assign events that have taken place in our lifetime. History is defined as a continuous, systematic narrative of past events as relating to a particular people, country, period and/or person. Events that have occurred in our past, our history, are recorded in our memory and through documentation, which generally provides for a more sound truth. Our perception and therefore our reality is the lens through which we construct our history and therefore believe is the truth. Perceived history and documented history are a dichotomy within one world that historians attempt to wrestle with on a daily bases. The following report will be an attempt to justly identify, explain and compare perceived history and documented history that relate to the Civil Rights Movement.

29. Michael Collins, Pragmatic Warrior in History and Film

Mary Gyves

Faculty Mentor: Dr. Charles Beem, Department of History

My paper discusses the historical accuracy of the 1996 film, "Michael Collins," which was written and directed by Neil Jordan. Jordan's movie depicted Michael Collins as the man responsible for severing the ties with the British Empire in the 1920s. It is the story of Ireland's turbulent history in the early 1900s and one of the most charismatic leaders of the Irish rebels, Michael Collins. Collins played a pivotal role, both militarily and diplomatically, in bringing about the negotiations that led to the Irish Free State. In six short years he effectively created an impact, particularly with his guerrilla warfare tactics against anyone aiding the British government, to force the British Prime Minister, David Lloyd George, to the negotiating table. While Collins did not like the resulting treaty, he and a majority of the Irish in the South viewed it as the first step in securing total independence for all of Ireland from Great Britain. Sadly, some radical republicans, led by Eamon de Valera, were determined to continue the fight for a united Ireland free of any British domination, even if it meant civil war.

My paper researches the actions of Michael Collins from his participation in the Easter Rising in 1916 in Dublin, through his actions and leadership of the IRA during the Anglo-Irish War of 1919 to 1921, to his unsuccessful efforts to thwart an Irish Civil War in 1922 to 1923 between the provisional government of the Irish Free State and the "irregulars" in Irish Republican Army. The paper will discuss the British government's blunders after the Easter Rising which radicalized the Irish nationalists. In addition, I will discuss the

negotiations between the government of David Lloyd George and the Irish delegation led by Collins and Arthur Griffith to create an Irish Free State. I will conclude, as does the film, with the assassination of Collins in 1922.

30. Cigarette Advertising to Women (1920-1950): Its Meaning in the Social History of the Time

Amber Holland

Faculty Mentor: Dr. Louis Kyriakouides, Department of History

Tobacco was known as “brown gold” to early Americans who profited on the backs of slaves from the sell of this commodity. Its early uses were medicinal but overtime became increasingly recreational among men. However, in the early twentieth century this changed with the changing role of women in American society. Women began to smoke more openly in public and embrace smoking as an opportunity to liberate themselves from the traditional roles men had placed them in. Alert to the growing movement among women, marketing executives created unique methods of capturing the female consumer’s attention and encouraging to not only smoke but to smoke a specific brand. The subject of my presentation will be the evolution of cigarette advertisements targeted toward women between the 1920s and 1950s. The goal is to examine how the actual cigarette was altered to be more appealing to females, how companies determined how to market to females, examples of advertisements and how they depicted females, which subgroups of females were particularly targeted according to race, gender, age and class and finally the female response to advertising efforts and changed in usage among female smokers. Understanding this information is important to understanding not only the role of tobacco in pop culture, but the mindset of many women during such a significant time in history.

31. Narrative of British and American Accounts: Concord and Lexington Green

Marc Leake

Faculty Mentor: Dr. Jeff Frederick, Department of History

In my presentation I will be examining eleven primary sources written by British and American eye-witnesses at the battle of Lexington Green and Concord. The documents take the form of military orders, after action reports and sworn depositions. This work investigates the differences and similarities contained in British and American accounts. Specific information provided in the papers is utilized to develop a detailed narrative, time line and chart illustrating the author, source and dates of each document. An illustration from an eye-witness will also be included. This project demonstrates the importance of primary sources to historians.

