

Undergraduate Research Day 2012

APRIL 19, 2012 12:00 NOON-3:30 PM
RIDLEY STUDENT CENTER

Undergraduate Research
Seeing Tomorrow Today

ECSU

ELIZABETH CITY STATE UNIVERSITY
Elevate Higher. Emerge Stronger.

Research Day - Schedule of Events

Oral Presentations - Room 206

1:30-1:45

Speller, LaShawn (Drs. Yan Jin & Paulette Edmunds)
Quick Response Code (QR Code): A New Technological Generation

1:45-2:00

Cherry, Rondell (Prof. Michael Worthington)
Impact of EITC and Child Credit on Marginal Tax Rates

2:00-2:15

Hall, Brittnei (Dr. Margaret Young)
*EMS Mutagenesis of *Cleome* sp.*

2:15-2:30

Ross, Michael and Nicholas Hamden (Dr. Adetayo Adedeji)
Monitoring the Oxidation/Diffusion Barrier Layer Characteristics with Rutherford Backscattering Spectroscopy (RBS)

2:30-2:45

Dander, Janice (Mr. Judah Lamar)
The Minimum Legal Drinking Age Debate

2:45-3:00

Joyner, Rakea (Dr. Dorothy Kersha-Aerga)
The Problem of Juvenile Transfer: Should Juveniles be tried as adults?

3:00-3:15

Kurfess, David (Dr. Debjani Kanjilal)
Absolute Labor Mobility – Utopia or simply the Free Market

3:15-3:30

Swalander, Kurt (Dr. Lloyd Mitchell)
Integrating Geology and Geosciences with Health and Physical Education Requirements for an Outdoor Activities Class: A 'Healthy' Match for ECSU students!



Oral Presentations - Room 216

1:30-1:45

Lancaster, Jeremiah (Dr. Eyuaem Abebe)
*The Symbiosis of *Caenorhabditis briggsae* KT0001 and *Serratia* sp. SCBI: a Fitness Cost Analysis*

1:45-2:00

Budour, Mohammad (Dr. Eyuaem Abebe)
Bacteria: A Key Resource to Free-Living Nematode Success

2:00-2:15

Fightmaster, Christopher (Dr. Eyuaem Abebe)
Microbial Diversity in Lake Phelps, NC

2:15-2:30

Ferebee, Briana (Dr. Eyuaem Abebe)
Two New Species of Nematodes from Lake Phelps, NC

2:30-2:45

McLees, Vongvilay (Dr. Eyuaem Abebe)
Survey of Entomopathogenic Nematodes in Northeastern North Carolina and Southeastern Virginia

2:45-3:00

Deirdre Vaughan, Gwyn Hyman, Jewel Medley, Christopher Krauss (Dr. Hirendranath Banerjee)
The Effects of Rhenium Acetyl Salicylate Compounds on Lung Cancer Cells

3:00-3:15

Gwyn Hyman, Deirdre Vaughan, Christopher Krauss, V. Smith (Dr. Hirendranath Banerjee)
Epigenetic studies on different cancer cell lines



Research Day Committee Members

Velma Blackmon	Harry S. Bass
Murel M. Jones	Charles Cherry
Margaret M. Young	W. Eric Thomas
Yan Jin	Nataya Harris
Vandana G. Gavaskar	Darnell Johnson
Delbert F. Garnes	Gloria Payne
Lloyd Mitchell	



Research Day Luncheon

April 19, 2012

Ridley Student Center

12:00-1:30 pm

Welcome & Greeting	Dr. Ali Khan <i>Vice Chancellor</i>
Organizational Remarks	Dr. W. Eric Thomas <i>Associate Vice Chancellor</i>
Introduction of Speaker	Dr. W. Eric Thomas
Keynote Speaker	Dr. Valerie Ashby <i>Distinguished Professor of Chemistry, UNC-Chapel Hill</i>
Blessing	Dr. W. Eric Thomas

LUNCH



<http://www.emsb.qc.ca/laurenhill/science/periodic3.jpg>

Dr. Valerie Ashby

Distinguished Professor of Chemistry, UNC-Chapel Hill

She received a bachelor's degree in 1988, and her doctorate degree in 1994, both in chemistry from UNC-Chapel Hill. She joined the University's faculty 10 years later. Today, she teaches organic chemistry to sophomores and juniors and introductory chemistry to first-year students.

The Bowman and Gordon Gray Distinguished Term Professor studies polymers. Polymers are the building blocks of plastics, created by linking many separate units together. One part of Ashby's research increases the benefits that sick people derive from medicines. Her team tailors biomaterials to improve drug delivery in the body.

She already has at least 10 patents for her research.

She has received numerous awards for her teaching and research. In 2002, the American Chemical Society named her one of the country's top 12 young female chemists. In 2008, she received the University's Sitterson Award for teaching first-year students.



POSTER PRESENTATIONS 1:30 - 3:30 pm, Ridley Student Center

1st Floor Lobby & Stage Area

School of Arts and Humanities

Denney, Marisol (Dr. Jose Gil)

Love and Death in Spanish Literatures

Jason Lindsay and Asia Austin (Dr. Eric Weil)

The Pickwick Society: Literary and Creative Arts Organization LLC

Joyner, Rakea (Dr. Dorothy Kersha-Aerga)

The Problem of Juvenile Transfer: Should Juveniles be tried as adults?

Kurfess, Rebekka (Dr. Chantelle MacPhee)

John William Waterhouse's Interpretation of Shakespeare's

McMurrian, Raynetta (Dr. Carla Miller)

The Nature of Victimization across the Racial Groups

Wilson, Quanticia (Dr. Carla Miller)

Gang Criminality: Impact of Race, Class and Gender

School of Business & Economics

Adams, Stephanie (Dr. Ngozi Oriaku)

The Big Issue at ECSU: Parking

Burnett, Shaniqua (Dr. Ngozi Oriaku)

The Importance of Studying/Traveling Abroad

Casey, Jessica (Freda McBride)

Financial Analysis and Comparison of Two Corporations for the Purpose of Investing

Cherry, Rondell (Michael Worthington)

Impact of EITC and Child Credit on Marginal Tax Rates

Gilson, Elizabeth (Dr. Narendra Sharma)

Auditing Failures and Earnings Management: Implications for the Auditing Profession

Jones, Courtney (Dr. Joy Smith)

Did Joe Paterno behave ethically?

