Book of Abstracts (updates)

2014 Regional Research Symposium

Graduate School

April 17, 2014

UNIVERSITY of MARYLAND EASTERN SHORE

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UNIVERSITY of MARYLAND EASTERN SHORE

DIVISION *of* ACADEMIC AFFAIRS

School *of* Graduate Studies

Fifth Annual Regional Research Symposium 2014

October 14, 2013

Dear Sir/Madam:

The Graduate School at the University of Maryland Eastern Shore (UMES) invites you to its Fifth Annual Regional Research Symposium which is scheduled to be held on April 17, 2014 at the Students' Services Center Ballroom. The theme of this year's symposium is "Fostering Interdisciplinary Research and Education through Collaboration". Discussions will focus on current research, teaching and funding opportunities for collaboration among participating programs and institutions.

Oral or poster presentations of research by students--graduate and undergraduate, and faculty will be competitively judged for awards. The official opening of the conference will feature a dynamic keynote speaker and will provide plenary and concurrent sessions. Opportunity for presenters to network in order to facilitate collaborative research will be encouraged.

The registration fee is $50.00 for each participant and includes the cost of registration materials and meals. The deadline for participant registration and abstract submission is January 17, 2014. The registration for the symposium may be completed online at www.umes.edu/Symposium 2014

Members of faculty are requested to assist students in submitting abstracts. For more information please contact the Graduate School at 410-651-6507; or, you may contact Ms. Donna Price by email at dmprice@umes.edu. We look forward to a productive conference.

Respectfully,

Jennifer Keane-Dawes

Jennifer Keane-Dawes, Ph.D.
Dean

Child Development Center, Suite 1137 Princess Anne, MD 21853 Tel: (410)651-6507 Fax: (410)651-7571

UNIVERSITY of MARYLAND EASTERN SHORE

School of Graduate Studies
DIVISION of ACADEMIC AFFAIRS

FIFTH REGIONAL RESEARCH SYMPOSIUM 2014
Student Services Center

"Fostering Interdisciplinary Research and Education through Collaboration"

Thursday, April 17, 2014

7:30 a.m. to 12:30 p.m. **Registration** **(SSC Ballroom Foyer)**

7:30 a.m. to 8:00 a.m. **Continental Breakfast (SSC Main Lobby)**

7:30 a.m. to 8:55 a.m. ***Opening Ceremony (SSC Theater)***

7:50 a.m. to 8:00 a.m. **Mistress of Ceremony**
Ms. Kristen Lycett, Doctoral Student
Marine Estuarine Environmental Science Program
President, Graduate Students Association
University of Maryland Eastern Shore

8:00 a.m. to 8:05 a.m. **Introduction of President Juliette B. Bell**
Ms. Kadijah Felder-Patterson,
Dual Degree Sophomore/Sociology and Social Work
UMES Honors Program

8:05 a.m. to 8:15 a.m. **Welcome**
Juliette B. Bell, Ph.D.
President
University of Maryland Eastern Shore

8:15 a.m. to 8:20 a.m. **Introduction of Guest Speaker:**
Ronald A. Nykiel, Ph.D.
Provost and Vice President for Academic Affairs
University of Maryland Eastern Shore

8:20 a.m. to 8:50 a.m. **Guest Speaker:**
Audrey Trotman, Ph.D.
Lead Program and Policy Analyst
National Oceanic and Atmospheric Administration

8:50 a.m. to 8:55 a.m. **Presentation:**
Ms. Tedra Booker, Doctoral Student
Marine Estuarine Environmental Science Program
University of Maryland Eastern Shore

UNIVERSITY of MARYLAND EASTERN SHORE

School of Graduate Studies
DIVISION of ACADEMIC AFFAIRS

FIFTH REGIONAL RESEARCH SYMPOSIUM 2014
Student Services Center

"Fostering Interdisciplinary Research and Education through Collaboration"

Thursday, April 17, 2014

8:55 a.m. to 9:00 a.m. Break

9:00 a.m. to 10:30 a.m. Poster Presentations (SSC Multipurpose Room)

10:30 a.m. to 10:34 a.m. Break

10:35 a.m. to 11:55 a.m. Oral Presentations— Session I
(SSC First Floor — SSC Theater and
SSC Second Floor — Rooms 2149, 2147, 2146, and 2144)

11:55 a.m. to 12:00 p.m. Break

12:00 p.m. to 1:25 p.m. Luncheon Session (SSC Ballroom)

12:00 p.m. to 12:03 p.m. Master of Ceremony
Mr. Marvin Webb, Doctoral Student,
Toxicology Program
University of Maryland Eastern Shore

12:03 p.m. to 12:09 p.m. Greetings:
Ron Nykiel, Ph.D.
Provost and Vice President for Academic Affairs
University of Maryland Eastern Shore

Jennifer Keane-Dawes, Ph.D.
Dean, Graduate School
University of Maryland Eastern Shore

12:09 p.m. to 12:10 p.m. Blessing of the Food
Mr. Lorenzo Baylor, Master's Student,
Rehabilitation Counseling Program
University of Maryland Eastern Shore

12:10 p.m. to 12:40 p.m. Lunch
Musical Interlude by Mr. Preston Gross
Administrative Assistant
Graduate School

UNIVERSITY of MARYLAND EASTERN SHORE

School of Graduate Studies
DIVISION of ACADEMIC AFFAIRS

FIFTH REGIONAL RESEARCH SYMPOSIUM 2014
Student Services Center

"Fostering Interdisciplinary Research and Education through Collaboration"

Thursday, April 17, 2014

12:40 p.m. to 12:45 p.m.	**Introduction of Speaker** **Juliette B. Bell, Ph.D.** **President**
12:45 p.m. to 1:15 p.m.	**Keynote Address:** **George Cooper, Ph.D.** **Executive Director** **White House Initiative on HBCUs**
1:15 p.m. to 1:17 p.m.	**Presentation:** **Mrs. Benita Brown-Rashaw, Doctoral Candidate** **Organizational Leadership Program**
1:17 p.m. to 1:25 p.m.	**Graduate Dean's Staff Awards** **Jennifer Keane-Dawes, Ph.D.**

1:25 p.m. to 1:30 p.m. **Break**

1:30 p.m. to 2:45 p.m. **Oral Presentations— Session II**
(SSC First Floor — SSC Theater and
SSC Second Floor — Rooms 2149, 2147, 2146, and 2144)

2:45 p.m. to 3:30 p.m. **Graduate Student Panel (SSC Second Floor— Room 2144)**
"Preparing, Applying and Getting Into Graduate Programs"

2:45 p.m. to 3:30 p.m. **Coordinators Meeting with Dr. Cooper (SSC Second Floor— Room 2149)**

3:30 p.m. to 3:45 p.m. **Break**

3:45 p.m. to 4:30 p.m. **Awards Ceremony & Closing Remarks (SSC Theater)**
Jennifer Keane-Dawes, Ph.D.
Dean - Graduate Studies
University of Maryland Eastern Shore

Poster Session

All Disciplines (Abstracts P1-P61)
Thursday, April 17, 2014 9:00 AM - 10:30 AM, SSC Multipurpose Room

Oral Presentations

SESSION I

Session I Group A: All Disciplines (Abstracts O1-O6)
Thursday, April 17, 2014 10:35 AM – 11:55 PM, SSC Theater

Session I Group B: All Disciplines (Abstracts O7-O12)
Thursday, April 17, 2014 10:35 AM – 11:55 PM, SSC Room 2149

Session I Group C: All Disciplines (Abstracts O13-O18)
Thursday, April 17, 2014 10:35 AM – 11:55 PM, SSC Room 2147

Session I Group D: All Disciplines (Abstracts O19-O24)
Thursday, April 17, 2014 10:35 AM – 11:55 PM, SSC Room 2146

Session I Group E: All Disciplines (Abstracts O25-O30)
Thursday, April 17, 2014 10:35 AM – 11:55 PM, SSC Room 2144

SESSION II

Session II Group A: All Disciplines (Abstracts O31-O36)
Thursday, April 17, 2014 1:30PM – 2:45 PM, SSC Theater

Session II Group B: All Disciplines (Abstracts O37-O42)
Thursday, April 17, 2014 1:30PM – 2:45 PM, SSC Room 2149

Session II Group C: All Disciplines (Abstracts O43-O48)
Thursday, April 17, 2014 1:30PM – 2:45 PM, SSC Room 2147

Session II Group D: All Disciplines (Abstracts O49-O54)
Thursday, April 17, 2014 1:30PM – 2:45 PM, SSC Room 2146

Session II Group E: All Disciplines (Abstracts O55-O60)
Thursday, April 17, 2014 1:30PM – 2:45 PM, SSC Room 2144

Message from the President

UNIVERSITY OF MARYLAND EASTERN SHORE

OFFICE OF THE PRESIDENT

JOHN T. WILLIAMS ADMINISTRATION BUILDING
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FAX: (410) 651-6300

April 2014

Dear Friends,

Welcome to the University of Maryland Eastern Shore's Research Symposium, sponsored by the UMES School of Graduate Studies.

As the State of Maryland's 1890 land-grant institution, UMES' mission is deeply rooted in the advancement of research and innovation. Consequently, UMES strongly supports the expansion of research in various disciplines and we are proud to collaborate with other institutions to promote cutting-edge exploration of solutions to the many challenges faced by our State, nation and world.

Through this Symposium, you will have the opportunity to present your research, share ideas, and work together with your colleagues to identify ways in which we can positively impact our communities through research.

Enjoy your time on our campus and thank you for attending the Symposium.

Sincerely,

Juliette B. Bell

Juliette B. Bell, Ph.D.
President

Message from the Provost and Vice President for Academic Affairs

Ronald Nykiel, Ph.D.
Provost and Vice President for Academic Affairs
University of Maryland Eastern Shore

The Division of Academic Affairs is once again pleased to present its Graduate School's Annual Regional Research Symposium which, now in its fifth year, has become one of the most successful academic initiatives at the University of Maryland Eastern Shore. As Provost and Vice-President for Academic Affairs, I wish to thank the Graduate Dean, Graduate Faculty, staff and students for their efforts in organizing this research activity that showcases the outstanding interdisciplinary research and creative projects. Also, I wish to thank the faculty who teach our undergraduate, graduate and professional students for the very good job they are doing as evidenced in the poster and oral presentations at this Symposium. There are several universities taking part in this symposium, and I wish to thank the representatives from each of them for making the effort to be here, and for showcasing the valuable research of their own students.

The Division of Academic Affairs' 10-year strategic plan envisions major growth in graduate programs and research activities. We envision adding one new doctoral research degree program every other year and at least one master's degree program every year pending funding. Also, we are currently working to achieve a College designation for the Honors Program, and as part of that plan we will be implementing a research thesis requirement for all future Honors students; therefore, our emphasis on both graduate and undergraduate student research continues to be a priority.

Congratulations to the School of Graduate Studies.

Message from the Senior USM Vice Chancellor

ACADEMIC AFFAIRS

April17, 2014

Dear Symposium Attendees:

Congratulations on a very successful day! Your lives as collaborators, researchers, and scholars have already been launched by your participation in today's activities.

I bring you greetings from the University System of Maryland (USM). I regret that I am unable to join you for your Fifth Annual Graduate School's Research Symposium. As a scientist in the field of genetics for decades, I can identify with the challenges you face, but I can also anticipate and appreciate the joy of your successes as well.

We at USM are proud that the University of Maryland Eastern Shore is hosting this year's symposium under the theme of "Fostering Interdisciplinary Research and Education through Collaboration." Today's symposium is of the utmost importance, as it promotes research being conducted by graduate and undergraduate students at UMES and other world-class institutions. I am especially pleased at a focus on the success of under-represented minorities in STEM fields.

The goals of the symposium are greatly aligned with several themes outlined in "Powering Maryland Forward: USM's 2020 Plan for More Degrees, A Stronger Innovation Economy, A Higher Quality of Life." The System's attention to reducing the gap in education success rates between various student populations, strengthening research, and achieving and sustaining national eminence through high-quality people and programs are all being addressed during today's convening.

USM celebrates the hard work and commendable job of today's speakers, presenters, award winners, and symposium organizers. We encourage continued focus on STEM, interdisciplinary research and education, collaborations, and increasing the participation of under-represented minorities in STEM.

It is my hope that I am able to join you for the Sixth Annual Graduate School's Research Symposium in 2015. Enjoy your day!

Sincerely,

Joann A. Boughman, Ph.D.
Senior Vice Chancellor for Academic Affairs

1807
University of Maryland, Baltimore

1856
University of Maryland, College Park

1865
Bowie Stale University

1866
Towson University

1886
University of Maryland Eastern Shore

1898
Frostburg State University

1900
Coppin State University

1925
Salisbury University

1925
University of Baltimore

1925
University of Maryland Center for Environmental Science

1947
University of Maryland University College

1966
University of Maryland, Baltimore County

1985
University of Maryland Biotechnology Institute

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Message from the Dean

Jennifer Keane-Dawes, Ph.D.
Dean, Graduate School
University of Maryland Eastern Shore

It is my honor to congratulate the graduate faculty at the University of Maryland Eastern Shore for their dedication to the advancement of graduate education on this campus. Specifically, I would like to thank the graduate program coordinators who go above and beyond the call of duty to execute a multiplicity of tasks such as serving on dissertation and thesis committees, advising countless numbers of students, researching, writing proposals and receiving grant funding, and at the same time teaching a full load of 12 credit hours in many instances. I would also like to thank the Graduate Council for being the gatekeeper of policies which keep us in line with practices nationwide. These groups, along with the university-wide body of graduate faculty, continue to maintain their commitment at a time when the war for scarce resources is intensifying, and when the global competitiveness of the United States which hinges on a strong system of graduate education is being threatened. The most serious threats come from the rapid investments in education by Asian countries while United States investments are declining. The National Science Board reported that in 2012, Asian countries invested a total of $100 billion in high tech industries and clean air. China's investment of that amount was $61billion. By comparison, the United States had only invested $29 billion.