Department of Mass Communications

32. Media and the public: The New York Times coverage of Weapons of Mass Destruction from 2002 to 2005 and its correlation with public opinion

Kelly Griffith

Faculty Mentor: Dr. Anthony Curtis, Dept. of Mass Communications,

For my presentation, I will explain my Senior Honors Thesis for the Esther G. Maynor Honors College. This is my final project as an honors scholar. I am currently working on a content analysis of *The New York Times* from 2002 to 2005 concerning all articles related to Weapons of Mass Destruction in Iraq. The articles will be split into groups based on the type of article, whether they are hard news or opinion. I will also divide the articles by content, whether they involve the reason for entering Iraq, outside influences that could contribute to WMD in Iraq, etc.

I will use the information collected in the content analysis and study public opinion polls from that time period. While this study cannot tell us whether or not the media influences public opinion, I hope to show a

correlation between this mass medium's coverage and the rise and fall of the public's views. I also hope to offer ideas about how my research can be expanded in the future.

It is important to study this because the idea of "agenda-setting" claims that the media do not tell us what to think, but rather what to think about. I believe today's media have crossed this barrier.

Department of Psychology and Counseling

33. Career Decision-Making: What Attributes are Important to College Students

Beth Butler

Faculty Mentor: Dr. John Raacke, Department of Psychology & Counseling

Previous literature on career decision making has generally been biased and outdated. Of the research found on this particular topic, the majority of the participants were either Masters of Business Administration (MBA) students or given qualities of MBA students for the participants to pretend to be. In other studies, participants were all male or research only investigated the cultural influence on career decisions.

Considering these biases the present study examined the types of decision making strategies used by college students when selecting potential careers. A pilot study was performed to determine exactly what career attributes were most important to college students. Participants rated thirty-one career attributes on a Likert scale from 1 to 7, with 1 being not at all important and 7 being very important. The top ten attributes were found to be benefits, job security, work safety, sense of achievement, plan for salary increases, opportunity for career advancement, opportunity for personal growth and development, sense of pride in work, interesting work, and pay. Interestingly, two categories of attributes emerged from this list. Specifically, people reported an equal number of extrinsic (those attributes associated with an external value) and intrinsic (those attributes associated with internal value) attributes.

This data is currently being used in a study to determine what decision making strategies college students' use when choosing careers. To determine decision-making strategies, Information Integration Theory is being employed. Particularly, a repeated measures within-subjects design asking participants to consider a career with various attributes and state how likely they would be to accept a career like the one described is being used. Results should indicate (1) the value associated with each career attribute as well as (2) what type of decision-making model people use when choosing on a career, i.e., an additive, multiplicative or weighted averaging model.

34. The Importance of Undergraduate Research: Research Assistants Share their Experiences

Meagan Carpenter, Amanda Perrin, and Bennett Harris

Faculty Mentors: Dr. Jenn Bonds-Raacke and Dr. John Raacke, Department: Psychology and Counseling

This poster will examine what it is like for three undergraduate students to work in a research lab. Specifically, we will discuss our experiences in working in the Theoretical Research for Investigating and Assessing Decision Strategies (TRIADS) Lab under the supervision of Dr. Jennifer Bonds-Raacke and Dr. John Raacke. Our poster will cover topics related to research in general. For example, we will discuss why being involved with research is important and how one can learn about research opportunities. We will also present from a student's perspective what it is like to work one-on-one with individual faculty members and to work with other undergraduate students involved in the research projects. Next, we will describe a typical week in the lab involving time commitments, research conceptualization, data collection, and data entry. Finally, we will present plans for future research and suggestions for other students thinking about becoming involved with research.