LaShawn Speller & Naomi Mallory (Yan Jin & Paulette Edmunds)

Quick Response Code (QR code): A New Technological Generation

Miranda Baker, Nikkia Mingia, Justin Swann, Jessica Young (Ebere Oriaku)

Effects of Sales Tax Increase to Economic Development of North Carolina

Moore, Nancy & Scott Weaver Caitlin Davis (Dr. Confidence Amadi)

Interest Rate Sensitivity of Bank's Investment and Loan Portfolio: A Comparison of Two Mid-sized Banks.

School of Education and Psychology

Camille S. McGowan, John A. Terrizzi, & Natalie J. Shook (Dr.

Michelle Wiggins)

You Disgust Me: The Effect Of Disgust On Prejudice Toward Out-



Group Members

Craig, Samantha and Jasmine Whitehurst; (Mr. William Holt)

How to develop a scoring rubric for a physical education activity class in a secondary setting

Ramsey, Carlton (Dr. Michelle Wiggins)

Typical and atypical antipsychotics: An example of discriminative cues

Takeshia Cofield, India Hawkins, Dianca Moore, Lahquan Perry (Mr. William Holt)

What is the most effective method of giving feed back to students learning new motor skills?

School of Math, Science & Technology

Alston, Danny (Dr. Ephriam Gwebu)

Improving Crystal Quality for a C-terminal Domain of Nicking Enzyme from Staphylococcus aureus

Bazile, Quachel (Dr. Tesfaye Serbessa)

An efficient synthesis of the 4'-epimer of 2-fluoronoraristeromycin

Brooks, Dwayne (Dr. Ephriam Gwebu)

The SVD Technique And Its Application To Accelerator Physics

Brown, Daphine (Dr. Ephraim Gwebu)

Effect of Negative Coping Skills On the Impairment of Cortisol Regulation

Collins, Rondessa (Dr. Ephraim Gwebu)

Isolation and Semi-synthesis of Oleanolic Acid Extracted from Syzygium aromaticum

Dover, Jasmine L. (Dr. Ephraim Gwebu)

Cortisol Dysregulation, And Its Effects on Fasting Insulin

Latoria Clagon (Michael Worthington)

Human Computer Interface

Rice, Brittany (Dr. Althea Bluiett)

Detrimental Effects of Up-Conversion in Resonantly Pumped Er³⁺ Doped in KPb₂Cl₅

Robinson, Laijia (Dr. Ephriam Gwebu)

Design, Synthesis and Biological Evaluation of Chalcone Derivates as Potential Agents to Treat Breast Cancer

Sharpe, William H. III (Dr. Ephriam Gwebu)

Condom Use Negotiation, Condom Attitudes and Relationship Quality Among African American Males: A Study in Hiv/AIDS Prevention

Simmons, Arkeen (Dr. Ephriam Gwebu)

Selective Modulation of Striatopallidal Gs Signaling Induces Histone H3 Phosphorylation

Wallace, Semaj (Dr. Ephriam Gwebu)

Is Anger Associated with Internalized Racism?

Wilkins, Juan (Dr. Ephraim Gwebu)

Human Papilloma Viral Genes Expression Is Regulated By Modification Of Splicing During Cell Differentiation

PROCEEDINGS

of

The 2nd Annual Elizabeth City State University Undergraduate Research Day

April 19, 2012

Forward

Elizabeth City State University (ECSU) had its 2nd annual Undergraduate Research Day on April 19, 2012. There were a total of 31 poster presentations and 15 oral presentations. The research presentations came from all four Schools and represented all academic departments of the University. These Proceedings contain the abstracts from those 46 presentations and showcase research work being done by students and faculty.

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Adams, Stephanie

Dr. Ngozi Oriaku - Business Administration – Banking & Finance

The Big Issue at ECSU: Parking

Everyone would like to drive to their designation and find a parking spot that is as close to the place as possible and a space where they don't have to worry about tow trucks. If drivers could use the drive-thru at every place they went they would because sometimes parking is stressful. The parking issue at Elizabeth City State University has caused students and faculty outraged with the sessions of long driving around to find a parking spot and the expensive tickets found under their windshield wiper of their cars. The university has yet to figure out a solution to this problem that will not only resolve the problem temporarily but for the future. I have an idea of what I think that the university should do with this problem. The main goal of my proposal is to increase parking spaces, provide parking spaces that are convenient to students, and to decrease towing expenses for students. I propose a plan to build an underground parking garage on the ECSU campus. This will conserve space on campus, provide convenient parking and help to solve this parking epidemic.

Alston, Danny

Dr. Ephriam Gwebu - Chemistry & Physics

Improving Crystal Quality for a C-terminal Domain of Nicking Enzyme from Staphylococcus aureus

Staphylococcus aureus has been a volatile bacterial entity since its discovery in the 19th century. Staphylococcus is known to live on the epidermis of many complex organisms but the danger it imposes comes from gradually being resistant to antibiotics. Staphylococcus also initiates a transfer sequence of this resistance to other bacterial sites through a protein. The research described here has the goal of finding the function by crystallography. Previous crystallization results showed that the wild type were diffracting poorly through x-ray exposure. For improvement of the diffraction and its crystalline structure Surface Entropy Reduction(1) was undertaken. Surface entropy reduction is a method to mutate highly mobile amino acids predicted to be on the surface of the protein that might interfere with compact crystal packing. We applied site directed mutagenesis on two "EKE" transfer sites, SER 308-310 and SER 178-180. Our hypothesis is that mutating the wild type sequence EKE into the sequence AAA will produce better crystal diffractions. Our tests showed that the first mutant, SER 308-310 sequence, produced a higher resolution diffraction than the wild type. The SER mutation 178-180 produced diamond shaped crystals of a different morphology than the wild type or SER 308-310. We are currently testing this SER 178-180 mutation under the same conditions like the first mutation. Possibly this mutation will improve for higher diffractions. The research described is currently an ongoing process but the future finding of a successful crystal structure now looks achievable for this protein. This structure will contribute greatly to understanding of the overall protein found in Staphylococcus aureus.

Baker, Miranda & Mingia, Nikkia & Swann, Justin & Young, Jessica

Ebere Oriaku - Business Administration

Effects of Sales Tax Increase to Economic Development of North Carolina

Tax is a financial charge or contribution imposed by the state known to raise government revenue. In the recent years of economic develop and ever-changing environment and economy tax is no longer known as a enforced contribution and raising public revenue but is also used to affect consumption, production and distribution through the economic development of North Carolina. The increase of tax can have both a positive and negative effect on the economic development in North Carolina. Tax increase and incentives in the largest city of Charlotte, North Carolina are intended to create partnerships between public and private sectors on North Carolina. (Hossain, 2012) One of the most commonly discussed issues in finance is how tax rates relate to economic growth. In North Carolina there has been a distinct difference in economic growth of rural and urban areas. With larger cities and larger populations have experienced development of more jobs and increase in revenue. In rural communities, there has been a significant loss over the years in jobs and in population. The Bureau of Economics rates North Carolina the wealthiest state in terms of gross domestic product in the year of 2010. This research examines the Impact of tax on the Economic Development of North Carolina giving an insight on how tax affects our lives from a financial and economic standpoint.