Late last year, Dr. Hunter Rawlings, President of the research extensive universities in the American Association of Universities (AAU) along with more than 160 university presidents, including four from Historically Black Universities, signed a letter to President Barack

Obama and Congress to close the innovation deficit and approve more funding for higher education. The call has been repeated by industry and other interest groups. At the same time that federal support is waning, states, faced with Medicaid and other expenditures are reducing their funding and relying on tuition increases to close the funding gap. The effect of this is higher cost of education to students and a less prepared workforce as enrollment decreases. Graduate students in particular face daunting funding challenges in trying to complete their degree as many enter graduate school with the burden of debt incurred at the undergraduate level.

With the international threat to the national security of the United States a forceful reality, with the emergence of a less prepared workforce, and with the historic position of graduate education being continuously disadvantaged by the fiscal priorities of undergraduate and other units within the academic enterprise, the graduate school at the University of Maryland Eastern Shore must continue to do what every graduate school in the world is called to do-- advocate for the advancement of graduate education and graduate students across academic disciplines, and lobby for the appropriate infrastructure and resources to get the job done.

Today, I celebrate Research Day 2014, once again thanking the faculty in the Department of Natural Sciences who allowed me to remove the research day activity from their department and expand it to the university and state-wide activity it has become today. I extend heartfelt thanks to everyone, particulary my staff in the Graduate Office, who was part of the planning and execution of this event. Further, I join the graduate faculty in taking pride in the quality of both graduate and undergraduate research presented today; in our sustained increase in graduate enrollment; in the significant number of doctoral research degrees, professional doctorates and master's degrees being awarded each year; in the funding received by research faculty to support graduate research assistantships; and, in the professional development workshops for graduate students. In this regard, I thank my colleague graduate deans in the University System of Maryland for their collaborative efforts to advance graduate education across the state as is evidenced by the presence of their faculty and students here today.

Congratulations to the graduate faculty, staff and students on the occasion of another successful Graduate School's Research Day!

Jennifer Keane-Dawes, Ph.D.
Dean, Graduate School
President, Council of Historically Black Graduate Schools

Special Congratulations to Juan Alvarez-Rosario!

Juan Alvarez-Rosario, Master's Student
Marine Estuarine and Environmental Science (MEES)
First University of Maryland Eastern Shore (UMES)
Recipient of 2014 National Science Foundation (NSF)
Graduate Research Fellowship

Juan Alvarez-Rosario, a student enrolled in the Marine Estuarine and Environmental Science (MEES) master's degree program at the University of Maryland Eastern Shore (UMES) is one of the recipients of the 2014 National Science Foundation (NSF) Graduate Research Fellowship. Juan is the first student to receive the award at UMES. He is currently funded by the NSF Center of Research Excellence in Science and Technology (CREST) - CISCEP, and in part by the NOAA Living Marine Resources Cooperative Science Center (LMRCSC).

Before enrolling at UMES in fall 2013, Juan completed a B.S. (*Cum laude*) degree in Environmental Science with a minor in Marine Science at the Universidad Metropolitana, San Juan, Puerto Rico. In summer 2012, he served as Assistant Coordinator for the Puerto Rican Research Experience for Undergraduates, established in collaboration with the Maryland Sea Grant Program, the University of Maryland Center for Environmental Sciences and his home institution. Prior to that, he held the position of Biology Educator at the Wildlife Museum, San Juan, Puerto Rico. He has taken part in many research programs at various institutions since 2007, including the Instituto de Investigaciones Marinas, Vigo, Espana, Virginia Institute of Marine Sciences, and Michigan Technological University.

Juan has made many presentations at major scientific meetings in the United States, Mexico, Ecuador, and Puerto Rico, for which he received presentation awards. In addition, he has authored one article published in the Global Aquaculture Advocate journal. Among his many awards are the Ana G. Méndez System Medal from Universidad Metropolitana, NOPHNRCSE Scholarship from Natural Resource Conservation Service, USDA, and Haciendo Ambiente Scholarship. Juan's M.S. degree research project focuses on the trophic role of ctenophores in the Maryland Coastal Lagoons. His major advisor is Dr. Paulinus Chigbu.

NOAA OFFICE OF EDUCATION
EDUCATIONAL PARTNERSHIP PROGRAM - EPP
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Audrey A. Trotman, Ph.D.
Program Manager of the Cooperative Science Centers Program in the Office of Education, Educational Partnership Program
National Oceanic and Atmospheric Administration

Audrey A. Trotman, Ph.D. - joined the National Oceanic and Atmospheric Administration, Office of Education, Educational Partnership Program (EPP) in June 2010 as a Lead Program and Policy Analyst. Dr. Trotman is the Program Manager of the Cooperative Science Centers Program in EPP. Dr. Trotman has more than twenty years of varied experience in higher education and human capital development - preparing the future Science, Technology, Engineering, and Mathematics (STEM) workforce. She came to NOAA from the U.S. Department of Agriculture - National Institute of Food and Agriculture where her portfolio included providing leadership for traineeship programs - graduate fellowships and undergraduate/ veterinary medicine scholarships. Dr. Trotman has over fourteen years in academe as a member of the graduate faculty at Tuskegee University. Dr. Trotman's education includes a doctoral degree from Texas A&M University - College Station; a Master's from Auburn University; and her summa cum laude baccalaureate degree is from Tuskegee University. Her past areas of focus for scientific research centered on microbial degradation of crop biomass and crop growth. Dr. Trotman has been the recipient of honors and meritorious awards that reflect her dedication to excellence. Her passion is learning and her current area of interest is public service.

Biography for Audrey A. Trotman, Ph.D.

Dr. George Cooper
Executive Director
White House Initiative on Historically Black Colleges and Universities

Dr. George Cooper was a Senior Fellow with the American Association of State Colleges and Universities, where he reviewed key federal legislative initiatives of significance to HBCUs. Previously, he served four years as President of South Carolina State University. Prior to this service, Dr. Cooper spent 17 years with the U.S. Department of Agriculture's National Institute of Food and Agriculture, where he provided oversight to programs important to the historically black land grant universities and other minority serving institutions to strengthen research, extension, academic and international programs. He has also served in faculty and administrative roles at Alabama A&M University and Tuskegee University. Additionally, Dr. Cooper has served on a number of boards and advisory groups, including the Orangeburg (SC) Chamber of Commerce, the National Collegiate Athletic Association Limited Resource Institution Academic Advisory Group, the Council of 1890 Presidents of Association of Public and Land Grant Universities, and the U.S. Department of Agriculture/1890 Task Force.

He received his B.S. degree in Animal Husbandry from Florida A&M University, his M.S. degree in Animal Science from Tuskegee University and his Ph.D. in Animal Nutrition from the University of Illinois – Urbana.

Biography for Dr. George Cooper

White House Initiative on Historically Black Colleges and Universities

About Us!

On February 26, 2010 President Obama signed an executive order renewing the White House Initiative on Historically Black Colleges and Universities (HBCUs).

The White House Initiative on Historically Black Colleges and Universities is a vehicle to ensure that historically black colleges and universities are model institutions of teaching, learning and service, effectively education diverse populations for the nation and the world. This office was designed to provide structured efforts to help HBCUs access federally funded programs. All of our efforts are focused on the fulfillment of our Executive Order 13532 mandate to strengthen the capacity of HBCUs to provide excellence in education.

Executive Order

Executive Order 13532--Promoting Excellence, Innovation, and Sustainability at Historically Black Colleges and Universities, http://www.gpo.gov/fdsys/pkg/DCPD-201000131/pdf/DCPD-201000131.pdf

What is an Historically Black College or University (HBCU)?

HBCUs are recognized by the Higher Education Act of 1965, as amended, as, "any black college or university [that was] established prior to 1964, whose principal mission (was and] is the education of Black Americans." These nationally accredited institutions offer all students, regardless of race, the opportunity to develop their skills and talents. With more than 300,000 undergraduate and graduate students at 106 institutions located in 20 States, the District of Columbia, and the U.S. Virgin Islands, HBCUs have produced many of the Nation's leaders in business, government, academia and the military and contributed to the development of leaders from many Nation's around the world.

The President's Board of Advisors on Historically Black Colleges and Universities

The Board is appointed by the President of the United States. It Advises the President and the Secretary of Education on all matters pertaining to strengthening the educational capacity of HBCUs in the following areas: improving he identity, visibility and distinctive capabilities and competitiveness; engaging stakeholders in a national dialogue regarding new programs and initiatives; improving abilities to remain fiscally secure; elevating public awareness of HBCUs; and encouraging public-private investments in HBCUs.

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www.ed.gov/whhbcu

Federal Agencies

Thirty-two Federal agencies participate under the Executive Order. These agencies appropriate grants, contracts and cooperative agreements and other arrangements with HBCUs to increase their ability to participate in federally sponsored programs.

Private Sector Involvement

In addition to active public involvement, The Executive Order encourages initiatives by the private sector to strengthen HBCUs. The goal of the private sector involvement is to enhance career prospects for HBCU graduates, and to increase the number of those graduates with degrees in science and technology.

The Future of HBCUs

In February of 2012, President Barack Obama said that, "we cannot reach the 2020 goal without HBCUs". Our nation's aim is to have the most educated, competitive, and diverse workforce in the world and to achieve this goal we need to increase the number of graduates by 8 million overall. HBCUs play an important part in helping to accomplish this goal because we would like 2 million of the graduates to be African American, which means graduating over 57,000 students from HBCUs per year. Not only will this aid the 2020 goal, but it will help to strengthen the capacity of HBCUs in the areas of capital enlargement, campus enrichment, strategy development, and perception enhancement as charged by Executive Order 13532.

Left to Right: Ronald Blakely, Ivory Toldson, Sedika Franklin, George Cooper, Elyse Jones, Joel Harrell (FSA Liaison), Meldon Hollis

Meet the Staff

George E. Cooper
Executive Director

Ivory Toldson
Deputy Director

Ronald Blakely
Associate Director

Meldon Hollis
Associate Director

Sedika Franklin
Program Specialist, Communications

Elyse Jones
Program Support Specialist

Contact Us:

White House Initiative on
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Stay connected with the White House Initiative on HBCUs:
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Follow us on Twitter @WHI_HBCUs

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Applied Computer Science, M.S

Dr. Albert Casavant

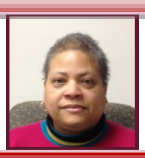
Career & Technology Education, M.Ed.

Dr. Thomas Loveland

Chemistry, M.S.

Dr. Deborah G. Sauder

Counselor Education, M.Ed.



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Criminology and Criminal Justice, M.S.

Dr. David Spinner

Educational Leadership, Ed.D.

Dr. Derry Stufft

Food & Agricultural Sciences. M.S.

and

Food Science and Technology, Ph.D.

Dr. Jurgen Schwarz

Master of Arts In Teaching, M.A.T

Dr. Mary Agnew

Marine Estuarine Environmental Sciences, Ph.D. and M.S.

Dr. Joseph Pitula

Organizational Leadership, Ph.D.

Dr. Todd Matthews

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Dr. Michael Rabel

Physician Assistant, M.M.S.

Mr. Peter Stanford

Professional Science Masters in Quantitative Fisheries, P.S.M.

Dr. Paulinus Chigbu

Rehabilitation Counseling, M.S.

Dr. LaKeisha Harris

Special Education, M.Ed.

Dr. Karen Verbeke

Toxicology, Ph.D. and M.S.