35. Academic Achievement: The Consequences of Eating Disorder Symptomology

Sarah M. Leonard

Faculty Mentor: Shilpa M. Pai Regan, Department of Psychology and Counseling

Eleven million Americans annually are estimated to have an eating disorder (National Eating Disorders Association, NEDA, 2006). The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV TR, American Psychiatric Association, 2002) identifies two eating disorders, anorexia and bulimia. Research has linked eating disorder diagnosis with a lack of motivation in academics and poor grade point average (Thompson & Schwartz, 1982). However, the paucity of existing research has been limited to secondary education and primarily females (Brouwers, 1988; Gibbs, 1986; Kashubeck, Walsh, & Crowl, 1994; Thompson & Schwartz, 1982). This is particularly disturbing given that a recent nation wide survey revealed that 80.9% of college students have dieted/skipped meals and 20% suffered from an eating disorder (NEDA, 2006). The purpose of the current study is to determine the effects of eating habits (e.g., dieting) and body image on college education (e.g., GPA, successful completion of courses, achievement tendencies). Participants will be 150 college students (men and women) recruited from Introductory Psychology courses at a Southeastern university. They will complete the following measures: demographic, Eating Disorders Inventory, Contour Drawing Scale, and Achieving Tendency and Goal Orientation Scales. Data will be collected in mid-March and results will be analyzed by March end. Results will assist in developing effective strategies to assist students with eating disorders to be successful in their educational studies.

36. An Examination of Emerging Adulthood and Romantic Relationship Commitment

Fantasy Lozada

Faculty Mentor: Dr. Beverly R. King, Department of Psychology & Counseling

This study examines the prevalence, definition, and importance of romantic relationships during the developmental stage of “emerging adulthood”. Emerging adulthood is a newly researched stage of development between the ages of 18-25. It is primarily found in post-industrialized countries and is marked by its period of prolonged dependence on parental figures (financial and/or emotional) after adolescence and the ability to explore various options concerning relationships and career paths. Participants include both male and female PSY 101 students over the age of 18 who completed a series of scales and surveys to measure their status as “emerging adults”, their willingness to commit, number of relationships, and personal definition of a long-term romantic relationship. These variables were studied in order to determine their correlation with each other. It was expected that there would be a negative correlation between the number of relationships and the status of emerging adulthood, between the importance of a long-term relationship and the status of emerging adulthood, and between participants’ willingness to commit and the number of relationships they have had. Although no specific hypotheses were formulated, the study also explored how adult status and sexual orientation might influence definitions of romantic relationships. (Results not yet available.)

Writing Festival Participation

Faculty Sponsor: Deanna C. Johnson, M.A.

First Amendment Rights and “Wrongs”: A Study of “Free Speech Zones” on American College and University Campuses

Student Participants:

Tabitha Carlton, DaMonique Coley, James Hammond, Amanda Jones, Jasmine Laughlin, Melissa Malloy, Carin McLaughlin, Brittany Mitchell, Brooke Mitchell, Melinda Pike, Jullian Pipkin, Danielle Reed, and Amber Smoak

Faculty Sponsor: Scott Hicks, Ph.D.

Robeson County Farmers and Local Foods

Donovan Bradley, Krystal Herbert, Kendall Nelson, Micah Plemmons

Local Foods, Campus Cafeteria: University/Community Decision-Making

Wayne Blevins, Brian Brewer, A.J. Graves, Thorne Locklear

Assessing the Safety and Nutrition of Local Foods

Olivia Broadway, LaToya Coleman, Kayla Cummings, Cierra Harris

Local Foods and Student Opinion

Katherine Laws, Christina Nyambura, Jessica Painter

Empowering Pembroke and Robeson County through Agriculture

Zach Batton, Lee McLain, Mannie Perez, Megan Woodard

Assessing Local Infrastructures for Local Foods

Heather Douglas, Chris McGill, Jennifer Milling, Jennifer Williams

Local Foods, Local Costs?

Jacque Banks, Brittany Wallace, Jasmine Washington, Jasmine Watson-Chestnut

Big Business, Local Foods: Sodexo Marriott

Ayman Badwan, Jonathan Currie, Adam Ruiz, Tim Toner

Management and Worker Perspectives on Local Foods

Chelsa Causseaux, Egan Dawson, Dana Essick, Lizzie O'Connor

University Officials' Perspectives on Local Foods

Jerry Jones, Torrean Martin

Faculty Sponsor: Roger Ladd, Ph.D.

Argument

Students to be announced