Bazile, Quachel

Dr. Tesfaye Serbessa - Chemistry & Physics

An Efficient Synthesis of the 4'-epimer of 2-fluoronoraristeromycin

The 4'-epimer of 2-fluoronoraristeromycin was synthesized by employing bis-t-butoxycarbonyl (Boc) protected 2-fluoroadenine as a superior substrate for the Mitsunobu reaction with the appropriate cyclopentenol. Unlike the unsubstituted counterpart 2-fluoroadenine, this substrate is completely soluble in THF and resulted in a very good yield in the Mitsunobu coupling reaction as well as subsequent steps.

Brooks, Dwayne

Dr. Ephriam Gwebu - Chemistry & Physics

The SVD Technique And Its Application To Accelerator Physics

A planned Polarized Electrons for Polarized Positrons (PEPPo) experiment at Jefferson Lab will consist of the first step of a program aiming to demonstrate a new type of polarized positron source that would take advantage of the tremendous advances in polarized electron sources that have taken place at this facility. This experiment will be installed over the summer 2011, and the associated dedicated beamline and detector packages calibrated in the Fall 2011 and early Spring 2012. PEPPo will be conducted during the Spring 2012. The purpose of this summer internship study is to extract information on the energy variation of the electron beam used to produced the positron beam, and to ultimately analyze its effect on the PEPPo experiment. Method: The energy fluctuation of the electron beam can be monitored during the experiment by inverting the transport matrix for PEPPo. The Singular Value Decomposition (SVD) mathematical technique was used to perform this task. The SAGE open source software was first

utilized to validate the technique. A standalone C++ code will then be developed to extract this information using five beam position monitoring systems Conclusion: The SVD technique was validated for symmetric matrices. After extracting the information on the energy variation, correction on the physics to be extracted for PEPPo could be done.

Brown, Daphine

Dr. Ephraim Gwebu - Chemistry & Physics

Effect of Negative Coping Skills On the Impairment of Cortisol Regulation

This study is part of a larger research project, which has as its objective the investigation of the association of psycho social variables with risk factors for Type 2 diabetes. There is research evidence that cortisol dysregulation is one of the risk factors for Type 2 diabetes, and also that methods of coping with stress might help people to reduce their incidence of some of the risk factors for Type 2 diabetes. Purpose. This study investigates the association of three negative coping techniques with cortisol dysregulation, one of the risk factors of Type 2 diabetes. Methods. Researchers in this study recruited 190 diabetic and non-diabetic patients from the Thokozani and Khandisa Clinics in KwaZulu-Natal to participate in the study. Cortisol Assay. Saliva was taken in the morning and afternoon from 8:00 a.m. – 10:00 a.m. and 3:00 p.m to 5:00p.m. The saliva was then taken to the lab where ELISA (Enzyme-Linked Imunno Assay) was conducted. ELISA was used to measure the concentration of the cortisol after the mean absorbance (450 nm) extrapolated from a standard curve created during the assay. Coping Skills Assessment. Coping skills were measured through a 12-question questionnaire. The three negative coping techniques measured in this study were denial coping, restraint coping, and behavioral disengagement coping. These measures were three subscales of the COPE Inventory (Caver, Scheier and \Vintaub 1989). Each subscale consisted of four questions with responses from 1 = "I don't do this at all" to 4= "I do this a lot". For the statistical analysis Statistical Product and Services Products (SPSS) was used. Within this program the t-test was used because coping was broken down into its subscales when it was compared to the morning and afternoon cortisol levels. Results. The analysis showed that there was no significant relationship of either denial coping or behavioral disengagement coping with cortisol dysregulation. However, there was a marginally significant relationship between restraint coping and cortisol dysregulation. The result indicated that persons who used high levels of restraint coping tended to have marginally less cortisol dysregulation. It can therefore be concluded that restraint coping tends to slightly help people in the maintenance of more normal levels of cortisol in their bodies.

Budour, Mohammad

Biology - Dr. Eyuaalem Abebe

Bacteria: A Key Resource to Free-Living Nematode Success

We investigated nematode-bacterial associations using the culture method with the goal of identifying bacterial species associated with free-living nematodes in southern Virginia and northeast North Carolina. We used 16S rRNA gene sequences for bacterial identification. Twenty-seven bacterial isolates

were cultivated from a total of 17 individual nematodes belonging to four taxa. Of those 27 bacterial isolates, BLAST results showed that 11 matched to hitherto uncultivated, environmental bacterial isolates. Our results show that the association warrant further investigation in the role of bacteria as a key resource to the success of nematodes and for future efforts to culturing free-living nematodes.

Burnett, Shaniqua

Dr. Ngozi Oriaku - Business Administration

The Importance of Studying/Traveling Abroad

Generally, studying abroad is a term used to describe enrolling in an educational program outside of your country. Study abroad is credit bearing courses taken overseas; the student receives a transcript from the university attended while overseas. The student registers for the home university course in the case of a faculty-led program, and receives the grade from that faculty leader. There are many reasons as to why students should travel abroad. Besides the excitement of travel, you also get the chance to experience new customs, holidays, music, foods, politics, and art. Studying abroad programs are targeted toward those students who are independent, self-assured, enjoy new experiences and different types of people, and can handle challenges. Students who desire to study abroad must meet certain eligibility requirements that have been set by their home institution. Colleges and universities place emphasis on international studies and productive global citizenship. Numbers of students studying abroad has rapidly increased although there is evidence that this program has been negatively impacted by the global economic crisis.

Casey, Jessica

Freda McBride - Accounting

Financial Analysis and Comparison of Two Corporations for the Purpose of Investing

Making investments in corporate stocks is a common method of increasing ones wealth. It can also be a method of decreasing ones wealth. How can a potential stockholder know which company is more beneficial as an investment? An investor can make a decision that can potentially have adverse reactions if they do not have the knowledge of how to conduct research and compose comparative statements and important ratios. Knowing how to compose these statements and compute these ratios is only half of the work; interpretation of this information is important as well. This project demonstrates how a potential investor should analyze financial statements in order to select a company in which to invest.