Dr. Ali Ishaque

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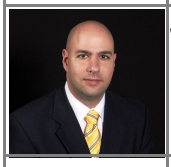	***School of Pharmacy and Health Professions*** **Dr. Denis Killian**
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ABSTRACTS FOR ORAL PRESENTATIONS

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Howard University, Washington D.C
Department of Communication, Culture, and Media Studies
Department of Systems and Computer Science

Lebanon Veterans Affairs Medical Center, (Lebanon, PA)

National Oceanic and Atmospheric Administration (NOAA) Great Lakes Environmental Research Lab, (Ann Arbor, MI)

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Respiratory Therapy Program

University of Business Commerce, Hunan, Changsha, China

University of Maryland Baltimore County
Department of Chemical and Biochemical Engineering
Department of Computer Science and Electrical Engineering
Department of Information Systems
Department of Mathematics and Statistics
Department of Mechanical Engineering

University of Maryland Center for Environmental Science, Horn Point Lab, (Cambridge, MD)

University of Maryland, College Park, MD

University of Maryland Extension, Wye Research and Education Center, Queenstown, MD 21658

University of Maryland Eastern Shore
Center for Academic Access and Success
Department of Agriculture, Food and Resource Sciences
Department of Business, Management and Accounting
Department of Education
Department of Engineering and Aviation Science
Department of Human Ecology
Department of Natural Sciences
Department of Mathematics
Department of Pharmaceutical Sciences
Department of Physical Therapy
Department of Physician Assistants
Department of Rehabilitation and Exercise Science
Organizational Leadership
School of Graduate Studies

University of Michigan
Water Center

University of Toledo College of Medicine and Life Sciences, (Toledo, OH)
Department of Medical Microbiology and Immunology

Virginia Tech, (Blacksburg, VA)
Department of Human Nutrition, Foods, and Exercise

Oral Presentations Session I Group A: All Disciplines (Abstracts O1-O6)
Thursday, April 17, 2014 10:35 AM – 11:55 AM, SSC Room Theater

FACULTY PRESENTATIONS

O1

A Qualitative Study of the Socioeconomic Factors Affecting Entry-stay-exit Behavior of the Blue Crab Fishermen in Maryland

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The purpose of the study was to identify the socioeconomic factors that affect the entry-stay-exit behavior of the blue crab fishermen in Maryland by conducting semi-structured interviews and performing qualitative analysis using consensual qualitative research (CQR) methods. The sample consisted of 19 participants, with 15 blue crab fishermen from 10 Maryland coastal counties and four other respondents representing industry at-large, crab processors, restaurant industry, and fishermen association. Interviews lasted 15 to 30 minutes and were digitally recorded. Transcriptions were made of the interviews for the purpose of data analysis. The analysis of the interviews yielded five domains: 1) fishermen's entry experiences; 2) factors affecting fishermen's entry-stay-exit behaviors; 3) measures for improving fishermen's economic likelihood; 4) policies for future management of the blue crab fishery; and 5) barriers to entry the fishery for young people. After the domains were established, each member of the research team individually coded the core ideas within domains for each interview. Then the research team discussed the core ideas to create a consensus version of the individual transcripts. Next a cross-analysis was conducted where the core ideas were organized into categories within each domain. For example, the first domain of fishermen's entry experiences indicates that fishermen's entry was affected by their family history and summer job experiences. The second domain of factors affecting fishermen's participation in the blue crab fishery includes personal interest, market conditions (market price of crabs, fuel cost, gear cost, etc.), blue crab abundance, and abundance of other species.

O2

Foreign Direct Investment, Business Regulations, and Firm Formation in Africa

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Many studies, both theoretical and empirical, have demonstrated the positive effects of new firm creation on entrepreneurship and development. At the country level, the literature has shown that regulatory, political, macroeconomic, and institutional factors significantly affect entrepreneurship and economic growth. The central contribution of this paper is its examination of the effect of foreign direct investment (FDI) on new business creation in Africa, and the manner in which the effect of FDI on firm formation is affected by business regulations. The focus on FDI is important because it can potentially crowd-in new local firms by providing access to superior technology and by creating positive externalities through the transmission of new ideas, entrepreneurial skills, and other knowledge transfers. Related literature has shown that the existing business regulatory environment plays a crucial role in determining the effects of FDI, both within and across host country economies. Bureaucratic regulations that are costly impede new firm creation, and as such any technology and knowledge spillovers from FDI will not be realized, and the crowding-in effect of FDI will be reduced. This study therefore also focuses on the nature of the relationship between FDI and business regulations in Africa, and how it impacts local firm formation. Africa still has the lowest rate of new firm creation in the world, despite achieving impressive growth rates over the last decade. FDI can therefore play an important role, not only in sustaining the growth momentum, but in making growth more inclusive and transformative as well by generating employment opportunities and higher income for millions of people through its impact on new firm establishment and growth of existing firms.

O3

Singular and Combined Effects of Nebivolol and Lifestyle Modification on Large Artery Stiffness in Hypertensive Adults

Timothy Werner[1]*, Nabil Boutagy[2], Kristin Osterberg[2], Jose Rivero[2] and Kevin Davy[2]

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We hypothesized that the combination of nebivolol and lifestyle modification would reduce large artery stiffness in middle-aged and older hypertensive adults more than either intervention alone. To address this, 45 men and women (age 40–75 years) with stage I hypertension were randomized to receive either nebivolol (NB; forced titration to 10 mg OD; n = 15; age 57.2 ± 11.4 years; body mass index [BMI] 30.8 ± 5.8 kg/m2), lifestyle modification (LM; 5–10% weight loss via calorie restriction and physical activity; n = 15; age 52.7 ± 8.5 years; BMI 33.9 ± 7.2 kg/m2) or nebivolol plus lifestyle modification (NBLM; n = 15; age 58.9 ± 9.4 years; BMI 32.5 ± 4.9 kg/m2) for 12 weeks. β-stiffness index, a blood-pressure-independent measure of arterial stiffness, and arterial compliance were measured via high-resolution ultrasound and tonometry at baseline and after the 12-week intervention. There was no difference between groups in age, body weight or composition, blood pressure, or in β-stiffness index or arterial compliance at baseline (all $p > 0.05$). Following the 12-week intervention, body weight decreased ~5% ($p < 0.05$) in the LM and NBLM groups but did not change from baseline in the NB group ($p > 0.05$). Supine brachial and carotid systolic and diastolic blood pressure declined following treatment in each of the groups ($p < 0.05$). However, the magnitude of reduction was not different ($p < 0.05$) between groups. β-stiffness index declined (–2.03 ± 0.60, –1.87 ± 0.83 and –2.51 ± 0.90 U) and arterial compliance increased similarly (both $p > 0.05$) in the NB, LM and NBLM groups, respectively. In summary, our findings indicate that the combination of nebivolol and lifestyle modification reduced large artery stiffness to a similar degree as either intervention alone in middle-aged and older hypertensive adults.

O4

An Undergraduate Inter-professional Critical Care Course Conveys the Importance of Collaborative Practice While Learning the Essentials of Critical Care

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An inter-professional collaborative approach to patient care in the critical care setting has been shown to garner the best outcomes. The purpose of this presentation is to describe the development of an inter-professional critical care course which teaches undergraduate nursing and respiratory therapy students the importance of collaborative practice while learning about the essentials of critical care. In a shared effort between the Department of Nursing and Health Sciences at Salisbury University, we developed a course based on the Fundamental Critical Care Support curriculum that fosters collaborative relationships between our students. This course was the first multi-disciplinary course of its kind within the University of Maryland System and targets nursing and respiratory therapy students who are interested in pursuing a career in critical care. The classroom is defined as a safe learning environment in which students could discover the fundamental principles of critical care clinical practice in a nurturing collaborative learning environment. We will discuss the development and implementation of the course and the implications for clinical practice.

O5

Towards an Early Warning System for Visceral Leishmaniasis in East Africa: The relationship between climatic and other Environmental Data on Incidence of the disease in Gedaref State (Sudan) and Jonglei State (South Sudan)

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Visceral (VL, kala azar) is a serious health problem in several countries in East Africa, including Sudan and the Republic of South Sudan (RSS). In most VL foci in these countries, the disease is caused by the protozoan parasite *Leishmania donovani*, which is transmitted by the sand fly *Phlebotomus orientalis*. The exception to this is a small focus in the border areas of RSS and Kenya, where transmission is maintained by *P. martini*. The endemicity of VL in Sudan and RSS is characterized by marked annual fluc-

tuations and occasional severe epidemics that claim the lives of large numbers of people. Since no significant interventions are undertaken against the disease in these regions, the fall and rise in the incidence of VL are most probably due to climate variability, which is a characteristic feature of climate change in the Sahelian region. In this study, we conducted an investigation on the effects of climate and other environmental factors on kala azar incidence in Gedaref State (Sudan) and Jonglei State (Sudan). Our results demonstrated for the first time that incidence of kala azar in this region is inversely proportional to rainfall and precipitation pattern towards the end of the dry season. Results are discussed in relation to the epidemiology of the disease. Findings from the study will be used to develop an Early Warning System and construction of high resolution Geographical Information System (GIS) risk-maps for the disease both in Sudan and the northern states of RSS.

O6

A Resolution On Retention Problems At HBCUs: Systematic, Student-Oriented Decision Process

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Low student retention rate at the average American institution of higher learning is endemic, and it has an adverse effect on graduation rate too. Combined, both low retention and low graduation rates continue to pose a challenge to funding resources and threaten the growth and survival of some Historically Black Colleges and Universities (HBCUs). Though much research has been done in an effort to resolve the problems of low retention and graduation rates, there is a gap in the proposed strategies to improve students persistence to graduation. There is a need to apply a more objective evaluation model to analyze and postulate a more effective resolution to the problem. Consequently, this study proposes to adopt a multiple criteria decision making (MCDM) methodology to analyze the factors affecting low retention and graduation rates. MCDM dates back to the late 1970s, and it has proved effective in the fields of industrial engineering, computer sciences, and operational research. Students' needs and preferences will be the focus of the study. The proposed MCDM approach will be used to evaluate the feasibility of students' needs and preferences in the context of technology, implementation, and operation.

O7

From Disdain to Esteem: An Autoethnographical Study on the Socio-Cultural Attitudes on Disability in Africa and the United States and how they facilitate Accepting, Dealing and Living with a Disability

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This autoethnography will explore my self-perceptions as I transition from an able-bodied to a woman with a disability in the United States. It will chronicle my experiences and internal battle as I struggle to understand and be accepting of my condition. I will identify and discuss my perception of people with disabilities, a perception grounded in my Cameroonian socio-cultural background, and the shift in that perception after I became a woman with disability in the United States. The purpose of this study is twofold: 1). It provides a personalized account of how culture influences the acceptance of, and dealing with, a disability; 2). It examines cultural differences in gender perceptions and possible effect of those perceptions in the differential treatment of people with disability along gender lines. The central question of this study is: How do the American socio-cultural attitudes differ from the African socio-cultural attitudes on disability and gender, and how do those attitudes facilitate or hinder accepting, living and coping with disability? In this research I am both the researcher and the research participant. I will use reflective journaling, recollection, art, artifacts and interviews as data sources. I will analyze and interpret the data to understand the socio-cultural meanings of thoughts, reactions, behaviors and events, and to deconstruct the socio-cultural undertones of what I recall, observed, experienced and was told. With natural biases that may arise from exaggeration

and embarrassment from facts, I will verify data by source triangulation. The theoretical frame for this study is social constructivism, as it relates to identity construction of African women with disabilities. Using advocacy/participatory worldview, I will advocate for the African woman with disability who suffers from stigma due to African socio-cultural attitudes.

O8

The Social Identity Development of White Students Who Attend Historically Black Colleges and Universities

Stephanie Krah[1]*
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In a time when higher education accountability is increasing, it is essential that institutions, no matter their mission and purpose, produce higher rates of retention, persistence and graduation. In that context, a debate continues concerning the relevance of Historically Black Colleges and Universities (HBCUs). HBCUs are not just "Black Colleges" only serving black students, but institutions that are inclusive and able to provide service to students from all racial backgrounds .This research study employed qualitative inquiry to examine the experiences of nine white students who attended two HBCUs in the Midwest. As temporary minorities, these white students shared that their HBCU experience provided a wonderful educational and social opportunity where they were able to receive one-on-one attention from their faculty members, engage closely with staff, and develop connections with their peers. Although these HBCUs do not offer support programs specifically targeted to minority students, the participants felt like they mattered and that attending an HBCU allowed them to gain a deeper insight into race related issues. This study also revealed that in order for the perceptions of HBCUs to change they must consider expanding their recruitment and marketing into non-African American communities. Ultimately, HBCUs must decide to take an active stance as to whether they will rest solely on an identity connected to the historic mission or if their institutional practices will evolve to embrace the current direction of higher education.

GRADUATE PRESENTATIONS

O9

Comparative genomics of two multidrug resistant *Salmonella* Typhimurium and *Salmonella* Kentucky Strains recovered from chicken carcasses

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Salmonella enterica, a Gram-negative bacterium belonging to the Enterobacteriaceae family, consists of more than 2500 serovars. *S. enterica* serovar Typhimurium is the leading cause of human non-typhoidal gastroenteritis in the US. *S. enterica* serovar Kentucky is one the most frequently isolated serovars from commercially processed poultry carcasses. This study was aimed to establish the phylogenetic relationship of two multidrug resistant *S.* Typhimurium (ST221) and *S.* Kentucky (SK222) strains recovered from chicken carcasses with previously sequenced genomes of 28 *S. enterica* strains. Whole genome sequencing of ST221 and SK222 was carried out using Illumina MiSeq and PacBio RSII platforms, yielding high-quality hybrid assembly for each genome. Rapid Annotation using Subsystem Technology (RAST) was employed for genome annotation. Annotated genomes of ST221 and SK222 were compared with the genomes of 28 *S. enterica* belonging to different serovars including *S.* Typhimurium and *S.* Kentucky. Comparative genomics data revealed 1711 non-duplicated protein-coding genes shared by all 30 *Salmonella* genomes, representing the core genome of *S. enterica*. Phylogenetic analysis employing homologous alignment of core *Salmonella* genome (~1,101,6707bp) demonstrated fully resolved bifurcating patterns with varying levels of diversity that separated ST221 and SK222 into distinct monophyletic clades suggesting that *S. enterica* serovars are being evolved into distinct evolutionary lineages. Comparative genome analysis further confirmed that both ST221 and SK222 shared serovar-specific conserved coding sequences, although several genomic regions with significant mismatch were detected. This mismatch can be explained by the insertion of genomic islands and/or acqui-

sition of mobile genetic elements that probably the reason for these strains to develop multidrug resistant phenotypes. Average nucleotide identity (ANI) analysis showed both ST221 and SK222 were closely (>99% ANI) related to their respective Typhimurium and Kentucky strains. Single nucleotide polymorphism (SNP) analysis subsequently identified 3050 SNPs within Typhimurium strains (ST221, LT2, and CVM23701) and 337 SNPs within Kentucky (SK222, CVM29188 and CDC191) strains. Future studies will investigate different physiological and/or metabolic pathways of both ST221 and SK222 strains using Phenotype MicroArrays (Biolog) to understand their differences in pathogenic potentials.