Cherry, Rondell

Michael Worthington - Accounting

Impact of EITC and Child Credit on Marginal Tax Rates

In the interest of fairness, from the very inception of the Federal Income Tax it has incorporated the principle of progressive marginal income tax rates, which means higher rates for higher income

taxpayers. The marginal income tax rate is the income tax rate applied to the next dollar of taxable income, so to be truly progressive the marginal rate should rise as taxable income rises. However, due to the phase-in and phase-out of tax deductions and tax credits, the actually marginal rate does not always rise in a smooth curve. These disruptions of the progressive tax rate principle are fundamentally unfair to taxpayers caught in the affected income brackets. The IRS Earned Income Credit is a refundable tax credit designed encourage people to earn wages. To be eligible, both the taxpayer's earned income and adjusted gross income must be within a specific range based on filing status and number of dependent children. The adjusted gross income could include unearned income such as dividends, interest, rental income, etc. The IRS Child Tax Credit is designed to ease the financial burden for low income taxpayers with dependent children. To qualify for the credit up to \$1,000, the child must be a dependent for tax purposes under the age of 17, and they must live in the taxpayer's household. The refundable portion of the child credit is called an "additional child credit" that is paid to the taxpayer even if they owe no tax. This study uses simulations of tax deductions and credits over ranges of taxable income applicable to the phase-in and phase-outs of the Earned Income Tax Credit and the Child Tax Credit. The assumptions are that all taxable income comes from wages and the taxpayer uses the standard deduction. The marginal tax rate is computed as the change in taxes due divided by the change in taxable income. Line graphs show the uneven distribution of marginal tax credits.

Clagon, Latoria

Michael Worthington - Computer Science Major/Business Administration Minor

Human Computer Interface

Human computer interface addresses the issue of ease of use. The interface should be intuitive, flexible and efficient. In regards to applications, users should be able to navigate to a desired link in three or fewer steps. However, the proliferation of smart phones has challenged this principle of good webpage design. Designers are faced with a dilemma because the smaller screens display less information, which limits the number of links on a page and complicates the navigation within a website. The research question involves the best practices for webpage design for view via a smartphone. The literature includes research regarding the best practices for human-computer interface design factors for webpages viewed via a personal computer monitor. Best practices include font size, font face, colors, distance between icons for links, and navigation features. However, smartphones present a new set of parameters such as screen resolution, contrast, refresh speed, touch screen, etc. I purpose creating a website with a number of webpages so that i can manipulate the human-computer interface factors for the different webpages. Then a sample of students would view webpages via a smartphone, with different webpages illustrative a range of design factors. The subjects would respond to a survey to indicate their preference for the design features. The results would be tabulated and converted to graphs. The survey would also gather some demographic information including experience with smartphones, to test for any correlation between experiences and preferences

Cofield, Takeshia & Hawkins, India & Moore, Dianca & Perry, Lahquan

Mr. William Holt - Health and Physical Education

What is the most effective method of giving feed back to students learning new motor skills?

The method that will be presented will be based off of research that has been developed in motor skills showing that motor learning concepts of modeling and cueing are the most effective means of giving both positive and negative feedback to the learner to assist in the development of new motor skills. This application will be processed by adolescents aged 13-19 in physical education activity classes. Physical education activity will be the platform that is used to show learning of new motor skills.

Collins, Rondessa

Dr. Ephraim Gwebu - Chemistry & Physics

Isolation and Semi-synthesis of Oleanolic Acid Extracted from Syzygium aromaticum

Oleanolic Acid is a naturally occurring triterpcnoid that is widely distributed in medicinal plants and food. It was first studied and isolated from several plants including Syzygium claviflorum and Syzygium samarangense. Previous studies have shown that Oleanolic Acid is relatively non- toxic, antitumor, and hepatoprotective and also exhibits antiviral properties. Oleanolic acid was found to exhibit strong anti-HIV activity. This particular study extracted, isolated and characterized Oleanolic Acid from S. aromaticum. The extractions were performed using n-hexane and ethyl acetate. A column was prepared aand carried out in order to isolate pure Olcanolic Acid. The ethyl acetate fraction afforded pure oleanolic acid (OA) amidst other compounds. Functional derivatization of the hydroxyl group at position3 gave acetylated OA. The structures of these three compounds were established and characterized using NMR.

Craig, Samantha & Whitehurst, Jasmine

Mr. William Holt - Health and Physical Education

How to develop a scoring rubric for a physical education activity class in a secondary setting

Students identified a physical education activity that could be utilized in teaching a 9th or 10th grade physical activity, i.e. basketball. They identified key components of the activity which were broken down into scoring segments. The scoring segments were further developed into a grading model. This grading model can be used for the final grading process. The rubric used to effectively score a student in this activity during a post activity teaching session. This rubric will give validation to the final physical activity grade assigned to the student. The key components of this test will be discussed in further detail showing grading assessment for a particular scale.

Dander, Janice

Mr. Judah Lamar - Language, Literature & Communication

The Minimum Legal Drinking Age Debate

John McCardell's article, "Yes, the U. S. Drinking Age Should be Lowered" (2010), opens the debate in favor of abolishing the national minimum drinking age of 21. Maria Carmona responds to him in her article "No, Effective Public Policy Should Not Be Discarded" (2010). Both articles appear in the Spring 2010 publication *Insights on Law & Society*. The authors enter a debate on the issue sighting references that enhance their individual viewpoints. However, discrepancies exist in their referenced facts which cause both positions to appear one-sided. In researching both sides of this issue, flaws are found in their citations which raise questions of the validity in their arguments. The minimum legal drinking age may be a perpetual debate but arguing with inconsistent and faulty evidence is no way to win the battle. Statistics can be biased and often unintentionally skewed to support a specific viewpoint. Mike A. Males states in *The Scapegoat Generation* the reason for prohibition aimed at teens is the adults' need to control their near-adulthood children in a two-fisted double standard. An open-minded discussion of the under and over age-21 debate with facts and figures that reflect honesty on both sides of the issue along with historical references is necessary for an informed discussion. This point is emphasized by the title of the article "The age-21 minimum legal drinking age: a case study linking past and present debates" published by the Society for the Study of Addiction. Alcohol is the drug of choice in America. History presents indispensable evidence about past governmental experiments with alcohol control. America has experienced no minimum drinking age, prohibition, and minimum drinking ages between 18 and 21 on a state and national level. Therefore, there is a great deal of past to remember. This paper describes the history of drinking alcohol in America, illustrates the evolution of the minimum legal drinking age, references the fallacies in oft-quoted statistics, and informs in order to aid in the development of an educated, fact-based opinion.

Dover, Jasmine

Dr. Ephraim Gwebu - Chemistry & Physics

Cortisol Dysregulation, And Its Effects on Fasting Insulin

A strong correlation exists between stress related conditions and cortisol levels. Per Bjorntorp's idea suggests that chronic stress is one of many causes associated with the Dysregulation of the Hypothalamic Pituitary-Adrenal Axis, which leads to glucose intolerance and obesity in the abdominal area. Cortisol secretion increases in response to any stress that is present in the body. When released in healthy amounts, cortisol regulates blood pressure and insulin levels. Cortisol Dysregulation is a marker for type II Diabetes. It is the intent of this study to analyze the influence of cortisol Dysregulation on fasting insulin. During this research saliva samples were collected twice a day, once in the morning from 9:00am-11:00am and again in the afternoon from 3:00pm-4:30 pm to measure cortisol levels using an Enzyme Immunoassay Kit. The data was analyzed using SPSS (Statistical Package for Social Sciences) to determine significance. Preliminary results demonstrate that cortisol Dysregulation is not significantly correlated with insulin levels. As cortisol differences increase, insulin levels also increase, indicating that people with normal cortisol differences report higher levels of insulin than those with smaller or impaired differences; however, this relationship is not significantly correlated.

Ferebee, Briana

Dr. Eyuaem Abebe - Biology

Two New Species of Nematodes from Lake Phelps, NC

In the framework of inventorying nematode communities in northeastern North Carolina, we studied the taxonomic identity of two populations at Lake Phelps, NC. Morphological data suggest that these populations, *Neotobrilus* sp and *Chronogaster* sp., are new to science. Our data expands the nematode taxa reported for the North American region and contribute to our understanding of nematode biogeography and ecology.

Fightmaster, Christopher

Biology - Dr. Eyuaem Abebe

Microbial Diversity in Lake Phelps, NC

To explore the role of microbial communities and its relationship with the diversity of other sediment animals, we studied microbial diversity of column water and the sediment of Lake Phelps, NC. We used traditional spread plate method to enrich bacteria. We identified cultivable bacteria using both traditional methods, i.e. gram staining and differential and selective media, and 16S ribosomal gene sequences. We isolated 27 unique colonies of bacteria and characterized 20 using DNA sequences. Out of these we identified 17 different strains/species that belonged to three phyla (9 isolates of Proteobacteria, 7 of Firmicutes, and 1 of Bacteroidetes), six classes (6 isolates of Betaproteobacteria, 4 of Bacilli, 3 of Gammaproteobacteria, 3 of Bacillales, and 1 of Flavobacteria), and seven orders (4 isolates of Neisseriales, 4 of Bacillales, 3 of Bacillaceae, 2 of Burkholderiales, 2 of Enterobacteriales, 1 of Aeromonadales, and 1 of Favobacteriales). Our results show a microbial community typical for freshwater habitats but also with a possibility of contamination, and this may have implication for water use. Future investigation will focus on characterizing ecological role of these bacterial strains.

Gilson, Elizabeth

Dr. Narendra Sharma - Accounting

Auditing Failures and Earnings Management: Implications for the Auditing Profession

Auditing failures and fraud have brought down companies, audit firms, and impacted financial markets since the Enron debacle in 2001. This paper attempts to examine some of the issues surrounding the earnings management and audit failure that involved Xerox Inc., which led to the enactment of Sarbanes Oxley Act 2002. KPMG's audit failure is discussed. A review of six articles pertaining to aspects of the case and issues brought up in the case are discussed. Proper treatments of reserves under GAAP and IFRS and related company assertions and auditor responsibilities are described. . The roles and responsibilities of audit firms in the conduct of an engagement, the use of the SEC Form 8-K for disclosures, and the Securities Exchange Act of 1934 Rule 10b-5 as it pertains to this case are all questions answered in this paper. Recommendations include the importance of staying abreast of

changes in GAAP, IFRS, and securities law. Auditors and CPAs need to remain vigilant, maintain professional skepticism and independence in their pursuit of audit engagements. Education, trainings, and professional development initiatives help rebuild the reputations of auditors after the audit failures and fraud.

Hyman, Gwyn & Vaughan, Deirdre & Krauss, Christopher & Smith, V.

Dr. Hirendranath Banerjee - Biology Department

Epigenetic studies on different cancer cell lines

This study is aimed at examining epigenetic differences between cancer cells and corresponding normal cells. Epigenetics simply means 'above the genome,' and represents a phenotypic expression of a mutation without a change in the gene sequence. There are two different mechanisms by which epigenetics effects gene expression: DNA methylation and histone modification. In this research DNA methylation percentages were determined using Imprint[®] Methylation DNA Quantification Kit. Glioblastoma multiforme, GBM, is a grade IV astrocytoma, a highly malignant cancer of the brain. Twelve Glioblastoma multiforme genomic DNA (gDNA) samples were compared to gDNA from Normal Brain. Histone modification was preformed using an EpiSeeker Histone Methyltransferase H3 Activity Quantification Assay. Nuclear extracts of HS-5, Normal Prostate, and PC3, Prostate Cancer, were extracted and activity levels of histone methyltransferase were measured. Results from the DNA methylation percentages showed that Normal Brain gDNA was significantly more methylated than GBM gDNA samples. Normal Brain gDNA showed 152% methylation (compared to the universal methylated control DNA) and brain cancer GBM gDNA ranged between 62-107% (compared to the universal methylated control DNA). Activity levels from Histone modification showed there were higher levels of activity in the Prostate Cancer compared to Normal Prostate. Histone methyltransferase activity in PC3 (normal prostate cells) was measured at 9.85 OD/h/mg compared to HS-5 (cancer prostate cells) at 0.28 OD/h/mg. Results obtained from this study clearly show a difference in the epigenetic expression of cancer and normal cells. Future research into different cell lines could help further determine the epigenetic differences between cells and the role epigenetics plays in cancer.

Jones, Courtney

Dr. Joy Smith - Business Administration-Management

Did Joe Paterno behave ethically?

Jerry Sandusky was accused of molesting young boys while on staff at Penn State and afterwards. This accusation was reported to Joe Paterno, Penn State's head football coach, who had allowed Sandusky locker room access after he left Penn State. Paterno reported the incident according to policy, but not follow up. This project asks whether it was ethical for Paterno not to follow up or do anything further after making his initial report. First, the project will identify the stakeholders who were affected by Paterno's inaction. Second, it will analyze Paterno's actions using six different ethical frameworks.