10

Design, Synthesis and Pharmacological Evaluation of Novel Enaminone Analogs as Potential Anticonvulsant Agents for Therapy-Resistant Partial Seizures

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Epilepsy is a chronic syndrome that is characterized by brief spontaneous recurrent seizures. It is known that about 1 in every 26 Americans will be diagnosed with epilepsy at some point in their lifetime. Despite the optimal use of available antiepileptic drugs, 25-40% of patients are still considered to be refractory to existing therapies. Therefore, discovery of novel antiepileptic agents with improve efficacy and side effect profiles, is a key milestone in the battle against epilepsies. By using a rational drug design template, 13 novel enaminone analogs have been successfully synthesized and characterized via H^1 NMR and elemental analysis. All compounds have undergone *in vivo* screenings in mice and rat seizure models at the National Institute of Neurological Disorders and Stroke (NINDS), NIH Anticonvulsant Screening Program (ASP). Active analogs have shown moderate to good protection in mice qualitative maximal electrical shock (MES) test and 6 Hz 'psychomotor' pre-clinical seizure model (correlates with partial and refractory epilepsy in humans), with minimal signs of neurotoxicity. The four lead compounds from this study THA 36, THA 40, SGA 33, and CBA 80 have shown to protect 25-75% of animals from partial seizures in the 6Hz 32mA model at doses of 30 mg/kg to 100 mg/kg. The *in vivo* pharmacological profile shows that the compounds also have an extended duration of action, protecting the animals from 15 minutes to 4 hours. Currently, the compounds are under evaluation to determine the effective dose 50 (ED_{50}) in the quantitative corneal kindled mouse models.

O11

Developing a Mobile Assistive Technology to Support Individuals who are Blind with Medication Management

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There is strong evidence in the literature suggesting medication management can oftentimes be a difficult and/or confusing task for people adhering to multiple medications. According to an Institute of Medicine report from 1999, at least 7,000 people die per year due to medication errors. In attempts to make medication management easier and safer, a number of technology-based medication management technologies have been developed such as digital pill counters and cell phone applications. Unfortunately, many of these systems do not cater to the unique needs of an individual who is blind. To address the difficulties associated with identifying medications and corresponding adherence issues, our main goal is to understand the underlying problems concerning medication management among individuals who are blind. Inexpensive and easy solutions include relying on caregivers and family members, or putting a certain number of rubber bands around medication bottles to identify them. While there is so far no universal solution for this problem, this presentation examines some of the strategies that are used by individuals who are blind to identify, manage and adhere to medications, as well as immediate challenges and preventable errors surrounding medication management for this group. A framework for potential affordable technologies addressing the issue will also be discussed.

O12

Evaluation of controlled release of small molecule drugs from a novel microporous silica-based carrier

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The goal of the present study was to evaluate the potential of microporous silica based structures as drug delivery carriers for adsorption and controlled release of biomolecules. We used a hydrophobic aminoquinoline small molecule with antimalarial properties as a model drug in our studies. 30 mg silica microparticles were mixed with stock solutions of the drug at different concentrations in deionized water for adsorption studies. The reaction time was varied from 30 minutes to 3-1/2 hours to maximize adsorption. Any unadsorbed drug was removed by centrifugation followed by washing. The amount of drug entrapped on silica was measured spectrophotometrically at 254 nm. To study the effect of ionization state of the silica surface on adsorption efficiency, the pH of the reaction mixture was varied from 5-8. We were able to successfully incorporate the model antimalarial drug on to the surface of silica microparticles. The maximum adsorption was achieved within 1 hour of incubation. The adsorption efficiency was found to be pH dependent. The extent of adsorption at pH 5-6 was 2 and 6 fold higher than at pH 7 and 8 respectively. The results are in agreement based on the pKa of the drug which suggests an increased solubility at pH 5-6. Beyond 1 hour of incubation desorption of the drug from the silica surface was observed. Overall these initial studies suggest that by pH modulation, drug molecule loading on to silica surface can be controlled. The present studies suggest that silica based microstructures can be a novel biocompatible carrier for drug molecules targeted to specific cells. The size of these microstructures is ideal for cellular uptake via endocytosis potentially allowing for intracellular release and enhanced therapeutic efficacy.

O13

Modeling Calcium Dynamics From Randomly Releasing Sparks in Cardiac Myocytes

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Intracellular calcium dynamics play a key role in regulating the contraction and relaxation of cardiac myocytes. We have observed experimental evidence of self-organizing calcium wave propagation in pathological conditions such as calcium store overload which can lead to arrhythmogenic-triggered activity in the heart (irregular heartbeats). In this talk, we present a computationally intensive 3D mathematical model with spatially regular randomly releasing units that reproduce the timing distribution of spontaneous calcium sparks and show the evolution of self-initiated calcium waves in a single cardiac cell. We will further present our work to characterize the self-initiated calcium wave dynamics at a sub-cellular level. The simulation results of our mathematical model is paving the way to showing that under certain conditions, such as calcium store overload and weak cellular electrical coupling, the calcium dynamics of multiple pathological cells can create an electrical anomaly possibly inducing a cardiac arrhythmia.

O14

Neuronal Phenotype, Tightly Regulated Gene Expression, Reduced Herpetic Susceptibility

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Molecular traces of the Herpes simplex virus 1 (HSV-1) has been found in 80% of the US population, however only nearly 20% of the population exhibit the cold sore symptoms. These characteristics are due to individual genetic and environmental susceptibility and the characteristic of this virus's family known as latency. HSV-1 persists as latent infection only in neurons of its infected host however an accepted explanation for the requirement of the neuronal phenotype has yet to be made. Furthermore, the signaling cascade driving reactivation from latency is also not well defined. Considering that stresses, such as hormone fluctuation, are required to break the tightly regulated gene expression of differentiated neurons and that stress is

believed to be the primary trigger of reactivation, we hypothesize that hormone fluctuations play a role in viral gene regulation. Since literature shows that the HSV-1 thymidine kinase (TK) promoter is sensitive to thyroid hormone (TH) our lab has chosen to investigate the role of thyroid hormone levels in regulating HSV-1 gene expression in neuron like cell cultures. In order to test this hypothesis in vitro, infection experiments in neuron like differentiated, N2aTRbeta, LNCaP, and SH-SY5Y cells treated with various thyroid hormone conditions were performed. Likewise tests were performed in undifferentiated cell types. Infected cells were analyzed for viral replication, expression of TK and other key viral genes, and histone tail modifications of viral promoters. In our HSV-1 infection models, compared to thyroid hormone treatment, TH removal exhibited increased viral replication, increased TK expression and decreased repressive histone tail marks on viral promoter only in the differentiated neuron like cells.

O15

Non-Invasive Glucose Sensor using Fluorescently Labeled Glucose Binding Protein

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This project focuses on developing a non-invasive glucose sensor that uses fluorescently labeled glucose binding protein to detect glucose on the skin versus the commonly used glucose blood test. The goal is to develop a commercial sensor that can monitor glucose levels in individuals suffering from diabetes, specifically neonates. The initial steps include the production and analysis of GBP, the sensor, which involves cell culture and fermentation of modified E. coli, extracting GBP from cells, fluorescently labeling protein and purifying GBP using size exclusion and ion exchange columns. This presentation will focus on the sensor and the work that has been done to analyze newer plasmids that contain the gene of interest. It will also discuss the current sampling and testing protocol for glucose levels on the skin and result from adult subjects.

O16

Algebraic Coding Theory

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The effectiveness of cell phones, radios, fax machines, PCs and barcodes for which electronic digital information is transmitted from one machine to another heavily relies on the theory of Algebraic Coding. ACT (Algebraic Coding Theory) is the theory of transmitting information in the most effective manner and has no relation to secret codes. It was created in the 1940s to respond to the practical communication issues at the time. In fact, ACT is one of the most widely used applications of Mathematics, especially in this world today of immediate communication. The process of encoding messages into longer codes with redundancy which enables the receiving communication device to decode, detect and/or correct any errors created during transmission is called Forward Error Detection/Correction (FEDC). This research focuses on the explanation of the basic principles of FEDC. While exploring the various types of block codes, which is one of the three well known methods of FEDC, we also analyzed the efficiency of certain error correction codes by calculating the probability of successful decoding of a transmitted message. The Block Codes we decided to focus on are Repetition Codes and Linear Codes with an emphasis on Hamming Codes.

O17

Assistive Technology for Paper Form Digitization in Resource-Limited Environments

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In developing countries, people are now more likely to have access to a mobile phone than clean water, making cellular based technology the only viable medium for collecting, aggregating, and communicating local data so that it can be turned into useful information. While mobile phones have found broad application in reporting health, financial, and environmental data, many data collection methods still suffer from delays, inefficiency and difficulties maintaining quality. In environments with insufficient IT support and infrastructure,

and among populations with limited education and experience with technology, paper forms rather than electronic methods remain the predominant means for data collection. To meet the digitization needs of paper driven data collection practices, this paper presents the development and study of a system that automatically converts unknown paper form images into text and use the SMS channel to transmit the information to a remote server for digital conversion by humans. We discuss our proposed system architecture for dealing with infrastructure constraints and human resources limitations at the local site level and present a novel framework (RLM) that decomposes the form detection task into retrieving, learning, and matching. Our goal is to significantly decrease the effort and cost of data entry, while maintaining a high level of quality.

O18

Extending the Fatigue Life of Aluminum 6061 and 7075 Alloys: The Methods and Significance

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The most common type of failure or fracture of engineered components is fatigue. Fatigue fractures occur from cyclic stresses, or the repetitive loading and unloading of the component. These types of fractures are particularly hazardous because they can occur under normal service conditions and with no warning. Thus, there is a significant interest into methods to extending the service / fatigue life of engineered components. One of these methods is to introduce an overload into the system. These overloads have been shown to retard crack growth under constant amplitude cyclic loading conditions which are under the overload stress value. Unfortunately, most service components are not in an environment with constant amplitude loading. Components in the aerospace industry (many are made of Al 6061 and Al7075) experience a wide spectrum of loading which could include multiple sharp overloads and underloads. Therefore, there has been a focus on observing the effect of multiple overloads at varying amplitudes and their effect on the fatigue life of components. In this study, fatigue experiments as specified by the ASTM E647 were conducted on pre-cracked compact tension specimens of Al6061 and Al7075. Multiple overloads at varying stress intensities were introduced throughout the experiment and their effect on the fatigue crack growth rates were recorded. The results from these tests will then be used to develop a modified behavioral model. The hope of this study is to create such a model that can predict the fatigue life of Al6061 and Al7075 based on the intensity and frequency of the overloads the components are subjected to.

O19

Anisotropy, Asymmetry and Strain Rate Sensitivity of Magnesium Alloy ZEK100 Sheet

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Magnesium alloy is a highly sought after material due is light weight and strength properties. It's about 70% lighter then steel and about 30% lighter then aluminum. However, magnesium alloy sheet has a limited number of slip planes at room temperature and where twinning is a significant contributor to deformation due to hexagonal close packed (HCP) crystal structure. Also, it shows strong crystallographic texture due to material forming which causes strong anisotropic and asymmetric behavior. Unlike commercially available magnesium alloy AZ31 sheet, ZEK100 sheet shows significant improvement in crystallographic texture due to the addition of rare earth elements. The results of the better texture are an increase in ductility and in strength. To be able to use this material in automotive and aerospace industry, mechanical response of the material under different load speeds and temperature must be tested. In this research, mechanical response of magnesium alloy ZEK100 in sheet was tested under uniaxial (tension and compression) loading along the rolling direction (RD), 45° to rolling direction (DD), and transverse direction (TD) at strain rates of 10^{-4} to $2.4x10^{3}$ s^{-1} and at temperature of 25 and 150°C. The mechanical response of the material will help in understanding how the material reacts in metal forming, under load and under impact. Data shows yielding and strain hardening to be dependent on strain rate and temperature in addition to orientation. The yield strength is the greatest along the RD and decreases towards TD whereas elongation is highest in the TD and decreases in the RD. Results show SRS to vary insignificantly at 25 and 150°C with respect to orientation but show

significant difference in SRS between 25 and 150°C. Future work will be to test the material at higher temperature and obtain texture pole figures to understand the texture evolution at different loads and temperature and to understand slip and twinning in magnesium alloys.