Finally, it will summarize the case for judging Paterno's actions as ethical or unethical, bringing the determinations under all of the frameworks together.

Kurfess, David

Dr. Debjani Kanjilal - Business Administration-Economics and Finance

Absolute Labor Mobility – Utopia or simply the Free Market

The modeling of immigration in basic labor market models predicts an equalization of wages, a positive wealth effect for the receiving country as well as for the immigrants themselves. At the same time, it shows losses in wealth for the emigration nation. However, overall wealth is increasing with a rising liberal migration policy. These findings are based on many assumptions and thereby the analysis is restricted. Nevertheless, they are in line with empirical findings in different nations and therefore, can be used as references to explain basic migration effects. Having such an easy model available could help to change the prejudiced view many immigration nations have towards the immigrants and their contribution towards wealth. Finally, I will draw an immigration utopia of a world without migration restrictions and show how in the long-run even issues like immigration and adjustment costs can be overcome. In addition, the global wealth is maximized due to labor market efficiency based on factor mobility, which is the implication of a free market.

Lancaster, Jeremaih

Dr. Eyuaem Abebe - Biology

The Symbiosis of Caenorhabditis briggsae KT0001 and Serratia sp. SCBI : a fitness cost analysis

Though extensive research efforts have advanced our understanding of Caenorhabditis as a model system, little is known in an ecological context. Bacterial associations of Caenorhabditis can vary vastly: they may be mutualistic, parasitic, or even serve as vectors for pathogenic bacteria. Serratia marcescens has been shown to be pathogenic, but strain-specific, and induce a fitness cost to Caenorhabditis. The recent isolation of a Caenorhabditis briggsae KT0001/Serratia marcescens SCBI association from the wild has allowed us to examine co-evolutionary adaptations under laboratory conditions. Our results found no significant difference in survivorship or total fecundity between E. coli and Serratia sp. SCBI fed Caenorhabditis briggsae KT0001. Only the mean onset of reproduction values of 2.12 days (E. coli) and 2.42 days (S. marcescens) were significantly different. Serratia sp. SCBI is most likely not pathogenic to C. briggsae KT0001 and the earlier reported mutualistic entomopathogenicity may have been a result of long non-transient, co-evolutionary nematode/bacterial association. This relationship shows that nematode/bacterial associations in the wild can vary greatly and brings to question the long-standing view of considering Serratia as pathogenic to Caenorhabditis.

Lindsay, Jason & Austin, Asia

Dr. Eric Weil - Language, Literature & Communication

The Picwick Society: Literary and Creative Arts Organization LLC

The Picwick Society is an organization on the campus of Elizabeth City State University, for writers of short stories and poems. In previous years Picwick Society has published poems and short stories in a literary magazine, The Phoenix, which was distributed throughout the campus. Picwick is student-based and displays short stories, poems, artwork and photography produced by students. Recently the magazine has evolved from a literary magazine into more of a Fine Arts magazine, featuring artwork, photography, and graphic designs done by the students. There are prerequisite for submitting work to be displayed in the magazine. Students are to submit their work online that will be reviewed by the editor-in-chief of Picwick, and the work that is selected will be published in the next issue. In this poster presentation we will share the significance of this literary magazine to the literary and cultural life of ECSU students. We will share information about our meetings and display the artwork and poetry that is being produced by ECSU students.

McGowan, Camille & Terrizzi, John & Shook, Natalie

Dr. Michelle Wiggins - Department of Psychology, Virginia Commonwealth University

You Disgust Me: The Effect Of Disgust On Prejudice Toward Out-Group Members

The behavioral immune system (BIS) is a cluster of psychological mechanisms that promote prophylactic behavior (Schaller, 2006). Disgust is a basic emotion within the BIS, which elicits an avoidance response to protect individuals against infection and disease (Rozin & Fallon, 1987). One potential source of contamination is other people. Specifically, individuals are more vulnerable to the diseases of out-group members than in-group members. Thus, individuals may have a stronger disgust reaction to out-group members, and prejudices may be exaggerated when individuals feel vulnerable to infection. The specific aim of this study was to test whether the activation of disgust leads to more prejudice toward out-group members. In this study, the BIS was experimentally activated by having half of our participants read an essay, supposedly written by an out-group member (i.e., Middle Eastern), that had a smudge of "snot" (an avocado and glue mixture) on it. The other half of the participants was a part of the control condition that received a clean copy of the essay. Participants then completed a disgust questionnaire, a word completion task to assess activation of disgust and contamination related thoughts, and a measure of prejudice toward the out-group essay writer. Independent samples t-tests were performed to determine whether the disgust induction was effective and to determine whether disgust affected prejudice toward out-group members. The data showed that there was a statistically significant difference between the disgust ($M = 2.04, SD = 1.40$) and the control ($M = 1.17, SD = .64$) conditions in ratings of disgust, $t(48) = 2.80, p < .05$. The word completion task and the prejudice measure did not produce a statistically significant difference between the two conditions. Thus, the disgust induction was effective. However, disgust did not increase prejudice toward out-group members. Additional studies are necessary to determine whether the relation between disgust and prejudice exists.

Moore, Nancy & Weaver, Scott & Davis, Caitlin

Dr. Confidence Amadi - Business Administration-Finance), (Business Administration-Management

Interest Rate Sensitivity of Bank's Investment and Loan Portfolio: A Comparison of Two Mid-sized Banks.

Interest rate sensitivity measures the effect on the value of the assets and liabilities of an institution due to changes in interest rates. The unpredictability of interest rate changes makes it imperative for bank management to effectively manage their assets and liabilities to protect them from future rate changes. The purpose of this research is to examine the interest rate sensitivity of a bank's investment and loan portfolio. A comparative analysis of two similarly sized small banks was conducted using financial information provided from the institutions most recent financial statements. Financial ratios were calculated to find the interest rate sensitivity and the dollar gap of each bank, and hypothetical interest rate changes were conducted to show the effect the changes have on each bank's portfolio. These ratios and hypotheticals help to determine what actions the management of a bank can take to protect its assets from interest rate changes.

Ramsey, Carlton

Dr. Michelle Wiggins - Education and Psychology

Typical and Atypical Antipsychotics: An Example of Discriminative Cues

Schizophrenia is a debilitating psychological disease that affects approximately one percent of the population worldwide. The most efficient form of treatment for the symptoms of schizophrenia is the use of antipsychotic drugs, which come in two classes: Typical and Atypical antipsychotics. The two classes of drugs have a defining pharmacological difference, with atypical affecting serotonin receptors more; whereas typical mainly affect dopamine receptors- which receptors are important for the therapeutic effects of individual drugs remains a mystery. The study looks at drug discrimination of Haloperidol, a typical antipsychotic, and Amisulpride, an atypical antipsychotic. Drug discrimination is an assay in which animals learn to associate responding on a lever with a food reward. The animals are then presented with two levers, each associated with either a drug or non-drug (vehicle) state. Animals are given an injection of either their training drug or a vehicle and reinforcement is given only on the condition appropriate lever. Once the animals have shown, through accurate and consistent responding, that they can discriminate between the drug and non-drug state they are given varying doses of their training drug to generate a Dose Effect Curve. With the doses in the dose effect curve, we hope to tell at what dosage the animal recognizes that the drug is "on board" and at what dose does the animal experience rate suppression, when does the drug begin to overwhelm the animal's ability to respond. Once the animals have completed the dose effect curve of their training drug (either Haloperidol or Amisulpride), also known as a generalization curve, they will complete a dose effect curve the opposite training drug (animals trained on Haloperidol will receive an Amisulpride dose effect curve and vice versa) this is known as a cross generalization curve. Although many of the animals are in their preliminary phases of the experiment some of the animals have completed the majority of their generalization curve.

Rice, Brittany

Dr. Althea Bluiett - Chemistry, Physics and Geology Department

Detrimental Effects of Up-Conversion in Resonantly Pumped Er³⁺ Doped in KPb₂Cl₅

To date, there is considerable interest in laser emission in the eye-safe wavelength regime (1.4 – 1.8 μm) for military and civilian applications. Currently, resonantly pumped Er: KPb₂Cl₅ is under consideration as a potential eye-safe laser material given that Er³⁺ has a metastable 1.5 μm emission transition (4I_{13/2} → 4I_{15/2}) overlapping the eye-safe wavelengths. The major drawback of resonantly pumped Er³⁺ systems are various up-conversion processes, which adds additional heat into the material and drains the upper laser level populations leading to reduced pump efficiency and inefficient laser emission. It is well known that up-conversion is highly dependent on the Er-ion concentrations. To obtain a more in depth understanding of the up-conversion processes in Er: KPb₂Cl₅, a systematic study of the up-conversion emission and eye-safe emission as a function of Er³⁺ concentration and temperature will be undertaken.

Robinson, Laijia

Dr. Ephriam Gwebu - Chemistry & Physics

Design, Synthesis and Biological Evaluation of Chalcone Derivates as Potential Agents to Treat Breast Cancer

Compared to African American women, white women are slightly more likely to develop breast cancer, but less likely to die of it. One possible reason is that African American women tend to have more aggressive tumors, although the reasons are not completely understood, the most aggressive tumors tend to be diagnosed as estrogen-receptor negative breast cancer (ER-) which is more likely to be treated with toxic chemotherapeutic agents than estrogen receptor positive (ER+) breast cancer. More effective therapy is thus needed to effectively treat both forms of breast cancer. Methods: Using the Claisen-Schmidt alkylation reaction we synthesized 14 Chalcone derivatives. Since Chalcones are known to have antioxidant properties we hypothesized that these derivatives would modulate the redox status within breast cytotoxicity of the Chalcone derivatives in MDA-MB-468 (ER-) and MCF7 (ER+) breast cancer cells. Using flow cytometry we evaluated the role that one of the most active Chalcones, JG107, played in modulating intracellular reactive oxygen species formation Results: JG107 exhibited cytotoxicity in MDA-MB-468 and MCF7 cells in the submicromolar range; In addition, JG107 was able to decrease reactive oxygen species formation particularly in ER-, MDA-MB-468 breast cancer cells. Conclusion: These data suggest JG107 exhibits both anticancer and antioxidant activity warranting further preclinical evaluation.

Sharpe, William H. III

Dr. Ephriam Gwebu - Chemistry & Physics

Condom Use Negotiation, Condom Attitudes and Relationship Quality among African American Males: A Study in HIV/AIDS Prevention

This study focuses on African Americans and the prevention of HIV/AIDS. The Raise 5 project is part of a national cross-site study that will collect pre, post and follow-up data from three intervention groups to

determine the effectiveness of these interventions at increasing HIV/AIDS knowledge, and changing HIV/AIDS risk attitudes and behaviors. Present data comes from a study of SISTA focusing on African American males. Hypothesis included positive associations between condom attitudes and condom negotiation self-efficacy; and perceptions of relationship quality and condom negotiation self-efficacy. One hundred twenty-six heterosexual African American males completed questionnaires pertaining to the variables being measured. Results supported the hypothesis of positive associations between condom attitudes and condom negotiation self-efficacy at $r=.53, p<.01$. There was no support for a positive relationship between perceptions of relationship quality and condom negotiation self-efficacy where $r=.08, p>.05$. Other demographic variables could be included in further research however the findings of this study do reveal target areas in prevention that may have an effect on individuals' sexual behavior.

Simmons, Arkeen

Dr. Ephriam Gwebu - Chemistry & Physics

Selective Modulation of Striatopallidal Gs Signaling Induces Histone H3 Phosphorylation

The striatum is part of the basal ganglia that consist of the caudate nucleus and the putamen that controls movement, balance, and walking, and is involved in addiction. Studying the function of the striatum is confounded by its complex circuitry. To study how neurons of the striatum function, we used a mouse that expresses the GsD, a Designer Receptor Exclusively Activated by Designer Drug (DREADD), in the indirect pathway in the striatum. The DREADD is an engineered receptor that is activated by the drug CNO. The actions of cocaine in the striatum have been well studied, and we sought to determine whether the GsD would produce similar activity. Methods: GsD mice were injected with CNO (1.0, 5.0 mg/kg), cocaine (20.0 mg/kg), or saline, and sacrificed 15 minutes later. Immunohistochemistry was performed on brain tissue to see if there were any signaling pathways activated by the GsD. Results: Cocaine treatment caused phosphorylation of ERK and histone H3 in the transgenic mice. CNO (5.0 mg/kg) caused phosphorylation of histone H3. Conclusion: CNO-GsD (1.0 & 5.0 mg/kg) does not cause phosphorylation of ERK, but did cause histone H3 phosphorylation.