O20

Application of a Finite Volume Coastal Ocean Model to Lake Erie

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Different partitions of Lake Erie experience various environmental issues, including harmful algae blooms and oxygen depletion. To better understand the hydrodynamic background of these problems, a three-dimensional, unstructured-grid based Finite Volume Costal Ocean Model (FVCOM), combining with FVCOM-Surface WAVE (FVCOM-SWAVE) model, was applied to investigate dynamics of physical processes in Lake Erie. Model was calibrated for elimination of pressure gradient error, grid resolution and surface wind forcing, and showed a good skill in simulation of water elevation, water temperature, current velocity and surface gravity waves. Model's sensitivity to topography, Long Point spit, wind stress curl and wave-current interaction was further examined. The results show that topographic effect is substantial for circulation in deep eastern Lake Erie, while that of central basin is dominated by wind stress curl. Long Point Spit has profound impacts on dynamics in eastern basin during stratified period and gust events. Wave-current interaction is significant on nearshore currents during episodic events. During certain period, it also contributes to mixing within epilimnion when the lake is stratified.

O21

Application of unstructured grid wave models to Lake Michigan

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It was widely known that wave plays a critical role in coastal circulation, so it is very important to simulate wave dynamics in lake and shallow regions. An unstructured triangular mesh wave model, Simulating Waves Nearshore (SWAN), was configured to Lake Michigan to understand the surface gravity wave pattern, and it could provide remote wave information for coastal (e.g. Grand Haven) wave simulation. In order to understand the temporal variation and spatial distribution of wave parameters near islands, inlet (e.g. Grand Haven) and nearshore regions, we ran a series of wave simulations using hourly wind. Some conclusions have been given, such as: wind from deep lake part had major impact on the wave dynamics of Lake Michigan; wave simulation was very sensitive to the parameterizations of whitecapping; bathymetry-induced refraction was observed near islands and costal lines. To better understand the effect of bathymetry on wave dynamics, some ideal wind speed cases have been conducted and discussed. Finally, a brief comparison between unstructured SWAN and unstructured-grid finite-volume surface wave model (FVCOM-SWAVE) has been given. The accurate simulation of wave dynamics could be useful to improve the understanding of the effect of wave and wave-current interactions in nearshore circulation in the future.

O22

Ecological and Genetic Investigations of *Hematodinium perezi*, a Parasite of Blue Crabs

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Hematodinium sp. infection of crustaceans, also known as Bitter Crab Disease, presents important questions pertaining to our understanding of the ecology of infectious agents. One of the largest unanswered questions centers on how disease transmission occurs in this system. We have established that the parasite can be detected in the water column as early as March, several months prior to when the disease is typically detected in blue crab hosts. We have identified distinct hotspots of environmental presence, clustering along the eastern coast of the Delmarva Peninsula in the Maryland Coastal Bay (MCB) Ecosystem. We hope to link these hotspots to environmental factors, allowing us to predict the

presence or absence of the parasite in environment. We are also seeking additional genetic markers for distinguishing between *Hematodinium* genotypes. Development of additional markers is critical as invasive species known to harbor both clades of *Hematodinium*, such as the green crab, have been observed in the MCB. It has also been suggested that a single species of *H. perezi* is responsible for infections along the eastern coast of the United States but we have evidence for a single nucleotide polymorphism (SNP) that is specific to the *H. perezi* present in the MCB. Therefore, alternate markers can enable us to address whether *H. perezi* in the MCB represents a strain-specific variation. In this study, Tridentate ligands were synthesized from the condensation of 2,2-ethyl-pyridyl amine with salicylaldehyde and substituted Salicylaldehyde derivatives. Manganese complexes of the ligands were also synthesized and characterized. X-ray crystallographic structures indicate Manganese complexes with N and O atom ligands. Electrochemical properties of the metal complexes in acetonitrile solution and at scan rate of 100 mv/s indicate one electron transfer with shifts in the potentials of the different salicylaldehyde substituents. Uv-Vis spectroscopic study of the reaction of the complexes with H2O2 of different mol concentrations showed new peaks at wavelengths of about 255 nm and 312nm. Reaction of the complexes with cyclohexene and H_2O_2 produced cyclohexene oxide confirmed by GC-MS analysis. Manganese complexes of the tridentate ligands catalyzed oxidation of olefins to their epoxide by H_2O_2.

O23

Examining the Relationship between Black Sea Bass Catch in Traps and Soak Time in the Mid-Atlantic Bight, USA

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The black sea bass (BSB) is a temperate reef fish species that supports an important commercial trap fishery in the Mid-Atlantic Bight. Fish traps are used extensively in the sea bass fishery where they are fished unbaited for variable soak times ranging from a few days to two or more weeks. Landings from traps are used in stock assessments to develop abundance estimates and catch quotas, however due to inconsistent soak times it is unclear how well they represent actual abundance of BSB on reefs or other habitats. We examined the relationship between BSB catch and soak time during June 2013 at two sites off the coast of Maryland. Traps were set around natural bottom structures for different soak times ranging from 4 to 14 days prior to being hauled. Underwater video camera deployments were conducted alongside trap set locations to obtain an independent density estimate for comparison with trap catches. The relationship between catch and soak time was modeled and compared using two three-parameter catch models from the literature.

O24

Exploring the molecular and structural basis of melanopsin signaling

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The visual pigment melanopsin is expressed in a subset of retinal ganglion cells (ipRGCs). These cells are intrinsically photosensitive and their axons project to brain regions such as the suprachiasmatic nucleus (SCN) and the olivary pretectal nucleus (OPN). These regions regulate non-image forming functions such as circadian photoentrainment and the pupillary eye reflex. Therefore, melanopsin is unique compared to visual opsins, such as cone opsins and rhodopsin, due to its role in regulating non-image forming functions. Melanopsin is also unique at the molecular level; the most distinctive feature being its long intracellular c-tail. Previous work has shown that there are several residues on the intracellular tail that are necessary for deactivation of melanopsin. However, it is not clear if the tail mediates the activation portion of signaling. We hypothesize that there is a helix structure on the proximal portion of the c-tail that is interacting with residues on intracellular loop 3 via hydrogen bonds. This would result in a physical interaction that is necessary for proper activation of melanopsin. To test this, a mutant mouse melanopsin (3X mutant) was constructed with sites 377, 380, and 382 on the c-tail altered to prolines to disrupt the hypothesized interaction with intracellular loop 3. This 3X mutant was transiently expressed in human embryonic kidney (HEK) cells to test

its response to light via calcium imaging assay. Using this assay, we observed a deficit in activation in the 3X mutant, suggesting that the tail is important for proper activation of melanopsin.

O25

Hypoxia-Induced Physiological and Immune System Effects in Atlantic Croaker, *Micropogonias Undulatus*, from Chesapeake Bay

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Hypoxia, low dissolved oxygen (DO), is an increasingly common problem during the summer months in the Chesapeake Bay due to natural and anthropogenic factors. In this study the physiological and immune system responses of Atlantic croaker to sub lethal hypoxia were evaluated in the laboratory and the field using a suite of biomarkers. Acute (24-48 h) and chronic (96-144 h) exposures to hypoxia (DO = 2.0 mg/L) were determined under laboratory conditions and field samples of Atlantic croaker were collected by hook-and-line from a reference and a hypoxic site in the Bay from May to September in 2012 and 2013. Blood and tissue samples were collected to assess overall health, reproductive, endocrine, and immune responses. Histopathology, vitellogenin, gonadotropin releasing hormone (GnRH), and phagocytosis analyses were performed. Comprehensive metabolic adjustment, organ damage, hyperglycemia, depressed vitellogenin and GnRH levels, and decreased phagocytic activity were observed in hypoxic fish in the lab and the field. Overall, croaker health and immune function were impaired due to hypoxic exposure. Improved information on immune response and croaker hypoxia biomarkers were key results from this project.

O26

Seasonality and Spatial Distribution of Cladocerans in the Maryland Coastal Bays

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Marine cladocerans have received less attention than their freshwater relatives in spite of the important trophic role they play. In particular, nothing is known about the cladocera fauna of the Maryland Coastal Bays. Zooplankton samples were collected from February to December 2012 at 13 sites using a 200 micron mesh plankton net. Two cladocera genera, *Podon* and *Evadne,* were found. Densities ranged from 0 to 752.5 ind. m^{-3} (*Evadne* spp.) and 0 to 137.6 ind. m^{-3} (*Podon* sp.). *Evadne* spp. were first observed in June at a mean density of 16.4 ± 10.9 SE ind. m^{-3}. By July, the density (mean = 57.9 ± 57.8 SE ind. m^{-3}) had increased especially at Sinepuxent Bay. A drastic decline in abundance was noted in late summer (0.02 ± 0.01 SE ind. m^{-3}), and cladocerans were absent in winter. *Podon* was mostly found in June when a peak density (137.6 ind. m^{-3}) occurred at 18.1^{0}C and 34.7 psu. Densities of the cladoceran species differed spatially; *Evadne* spp. were found mainly in Sinepuxent Bay, whereas *Podon* sp. was found predominantly in Assawoman and Sinepuxent Bays.

O27

The Effects of Irritant Exposure on the Olfactory Behavior of Skn-1a Knockout Mice

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The main olfactory epithelium (MOE) in the nasal cavity detects thousands of inhaled odorants daily. However, it is poorly understood how the MOE detects and removes noxious substances such as odorous irritants and pollutants in order to maintain function when faced with such environmental insults. This underappreciated function is essential for protecting the MOE as well as the lower airway, lungs and brain. Our previous research demonstrated that TRPM5-expressing microvillous cells (TRPM5-MC's) can respond to odorous irritants and are capable of releasing acetylcholine (ACh). We hypothesize that these cholinergic TRPM5-MC's play a role in detecting harmful chemicals and modulating functional sensitivity of the MOE in response to noxious substances. Our experimental results from a recent collaboration have provided evidence that knockout mice for the POU homeobox transcription factor Skn-1a lack TRPM5-MC's in their MOE. In order to elucidate the role of TRPM5-MC's in MOE protection, we exposed both Skn-1a$^{-/-}$ and WT mice to odorous irritants

for 2 weeks and performed 2 standard olfactory behavior tests, i) the Buried Food test and ii) the Habituation-Dishabituation (H-D) test to assess olfactory function pre, mid, and post-exposure. Initial data from WT and Skn-1a$^{-/-}$ mice reveals that exposure decreases the time required to locate the food stimulus in the Buried Food test, although exposed Skn-1a$^{-/-}$ mice take more time to complete the task than exposed WT mice at week 2. Moreover, exposed Skn-1a$^{-/-}$ mice still respond noticeably to odorant presentations in the week 2 H-D test, whereas exposed WT mice sniff little at presented odorants throughout the test. Taken together, these data indicate that unlike Skn-1a$^{-/-}$ mice, WT mice show a decrease in olfactory ability to detect odorants with irritant exposure. Thus, preliminary behavioral results support our hypothesis that cholinergic TRPM5-MC's are involved in olfactory modulation in response to irritant exposure. To better understand these behavioral results, we are also currently investigating MOE morphology after irritant exposure in both strains of mice

O28

Identification of Leadership Competencies Required for Leaders Who Lead Organizational Change: A Phenomenological Study

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According to multiple change scholars, some of whom are internationally renowned, over 70% of organizations that embark on transformation efforts fail. Research suggests that there are many reasons why this failure occurs; however, the most common denominator about which intellectual change contributors have found agreement (based on change literature) is that there exists an absence of change leaders, and a dearth of effective processes supporting their training and development. Change literature is replete with models that organizational leaders may use to inform their transformation decisions. However, these models function on a presupposition that, for the most part, is neither documented nor stated by the creator. What is missing from the body of research is the focus on development of change leaders as the indisputable nexus, the *sine qua non*, of successful change efforts. For this reason, my goal is to further the body of research regarding change leadership by creating competencies specifically designed for the development of leaders who lead organizational change. I will achieve the foregoing goal through the utilization of a phenomenological study (in depth interviews). My study participants will be chief learning officers (or similarly titled individuals) because they are responsible for the training and development of leadership officials. I will select the participants from organizations listed in the "Directory of Leadership Programs," as documented in the most recent edition of the leadership encyclopedia housed in the Library of Congress.

O29

"Like My Status, Mom": The Use of Facebook by African American College Students to Maintain Communalism

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There are few studies on African Americans use of social media. This paper examines the use of Facebook by African American students to stay connected with their families while living miles away. The concept of communalism is the awareness of the interdependence of people. The researcher surveyed 200 undergraduate and graduate students at an HBCU on their use of Facebook to communicate with their families. Students responded to questions regarding their use of Facebook using the Facebook Intensity Measurement and their connection to family using the Home Communalism Measure. Participants responded to questions such as how much time is spent on Facebook, which family member do they communicate with most, and how far they live from school. The researcher used SPSS to analyze the data using frequency distribution. This research will allow for more studies on family communication using social media as well as social media use by African Americans.

O30

Blazing the Trail-Student Leadership Development and Its Impact on Life after College

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With the overwhelming number of college graduates entering the workforce, it is more important than ever that they are well equipped and adequately prepared for life after college. Too often, recent college graduates obtain the necessary academic skills but lack the leadership skills needed to be successful as new professionals. The purpose of this case study is to determine the impact that leadership development has on former student leaders' lives after college. Using an intrinsic case study as the methodological approach, a total of 30 former student leaders associated with student government association and a resident assistant (RA) program were interviewed. Additionally, data collected consisted of field notes, historical documents and training materials of both leadership programs. Using MAXQDA, a qualitative software, the data was coded and organized into common themes. The findings from this study provide an understanding of students' perception of leadership development and offer implications to student affairs professionals to enhance the leadership development experience of student leaders. In particular, student leadership aspiration differs between the two leadership development programs which impact their future abilities.