Speller, LaShawn

Yan Jin & Paulette Edmunds - Business Administration-Management

Quick Response Code (QR code): A New Technological Generation

The Quick Response code, or QR code, has been recently emerging as a prominent trend for the company to market their products around the world. They are showing up everywhere, in print advertisements, product displays, and web pages. These codes can be scanned by smart phone users and used to find out additional information about a specific product or company. Through the study of this trend over a short period of time, it gives us insight on what companies are actually using these codes and what's the most popular industry taking advantage of this opportunity. The results of this research support that: while the number of companies using QR codes fluctuates, one main factor that

stands is that the financial companies are the dominating industry. As the number of companies using them and the smart phone market increases, we can definitely see this trend continuing to grow if these companies effectively advertise their codes.

Speller, LaShawn & Mallory, Naomi

Yan Jin & Paulette Edmunds - Business Administration-Management

Quick Response Code (QR code): A New Technological Generation

The Quick Response code, or QR code, has been recently emerging as a prominent trend for the company to market their products around the world. They are showing up everywhere, in print advertisements, product displays, and web pages. These codes can be scanned by smart phone users and used to find out additional information about a specific product or company. Through the study of this trend over a short period of time, it gives us insight on what companies are actually using these codes and what's the most popular industry taking advantage of this opportunity. The results of this research support that: while the number of companies using QR codes fluctuates, one main factor that stands is that the financial companies are the dominating industry. As the number of companies using them and the smart phone market increases, we can definitely see this trend continuing to grow if these companies effectively advertise their codes.

Swalander, Kurt

Dr. Lloyd Mitchell - Departments of English and Department of Chemistry, Geology, and Physics

Integrating Geology and Geosciences with Health and Physical Education Requirements for an Outdoor Activities Class: A 'Healthy' Match for ECSU students!

A geologist or geoscientist must maintain himself or herself in good physical and mental condition in order to perform at optimum capacity while in the field. Field work involves hiking across all types of terrain through diverse environments and in various weather conditions. Geologists and geoscientists also must be constantly vigilant of environmental hazards and equip himself or herself accordingly with both equipment and knowledge of the outdoor environment. In an effort to prepare geology graduates with all the tools necessary for a successful career, it was advised that the course Outdoor Activities be taken. This study reviews six outdoor activities that were conducted to meet course requirements under the self-designed activity option. With assistance provided through a grant from a non-profit organization, six geologic sites were visited. The sites were 1) Mt. Mitchell State Park in North Carolina 2) Death Valley National Park in Nevada; 3) Great Smoky Mountains National Park in Tennessee, 4) Crazy Horse in South Dakota, 5) Devil's Tower in Wyoming, 6) Scotts Bluff National Monument in Nebraska, 7) Blue Ridge Parkway in North Carolina, 8) Henricus State Park in Virginia, 9) Agate Fossil Beds National Monument in Nebraska, and 10) Mt. Rainier National Park in Washington State. At all ten sites, trail hiking, angular and sheer face traversing, and other physical activities were needed to reach sites and to observe geological processes, document rock formations, and when allowable, collect geological samples. Results of this research clearly indicate that the Outdoor Activities class offered through the

Department of Health and Physical Education should be a required course, or at least a highly recommended course, for all geology majors.

Vaughan, Deirdre & Hyman, Gwyn & Medley, Jewel & Krauss, Christopher

Hirendranath Banerjee, ECSU & Dr.Santosh Mondol,Morgan State University,Baltimore,MD - Biology Department

The Effects of Rhenium Acetyl Salicylate Compounds on Lung Cancer Cells

Cancer is the leading cause of death worldwide. Lung cancer is one of the most common cancers and affects more than 200,000 Americans each year. The current known and acceptable treatments for cancer are surgery, radiation therapy, and chemotherapy. These conservative methods each have limitations or drawbacks which lead researchers to find new cytotoxic agents that could be used for the treatment of cancer. The goal of this project was to determine whether novel Rhenium Acetyl Salicylate (RAC) drug compounds have any anti-cancer effects on lung cancer cells. RAC compounds were prepared at a stock solution of $1\mu\text{g}/\mu\text{L}$. Cell culture was completed to maintain and grow lung cancer cells. Cells were treated at a dose of $1\mu\text{M}$ of RAC 1-4 in a 6-well plate. To determine the toxicity of the compounds, cytotoxicity assays were done by Trypan Blue method after 72 hours of RAC treatment. Evidence showed all RAC compounds had anti-cancerous effects on lung cancer cells. RAC 4 had the most cell death with an average of 82%, while RAC 1 had an IC-50 around 46%. Our findings postulate that Rhenium acetyl salicylate compounds probably can be used as a potential drug in chemotherapy for lung cancer.

Wallace, Semaj

Dr. Ephraim Gwebu - Chemistry & Physics

Is Anger Associated with Internalized Racism?

The objective of this research is to find out if anger has a significant relationship with a psychosocial stressor referred to as internalized racism (INR) administered through a questionnaire. Internalized Racism means a person of color accepts the definition of themselves that another race has created for them.

Wilkins, Juan

Dr. Ephraim Gwebu - Chemistry & Physics

Human Papilloma Viral Genes Expression is Regulated by Modification of Splicing During Cell Differentiation

Human Papillomavirus (HPV), which affects over 19 million Americans is the most common sexually transmitted disease in the world and can cause cancer if left untreated for long periods of time. High Risk types of HPV are responsible for nearly all cases of cervical cancer and are believed to be the cause for other tumors. They have a life cycle that is intimately tied to the differentiation of the host

keratinocytes that are infected. After infection of undifferentiated cells in the basal layer of the epithelium, HPV starts to express its genes using transcriptional and splicing host machineries. So during differentiation keratinocytes splice and undergo substantial changes that also affect and modify the HPV's gene transcription. To view this better we developed a model to investigate the HPV life cycle in keratinocytes that undergo differentiation. This requires developing tools to monitor and study expression of its genes through various steps in this model. The purpose of this research was (is) to test several PCR primers sets as if they are appropriate for monitoring HPV gene expression during differentiation. To do this, we used RNA isolated from two HPV16+cervical cancer cell lines, SiHa and CasKi, which differ in their levels of differentiation status. Then this RNA was converted into cDNA, which was analyzed using several sets of HPV16-specific primers that were designed to determine the expression levels as well as the composition of viral mRNAs. The Precise structures of several HPV mRNAs were determined by cloning their PCR-derived products followed by sequencing obtained clones. Results obtained in this study allowed us to evaluate the efficiency of the tested primers by studying expression profiles of HPV genes during keratinocyte differentiation.