O31

Decision-Making under Uncertainty: Risk Assessment and the Best Available Science

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In honor of Dr. Daniel Goodman, in March 2014, Montana State University organized a two day symposium dedicated to bringing together scientists who have expanded on the prolific work he left behind. Presenters representing a wide range of institutions (NOAA, USGS, universities, EPA, research councils) and fields (policy, law, resource management, ecology) shared experience and insight with colleagues and graduate students from across the country. Presenters came together to describe Dr. Goodman's contributions to each topic (fisheries, ecosystem modeling, Bayesian statistics, ecological decision-making, risk assessment, endangered species policy and environmental monitoring) and how they -- and others --are building on Dr. Goodman's legacy. A summary of the symposium, and distribution of resources, will be presented. The ideas, research, and experience bring to mind the transformative efforts that come from interdisciplinary research and collaboration – the theme of University of Maryland, Eastern Shore's Fifth Annual Research Symposium.

O32

Dispute System Design for Wicomico High School

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Our school systems and education structures host dynamic conflicts. "Conflict exists in all areas of life, and certainly within organizations. People disagree about many things: the direction an organization should be taking, urgent problems, long term strategy, and even who should make the next pot of coffee" (Stitt, 1998, p.3). Dealing with school conflict requires collaboration for diagnosis and dispute system design. To this end, this study investigated and diagnosed Wicomico High School's (WHS) dispute system design. The kind of dispute resolution system that the school has is called Progressive Discipline. However, the study proposes that the school implements a Dispute System Design (DSD) that fits its audience. The study looked into the current dispute management structure of WHS and determined how the school handles disputes. After examining the current dispute resolution system, bringing out its strengths and limitations, the study then addressed the following questions: Is the system effective and what dispute resolution system will be a good fit for the organization? The study further pointed out the obstacles of our proposed system, as well as, implementation and evaluation plan for the school.

O33

Empirical Evaluation of Strategy-Proofness of *Majority Judgment*

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There has long been a keen interest in the strategy proofness of different voting algorithms. Recently Michel Balinski and Rida Laraki (Balinski, 2010) proposed the Majority Judgment method and claimed that it was resistant to strategic manipulation. In this report we empirically compare the strategy proofness of Majority Judgment, Plurality Voting, Boorda Count, Range voting, Approval voting, and Kemeny-Young using a simple model.

O34

Executive Search Consultants Role in Staffing Corporate Boards with Women and Minorities

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This qualitative interview study of 21 executive search consultants (ESCs) examined their role in staffing corporate boards with women and minorities. There are limited qualitative studies about the context and mechanisms for appointing minorities to boards. This research confirmed factors surrounding the underrepresentation of minorities on boards by examining the ESC's role in director selection. Participants' practices were confirmed using constructs from Upper Echelons and Strategic Leadership Theories i.e. values and preferences, strategic leadership capabilities and discernment qualities; Human Capital Theory i.e. education, experience and reputation; and Intersectionality Theory i.e. race and gender dynamics; as factors impacting ESCs staffing processes. Study results uphold existing findings on director selection processes: appointment decisions are often determined by "Fit" (e.g., chemistry, alignment) with the board's values and preferences. Candidates who are perceived as "Fitting" the culture of hiring authorities are selected at higher rates than candidates who are perceived to be a "Fit-risk" (i.e., Gupta, Otley, & Young, 2008; Hillman & Dalzier, 2003; Hillman, Nicholson, Shropshire, 2008; Withers, Hillman, & Cannella, 2012). The ESCs' primary role is to find diverse talent that will fit the requirements and expectations of their clients. Study results and implications are discussed. Recommendations for future leadership research are presented.

O35

Labyrinth in the Lab: How Gender, Race and Relationships Influence African-American Women's Leadership Opportunities in Biomedical Research

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Women are generally underrepresented in male dominated fields, particularly in the fields of biomedical research, and leaders in these fields are concerned with ways to attract women to the career path. Although there is much literature that covers women in leadership, there is a lack of research that centers on race in general and the role of African-American women in particular, in biomedical research fields. This study is necessary to bridge the gap between men and women in biomedical research and challenge practices that may exclude African-American women from male-dominated occupations. I use intersectionality theory and critical race theory to examine the dearth of African-American women in leadership of male-dominated fields and how those who do excel are influenced by their intersectionality and relationships. Through an in-depth study of African-American female leaders in biomedical research a road map can be created for other African American women to follow in the path toward leadership, enhancing leadership scholarship to include the challenges faced by minority leaders.. In addition, the results of the study can be used to inform the design of mentoring or other leadership development programs that will help promote African-American women.

UNDERGRADUATE PRESENTATIONS

O36

A Critical Review of the UMES Cafeteria Breakfast Menu: Are UMES Students Eating Breakfast?

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The benefits of breakfast have been researched for a significant amount of time. Thus far it has been determined that breakfast can: Increase nutrient intake, increase food group consumption, possibly contribute to cognitive and academic performance, possibly aid in weight control and improve overall health. Emerging evidence suggests that breakfast aids in adolescents being able to do better in school by improving: memory, alertness, concentration, problem-solving ability, test scores, school attendance, and mood. My research project is purposed to determine whether UMES students are eating breakfast in the cafeteria. If they are, what is their level of satisfaction? And if they are not, what are the grounds for their dissatisfaction? The subjects of this project will be UMES students. Those who choose to participate will primarily be those from the school cafeteria during all hours. Once the project has been carried out and the data is analyzed I would like to use the results to see if there is a correlation between African American youth and the absence of a regularly eaten breakfast in their diets; bearing in mind information found during the earlier stages of my project stating that skipping breakfast is highly prevalent among school-aged urban minority youth and has a negative impact on academic achievement (Basch, 2011).

O37

Investigation and Observational Study into the Causes of Diarrheic Symptoms of the Small Ruminants on the University of Maryland Eastern Shore Farm

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Gastrointestinal nematode infestation is a major cause of economic loss, in agriculture, worldwide. Much study has been done on *Haemonchus contortus*; a significant nematode of ruminant animals. *Ostertagia ostertagi* and *Trichostrongylus axei* are also significant though not well studied. These three, organisms: *Haemonchus spp., Ostertagia spp*., and *Trichostrongylus spp*., are all present on the UMES farm. The goat and sheep populations are constantly exposed to them due to the grazing pasture they are put on. It is hypothesized that these organisms are responsible for the diarrheic symptoms in the goats on the UMES farm. To test this hypothesis, an observational study was conducted. Fecal samples were taken and processed to determine egg counts of the samples. The egg counts showed a large number of all three microorganisms. *Eimeria* was also recognized in the samples. In large numbers. Due to the large number of *Eimeria* present, and its process of causing diarrhea, no microorganism could be pinpointed as responsible for causing the goats' diarrhea. Further study into *Eimera* and its disease coccidiosis is necessary.

O38

Can Online Streaming Music Shift Consumer Preferences?

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Since music's shift to the digital wave, the industry is adapting to consumer's demands of how, where, and when they listen to music. Over the past ten years, physical record sales have declined while buyers sought out to fulfill their music needs online. Currently, consumers are turning to websites such as Pandora and Spotify, which offer free online music streaming where users can create and personalize music stations of their preference. My research will include how online music streaming can enhance today's music market for the better of record companies. In addition, my research will include how these sites influence people's music decisions, how they find new music, and new artists, and how the industry can classify these consumers and sell to a particular market. I will research the role of awareness and experience on choice of music. I will use focus groups, observations and survey questionnaires from users as data collecting techniques. This study was conducted as a part of the course requirement for the Marketing Research course and is guided by Dr. Monisha Das.

O39

Consumers make decisions about online media influencing lifestyle patterns and attitudes.

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Consumers make decisions about the usage of online media for entertainment. Some consumers use iTunes and artist websites to download music. Downloading music is important because it is so convenient and popular among music listeners. Some questions I will address are the patterns of music listening and the attitude of consumers of online music downloading. Who benefits and who does not? Are innovative consumers more likely to download music? I will research the role of the degree of interest, impact of mood, and the influence of online reviews of music. This research will be based on a combination of qualitative and quantitative methods. I will specifically use the focus group unstructured method, opinion survey and usage behavior interview. There will be a discussion of findings and results. This study was conducted as a part of the requirement for the Marketing Research course and is guided by Dr. Monisha Das.

O40

Filing Patents Alone versus Seeking Legal Help

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The purpose of this research paper is to study and understand the choice by patent filers to use legal services for information. This study focuses on how users use USPTO, WIPO, and even Google Patents to acquire patent information. Patent search site information is not easy to use or informative for most users, so seeking legal help from a patent office is often used. Filing a patent is significant because of financial reasons and to protect intellectual property. My research is whether search behavior leads to more satisfactory results using legal intermediaries or personal knowledge. This research study will be based on qualitative and quantitative methods. I will specifically use the focus group unstructured method, case study methodology and buying behavior interview methods. Among our independent variables we will research the role of awareness and the role of promotion by legal firms. There will be a discussion of findings and results. This study was conducted as part of the course requirement for Marketing Research and is guided by Dr. Monisha Das.

O41

How Do Spiritually Oriented Users Choose and Use Online Spiritual Resources?

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The Internet has advanced and expanded in so many ways since its first appearance in the world. Today, the internet can be used in an infinite number of ways. Data are no longer confined to physical publishing of books and papers, they are now shared digitally. Since resources have become so much more readily accessible, there are different types of people who seek different types of information and internet tools all of the time. This study is used to determine the usage behavior of spiritually oriented internet users. I will research the degree of awareness, interests, moods and experience of users. The methodology of this study will include quantitative as well as qualitative surveys designed to depict patterns of usage behavior. This study was conducted as part of the course requirement for Marketing Research and is guided by Dr. Monisha Das

O42

Pharmaceuticals: The Decision Making Behind the Choice of Medication

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The purpose of this research paper is to study and understand how consumers or patients make decisions about the different types of pharmaceuticals available on the market. This research paper will investigate why and how patients acquire information that leads them to select one type of drug over another. I will focus on the role of awareness on choice behavior. This research will be based on qualitative and quantitative methods. I will find and research whether or not different types of available information is important to those who choose the different types of pharmaceuticals. I will explore the decision process in depth. My methods will consist of a focus group unstructured methodology, document analysis, and opinion survey of patients. Consumers

spend a significant amount of time searching for the appropriate drug. My project advisor will properly check and clear the data found in my research to assure the reliability. This study was conducted as part of the course requirement for Marketing Research and is guided by Professor Monisha Das of the University of Maryland Eastern Shore.

O43

Role of Promotional Inserts on Video Games Usage by Consumers

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The purpose of this paper is to study how consumers make choices about online advertising and commercials. Consumers use video games and social media for websites that consumers use for entertainment. This study is important to consumers and the advertising company. Do consumers object to commercials in video games? Consumers spend a significant amount of time playing and watching video games online. This research will be based on the combination of qualitative and quantitative methods. I would specifically focus on consumer's dislikes and attitude to interference before and after the game. I would like to know how advertising affects the users if they like video games and advertisements. Do advertisements play a primary role in letting consumers know more about the various online games? This study involves various interesting surveys and interview data. This study was conducted as part of the course requirements for Marketing Research and is guided by Dr. Monisha Das.

O44

The Importance of Aggregate Demand

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My paper is on "*Aggregate Demand*," which is the total quantity of goods and services demanded in the economy for any price level. In my research, I will focus on how aggregate demand is specifically influenced by the monetary policy transmission mechanisms. These are critical factors that can influence aggregate-demand. Other factors are fiscal policy, banking, investment and wealth. The economic condition of a country is greatly influence by the growth of aggregate-demand. In the US economy, it plays a major role in Growth Domestic Product (GDP) accounting. How much can one person buy from his or her personal income? Cyclical unemployment is making certain job skill obsolete. Eventually, cyclical employment is turning into long-term structural unemployment. Hence, an increasing or stagnant unemployment rate is the biggest concern in any economic policy making. We need both fiscal and monetary policy to stimulate aggregate demand. I am researching in the transmission channels to determine which channels stimulate aggregate demand. For example, the banking channel can stimulate economy by changing the credit terms. The interest rate channel shows that lower interest rates stimulate investment spending and thus increase the quantity of goods and services demanded. According to Keynes's theory "interest rate adjusts to bring money supply and money demand into balance."

O45

The Transition from the Generally Accepted Accounting Principles to the International Financial Reporting Standards

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After the outbreak of accounting scandals committed by large corporations, such as Enron and WorldCom, the Securities and Exchange Commission (SEC) was compelled to consider transitioning from the Generally Accepted Accounting Principles (GAAP) to the International Financial Reporting Standards (IFRS) in order to regain investor confidence in US companies. This research will focus on the effects of this transition from GAAP to IFRS and whether or not it can be implemented successfully. The change in accounting standards will force companies to modify the way they report their external data and financial records to the SEC and investors. The new standard is also important to individual professionals because the IFRS will require increased professional judgment and

ethics, thus increasing their responsibility to reduce or report fraud. The research methods will include document analysis and a case study of the publicly traded company that has transitioned from using GAAP for their financial records to using the IFRS standards. The study of the publicly traded company will determine whether the transition was successfully implemented and whether it was overall beneficial to the company. This research will be guided by Dr. Monisha Das and Leesa Thomas-Banks.

O46

Cooperative Load Balancing for Providing Fairness in Distributed Systems

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Distributed computing systems often comprise of heterogeneous computing resources. Jobs scheduled for execution in these systems should be efficiently allocated to the heterogeneous computing resources to improve their performance. In this paper, we study a static load balancing scheme for single-class job distributed systems whose objective is to provide fairness to all the jobs in the system, *i.e.*, all jobs of approximately the same size will complete their execution in approximately the same time independent of the computers allocated for their execution. The studied load balancing scheme is formulated based on cooperative game theory. Simulations were performed using various system configurations and loads comparing the performance of the cooperative load balancing scheme with other existing schemes.

O47

New Methods of Solution to Synthesize Optimal Nonlinear Feedback Controllers and Applications

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In the quest for automatic control to the real-world dynamical systems, meeting the requirements with strict design standards including ascertaining optimality throughout the engineering, modeling and applications still need much more research due to be investigated. In aerospace engineering, particularly focusing on current needs in the areas of air-traffic control, missile guidance, bio-inspired unmanned vehicles & trajectory planning, space situational awareness, atmospheric reentry and optimal rendezvous, there are many open challenging problems in system dynamics & controls. This research is another step forward towards contributing some new approaches to a class of optimal control problems (OCP) and extending it to a variety of applications in other fields as well. In view of controls' synthesis for nonlinear dynamical systems, obtaining exact practical optimal solution is a formidable task when the system's modeling is an amalgam of coupled differential and algebraic equations with the real-time constraints. The necessity to obtain global feedback solution generally approaches to the formulation of the governing Hamilton-Jacobi-Bellman (HJB) equation. Solution of the HJB equation generates the guaranteed global feedback solution for the control problem posed as either in continuous, discrete or hybrid OCP. Remarkably, it is extremely rare to obtain the complete analytical solution of the HJB equation, thus one solution procedure relies on approximating the PDE using analytical, numerical and/or a mix of these techniques. To reduce the known concerns and broaden the scope of the subject, this research addresses nonlinear optimal feedback control and attempts to present novel methodologies for constructing the control solution.

O48

The Badjo Suit

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The Badjo Suit Mark II (BSM-II) is the next generation in Badjo Mech suit defense technology. The Badjo Suit is a technological suit designed for self-defensive purposes. The suit is equipped with many offensive and defensive capabilities designed to protect the user and impair the enemy. Since the creation of the Badjo Suit (original) several improvements have been made to modify and improve the capabilities and performances of the Badjo Suit Lineage. These modifications included making it easier to get into the suit, increasing its upgrade potential, and temperature regulation. Many of the Suits features are controlled by a battery connected to a micro controller which (depending on its programing) controls the servos, to activate weapons of shields.

O49

Expression of *Francisella tularensis* Outer Membrane Proteins in *Escherichia coli*

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Francisella tularensis causes a highly-infectious and lethal disease that can be transmitted to humans via multiple routes and can kill humans within 5 to 8 days. Bacterial outer membrane proteins (OMPs) are surface-exposed molecules involved in attachment, invasion, and manipulation of the host cell for bacterial replication and disease. Nothing is currently known about *F. tularensis* hypothetical proteins FTT0267 and FTT0602c, but bioinformatic analyses predict that both are OMPs and may be involved in iron acquisition. Iron is known to be a necessary metal cofactor for virulence proteins in many bacterial pathogens. To study the true functions of FTT0267 and FTT0602c, purified proteins must be obtained for characterization and structural studies. In this project, the genes encoding each *F. tularensis* OMP were PCR-amplified and cloned into a specially-designed expression plasmid (pQE-ssOmpA) that allows for inducible recombinant protein expression and assembly into the *E. coli* outer membrane (OM). As compared with native OMP expression in *F. tularensis*, recombinant protein expression in *E. coli* can be turned on-off, protein quantity can be controlled, and up to 300-times more protein per cell can be purified. Importantly, OMP folding in the *E. coli* OM is necessary for correct 3-dimensional structure and protein function. Recombinant *E. coli* clones were screened for correct insert sizes and selected clones were sequenced to verify coding region integrity. Next, a series of pilot inductions were performed for each OMP construct to optimize variables such as *E. coli* density, expression temperature, expression time, and extraction and purification conditions. Following a series of procedures to optimize lysis, extraction, and purification conditions, FTT0267 and FTT0602c OM localization was confirmed in *E. coli* by SDS-PAGE analysis. In conclusion, this study demonstrated that hypothetical *F. tularensis* proteins FTT0267 and FTT0602c can be expressed and inserted into the *E. coli* OM, suggesting that both proteins may be true OMPs in *F. tularensis*.

O50

Fullerene C_{60} Chemically Linked For Biocompatible Polymers for In-Vivo Radical Trapping

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Free radicals can be formed in living tissues under UV irradiation and/or when oxygen interacts with certain bio-molecules. Once formed these highly reactive particles are capable to start number of chain reactions damaging living tissues and believed to be a reason for some kinds of cancer. Facts above show the importance of trapping and studying free radicals in biological tissues and samples, which is complicated due to short-lived life span of free radicals. Mostly indirect methods focused on studying tissues affected by free radicals instead of direct observation and trapping of the latter. Here we present the method for the synthesis of biocompatible polymers based on polycyclic esters, in which fullerene C_{60}, is chemically linked to the polymeric matrix. Fullerene is biocompatible and also known as a good radical scavenger capable to trap multiple small radicals from solutions. In such a way, radical trapping from living tissues and blood can happen on the surface of biocompatible polymer which is in contact with physiological sample allowing in-vivo studying of free radicals effects. Recently we first used the Diels-Alder reaction to connect C_{60} to amino-anthracene following by the Schiff-base or reductive amination reactions of carbonyl groups of poly-cyclic esters with primary amines in order to link the fullerene radical trap to the polymeric matrix. Alike pure fullerene, this biocompatible polymer with built-in radical scavengers may be used in *in-vivo* experiments. This presentation will be focused on product isolation and characterization as well as preliminary trapping experiments and determination of ORAC factor for new materials. Here we present the method for the synthesis of biocompatible polymers based on polycyclic esters, in which fullerene C_{60}, is chemically linked to the polymeric matrix. Fullerene is biocompati-

ble and also known as a good radical scavenger capable to trap multiple small radicals from solutions. In such a way, radical trapping from living tissues and blood can happen on the surface of biocompatible polymer which is in contact with physiological sample allowing in-vivo studying of free radicals effects. Recently we first used the Diels-Alder reaction to connect C_{60} to amino-anthracene following by the Schiff-base or reductive amination reactions of carbonyl groups of poly-cyclic esters with primary amines in order to link the fullerene radical trap to the polymeric matrix. Alike pure fullerene, this biocompatible polymer with built-in radical scavengers may be used in *in-vivo* experiments. This presentation will be focused on product isolation and characterization as well as preliminary trapping experiments and determination of ORAC factor for new materials.

O51

Improving Prediction and Visualization of Coastal Inundation on the Eastern Shore of Maryland

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Climate change, sea-level rise, and associated storms are putting Maryland's people, property, natural resources, and public investments at risk. Currently emergency-response managers and coastal-development planners on the Maryland's Eastern Shore rely on coarse-resolution storm-surge models (such as SLOSH) and static floodplain maps. This research project is directed at assessing the impacts of long-term sea-level rise and episodic storm surges on the low-lying lands of the Maryland's Eastern Shore and developing 2D and 3D GIS software product that visualizes inundation at the street level for this region. This research investigates how different categories of storms such as hurricanes and nor'easters cause temporary flooding and inundation on the Eastern Shore and how the sea-level rise might amplify the storm surges. To conduct inundation simulations, a hydrodynamic model developed by University of Maryland Center for Environmental Science is used to place high resolutions on the Maryland's Eastern Shore. A series of numerical experiments have been conducted to explore different combinations of sea-level rise and storm-surge scenarios. In a capstone project in software engineering courses at Salisbury University, a software application has been developed to bring together the high-resolution model predictions, LIDAR data, and advanced GIS tools such QGIS and Google Earth to visualize the area extent, depth, duration of inundation at the street level on the Eastern Shore of Maryland during different categories of hurricanes. This cross-platform, web-based application has been designed and developed for PCs and tablets users. Open-source tools such JavaScript, HTML, CSS, Leaflet and Google Earth are used to create animation tiles to show sea level and inundation over a period of time in 2D and 3D maps. This research helps to gain further understanding of the inundation risks of the Maryland's Eastern Shore to different scenarios of sea level rise and storms, delivers much-needed information to state and county policy makers who are tasked to design adaptation and mitigation strategy for climate change and provides research-training opportunities to undergraduate students at Salisbury University.

O52

The Effect of the Heavy Metals Lead, Arsenic and Mercury on Breast Cancer (MCF-7) Cells

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During this study, a Real Time Cell Electronic Sensor (RT-CES) was used to determine which heavy metal – Mercury, Lead or Arsenic – was the most toxic to MCF-7 breast cancer cells. In this experiment the RT-CES was used to measure the number of living cells within a solution. When accumulated inside the human body, all three heavy metals can cause serious neurological illness and severe amounts of tissue damage. By using a human breast cancer cell line and maintaining physiological contains throughout the experiment, we seek to emulate the effects these heavy metals would have if they were to act on human tissues within the body. We found that, of the metals tested, Arsenic was the most toxic, followed by lead and then mercury. The results found in this study

contradict the findings reported in other published works. In which the toxicity of the test metals are as follows: Arsenic > Mercury > Lead. (Egiebor, Tulu, Abou -Zeid, Aighewi, & Ishaque, 2013) It is the recommendation of this researcher that this study be repeated in order to confirm the results found.

O53

Transient heat stress causes degradation of polar lipids in near-isogenic wheat lines resistant and susceptible to Hessian fly infestation

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Environmental factors have significant impacts on the resistance of plants to parasites. Polar lipid metabolism plays major roles in signal transduction during plant defense against biotic and abiotic factors. In the current study, our objective was to investigate how transient heat stress changes the profiles of lipids in Molly and Newton with or without Hessian fly (HF) infestation, in an effort to gain insight on molecular mechanisms contributing to the loss of wheat resistance to HF infestation under heat stress. Molly seedlings were subjected to six hours of 40°C heat stress at 0, 6, 12, 24, and 48 h, respectively, after initial larval attack, we observed an average of 78, 73, 83, and 47% of plants became susceptible. Four treatments including control, HF and heat exposure, HF only exposure, and heat only exposure were analyzed in samples harvested from the HF larvae feeding site of resistant "Molly" and susceptible "Newton" wheat seedlings at 0 hpost initial larval attack using ESI-MS/MS. The results indicated that heat stress alone exerts similar effects on "Molly" and "Newton" plants. This short period of infestation affects Molly more significantly than Newton in their respective lipid profiles. The combination of heat and infestation generate unique lipid profiles in Molly. Reduction in total lipid concentrations of Molly and Newton in all treatments was detected. Future research will further investigate the mechanisms by which wheat loses its resistance to Hessian flies under heat stress.

O54

Creating the Sea Gull Century Mobile Application – A Multi-Discipline Effort

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With the current sophistication of new technologies and rapidly changing needs of the marketplace, multi-discipline contributions are essential for useful product development. An opportunity to gain valuable real-world experience presented itself in the form of a mobile application for the Sea Gull Century, a 100-mile bicycle ride organized by Salisbury University. Combining Computer Science, Geographical Information Systems, and Business Marketing disciplines, an application was developed which allows Sea Gull Century patrons to access GPS positioning, vendor information, and course details. Creating this application presented an opportunity for students to enhance collaborative skills. The Department of Geography and Geoscience team members provided GPS and geographical positioning information, map data files, and GPS coordinates for waypoints, facilities, and vendors. The Dept. of Math and Computer Science team members combined the data from the GIS department with Android and IOS mobile platform operating systems to create the mobile application software. During the development process, team members from the Purdue School of Business evaluated the needs of the customer and began the marketing campaign to help ensure the end product is relevant and accessible. The application design will allow last minute updates to necessary data files for dynamic control of information distribution. A multi-platform application exposes student developers to significant challenges. Developing a useful application with consistent functionality across many devices requires a significant amount of effort. Future collaborators will have the opportunity to add functionality and integrate new technologies into the application.

O55

Next Generation of Supper-Berry Comes to its Native Land

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The recent success of acai berry in the market as a super fruit with high antioxidant content and clinically proven ability in treating diseases caused by oxidative stress has caused scientists to look at additional nature miracles. Recently in Dr. Volkis lab in collaboration with Dr. Ristvey from the Wye Research Center we have discovered the potential of the berry that is 15 times higher in antioxidant capacity than acai berry and 40 times higher than tomatoes. *Aronia Melanocarpa* is one of the richest plant source of phenolic substances and it has been proven to be high in antioxidant. It's capability to capture free radicals makes it an ideal plant for preventing and even treating diseases like cancer, heart disease and others. To properly compare this berry to other berries and develop the best practice for its growing and processing, we use different techniques to measure the pH, anthocyanin, flavonoids, total polyphenol content, and the ORAC factor of this supper berry. Recently, we have shown that the growth condition and processing can strongly influence all parameters listed above. In this lecture, measurement techniques, preliminary results, and the importance of our measurement based on the treatment of the crop will be presented. The aim of this research is to determine the best treatment for Aronia that will yield the highest antioxidant capacity and develop some processing techniques beyond ordinary food production.

O56

What does Instagram mean to users? A study of user lifestyles.

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Consumers make decisions about choice of online media for sharing. Some sites that consumers use to share are Tumblr, Pinterest, and Snap Chat. Instagram has become such an important resource for consumers because of the visual connection they can display through the use of photos and video uploading for others to see. Some consumers spend a significant amount of time uploading videos and photos. Who are the heavy users of Instagram? I study usage behavior based on time spent on Instagram. Among our independent variables, I will research the role of impact of mood, product knowledge, and the degree of interest on the usage of Instagram. This research will be based on a combination of qualitative and quantitative methods. I will specifically use a focus group unstructured method, opinion survey and usage behavior interview as key instruments for this study. There will be a discussion of findings and results. This study was conducted as part of the course requirement for Marketing Research and is guided by Dr. Monisha Das.

O57

What are the Estrogenic Effluents Effect on Sex Ratios in the Transsexual White Perch (*Morone Americana)?*

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Effluents that lead into the Chesapeake Bay from the Migathy, Middle, Corsica, and Sassafras rivers may contain environmental estrogens (EEs) (Sonnenschein and Soto, 1998). Estrone, estriol, and estradiol are three major estrogenic hormones that could be affecting sex ratios of White Perch (*Morone Americana)* near/in the Chesapeake Bay and turning some male White Perch into transsexual individuals. This project will discover if there are any differences in sex ratios between two urbanized rivers (Migathy and Middle), two agricultural rivers (Corsica and Sassafras), and two natural rivers (Honga and Rhode). Early detection of estrogenic effluent levels can ultimately be the difference between endangering the species of animals that occupy the Chesapeake Bay, and helping those species thrive.

O58

Exploring Opportunities and Challenges for Wearable Computing in Classroom Settings

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The purpose of this project is to explore the potential of upcoming wearable technology platforms for improving interaction between instructors and students in the classroom setting. This project will explore issues related to wearable computing technologies in classroom settings before these technologies are widely available, providing an opportunity to direct the development of wearable computing technology and applications.

O59

O60

Notes

Notes

ABSTRACTS FOR ORAL PRESENTATIONS

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Department of Education
Department of Human Ecology
Department of Natural Sciences
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Department of Pharmaceutical Sciences
Department of Physician Assistants
Department of Rehabilitation and Exercise Science

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FACULTY PRESENTATIONS

P1

Singular and Combined Effects of Nebivolol and Lifestyle Modification on Large Artery Stiffness in Hypertensive Adults

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We hypothesized that the combination of nebivolol and lifestyle modification would reduce large artery stiffness in middle-aged and older hypertensive adults more than either intervention alone. To address this, 45 men and women (age 40–75 years) with stage I hypertension were randomized to receive either nebivolol (NB; forced titration to 10 mg OD; *n* = 15; age 57.2 ± 11.4 years; body mass index [BMI] 30.8 ± 5.8 kg/m2), lifestyle modification (LM; 5–10% weight loss via calorie restriction and physical activity; *n* = 15; age 52.7 ± 8.5 years; BMI 33.9 ± 7.2 kg/m2) or nebivolol plus lifestyle modification (NBLM; *n* = 15; age 58.9 ± 9.4 years; BMI 32.5 ± 4.9 kg/m2) for 12 weeks. β-stiffness index, a blood-pressure-independent measure of arterial stiffness, and arterial compliance were measured via high-resolution ultrasound and tonometry at baseline and after the 12-week intervention. There was no difference between groups in age, body weight or composition, blood pressure, or in β-stiffness index or arterial compliance at baseline (all $p > 0.05$). Following the 12-week intervention, body weight decreased ~5% ($p < 0.05$) in the LM and NBLM groups but did not change from baseline in the NB group ($p > 0.05$). Supine brachial and carotid systolic and diastolic blood pressure declined following treatment in each of the groups ($p < 0.05$). However, the magnitude of reduction was not different ($p < 0.05$) between groups. β-stiffness index declined (–2.03 ± 0.60, –1.87 ± 0.83 and –2.51 ± 0.90 U) and arterial compliance increased similarly (both $p > 0.05$) in the NB, LM and NBLM groups, respectively. In summary, our findings indicate that the combination of nebivolol and lifestyle modification reduced large artery stiffness to a similar degree as either intervention alone in middle-aged and older hypertensive adults.

P2

Container Breeding Mosquito Larvae Survival in Selected Plant Infusions

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The surveillance of mosquito-borne diseases vectors of the genera *Anopheles, Aedes*, and *Culex* indicates the extent of the mosquito's activity in an area. Fermented or stagnant water is attractive to gravid females for laying eggs in which larvae can feed and grow. The female selects the oviposition sites based on visual and olfaction cues from the environment. This study evaluates female mosquitoes oviposition preference and larvae survival in selected plant infusion from the Eastern Shore of Maryland. This investigation is part of a larger study to find alternative pest control products from plants. Preliminary data indicate that evening primrose (*Oenothera macrocarpa*), pokeweed (*Phytolacca americana*) with berries and old leaves, jimsonweed (*Datura stramonium*) with leaves fruits and stems, trumpet *creeper(Campsis radicans*) with flowers and leaves, fresh red oak leaves (*Quercus rubra*), fresh crab grass (*Digitaria sanguinalis*), red maple leaves (*Acer rubrum*) had fewer larvae and eggs then other treatments of dry wheat hay (*Triticum sativum*), dried Bermuda hay (*Cynodon dactylon*), and the tap water control. Oviposition infusions made with water and the plant only without the fermentation compounds had fewer eggs and surviving larvae than their counterpart. The preferred oviposition infusion were dried wheat hay, dried oak leaves and dried Bermuda hay, respectively. Females preferred oviposition traps with dried wheat hay, dried oak leaves, dried Bermuda hay, and fresh crab grass infusions for laying eggs. Least preferred oviposition infusions were Trumpet Creeper, Evening Primrose, new pokeweed, old pokeweed fresh oak leaves and tap water control. Larvae did not survive to the pupal stage in the same plant infusions least preferred by female. The primary purpose of this study is to determine which plant infusion could be used as a larvicidal agent or oviposition deterrent for female container breeding mosquitoes by using a simple ovitrap method. All plants selected have known

toxic properties and only pokeweed has been used in other studies with mosquitoes. Six new plants have been included in future studies.

P3

New Bacterial Natural Products Isolated from Unique Ecological Niches of Rural Kentucky

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Secondary metabolites produced by actinobacteria contribute to a significant portion of modern therapeutic agents, including anti-infective, anti-cancer, and immunomodulatory agents. In addition to contributing directly to the drug repository, the metabolic products of these organisms are also proven to be a valuable source of drug leads for further development through synthetic/biosynthetic/semi-synthetic means. In this context, soil actinobacteria inhabiting in unique ecological niches such as abandoned underground mines, caves, coal fire sites, acid-drainage sites, and zinc and lead mines of rural Kentucky were isolated and analyzed. 490 bacterial pure cultures were isolated from the collected soil samples. Random sampling followed by DNA sequencing for 16SrRNA gene of 20 bacterial cultures indicated the presence of 85% *Streptomyces*, 6% *Amycolaptosis*, 2% *Micromonospora*, 2% *Nonomurarea*, and 6% of mixed bacterial species. Analysis of LC-MS profiling of metabolites of individual strain in the database (AntiBase 2012) combined with high throughput biological activity analysis indicated the production of dozens of unique (new/novel) metabolites. Scale up fermentation (8 L) of selected species followed by chromatographic separation and purification led to the isolation of structurally diverse new sets of metabolites including pyranonapthoquinones (frenolicins), ansamitosins (herbimycins), macrolactones (venturicidins), a sesquiterpene (isopterocarpolone), and the novel structure ruthmycin. The results presented herein indicated that microbes inhabiting in unique ecological niches are equipped with the capability of producing yet unseen natural products which may serve as pharmaceutical leads.

P4

The Maryland Eastern-Shore Collaborative for Interprofessional Education (ESCIPE) Experience

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The Centre for the Advancement of Interprofessional Education, the Institute of Medicine, and the World Health Organization highlight the importance of interprofessional education (IPE) in preparation of health professionals for a practice-ready healthcare workforce. Professional academic accrediting bodies are calling for the inclusion of IPE within respective curricula. This paper describes the formation and impact of an inter-institutional interprofessional team comprised of six healthcare disciplines from two different academic institutions. In September 2012, faculty from Nursing, Pharmacy, Physical Therapy, Physician Assistant, Rehabilitation, and Respiratory Therapy from two institutions on the Maryland's Eastern Shore, a geographically isolated area, met to create an inter-institutional interprofessional team to foster educational redesign in preparation for a collaboration ready healthcare workforce. Members attended the Interprofessional Education Collaborative and met monthly, alternating between the two institutions. The team worked to develop and implement the mission, vision, objectives, and priorities of the initiative. During first year, the team adopted a mission and vision statement, mapped curricula according to the Core Competencies for Interprofessional Collaborative Practice, and identified key priorities for IPE. Additionally, the team conducted a faculty

IPE needs assessment, implemented a faculty speakers' bureau, coordinated IPE students' seminars, and started building an inter-institutional website. Challenges included bringing together faculty from different professions and institutions, clarifying roles and responsibilities, and understanding how the professions integrate. Despite challenges, the team was able to identify common ground, work productively together, and have strong administrative support. The team has served as a catalyst for future faculty and student collaboration in IPE to ensure better health outcomes for populations on the Maryland Eastern Shore.

P5

Tough Choices or Tough Times: Developing Competitive Advantage by Exploiting the Changing Career Dynamics in the IT Industry

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The first report from the Commission on the Skills of the American Workforce, America's Choice: high skills or low wages was released in 1990. This research provides a case study of the University of Maryland Eastern Shore's attempt to exploit the changing career dynamics enterprise computing segment of the IT industry.

GRADUATE PRESENTATIONS

P6

Mathematical Modeling and Analysis of Cancer Immunotherapy

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Cancer Immunotherapy is one of the innovative cancer treatment modalities currently being used for eradication of disseminated cancer cells after surgical debunking of the primary tumor. A system of non-linear deterministic differential equations is used to construct a phenomenological model of cancer pathodynamics during exogenous immunological therapy. The model incorporates all the basic and essential physiological interactions between cancer cells, normal cells and adoptively-transferred exogenous cytolytic immune cells. The mathematical tools used include Dynamical Systems Theory, Non-Linear Analysis, Hartmann-Grobman Theory, and Hopf-Poincare-Andronov bifurcation. In particular, clinically plausible therapeutic criteria are derived under which cancer cells exhibit persistence, recurrence, or annihilation of normal cells. Clinically applicable therapeutic scenarios are described which are of importance to the clinical oncologists and the medical doctors working with cancer patients. Investigative computer simulations are exhibited which elucidate some clinical aspects of cancer immunotherapy.

P7

Campus-related Barriers that College Students with a High Risk of Type 2 Diabetes Face when Making Decisions Affecting their Health

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Previous research at the University of Maryland Eastern Shore revealed that the majority of study participants on campus were knowledgeable about their risk of diabetes but were making unhealthy choices regardless of this knowledge. To expand upon this research, this study examined possible barriers students face in regards to making healthy lifestyle choices on campus in order to prevent diabetes. Researchers prepared and administered a 2-sided survey which was distributed to a variety of students (n=216) during the fall 2014 semester. The first side of the survey determined if the subject had a risk(s) for Type 2 Diabetes (T2DM) and if so, the subject was prompted to continue the survey and complete the backside, which was developed to assess the largest barrier that subjects face to making healthy choices on campus. Results indicated that regardless of the number of risk factors, subjects specified that the main barrier to making healthy choices on campus was lack of food options. Seventy percent of the subjects claimed to get the majority of their

food from the dining hall on campus. Also, over two thirds of the subjects did not feel that campus dining provided them with enough healthy options such as fresh fruits and vegetables, other than the salad bar. Finally, data indicated that 93% of the subjects chose a 5 or higher, on a scale from 1 to 10, where ten was designated the greatest motivation level for making healthy choices given their knowledge of T2DM risk. These results suggest that subjects are interested in making healthy choices but are limited by barriers related to food availability on campus.

P8

Diabetes Resources for School Nurses in Maryland

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The purpose of this study was to evaluate the diabetes resources that are available and desired by public school nurses in the state of Maryland. After IRB approval a 10 question survey was electronically administered and completed by 159 public school nurses within the state of Maryland via survey-monkey.com. Sixty-five percent of school nurses report diabetes resources to be essential to their job. Additionally, 38% strongly desire and 28% often desire additional resources regarding diabetes. Nurses reported the kinds of resources available which include multimedia (55.8%), textbooks (52.4%), face-to-face training for diabetes education (40.8%), online courses about diabetes education (38.1%), and coordination with a Certified Diabetes Educator (CDE) (20.4%). The resources that were the least available: coordination with a CDE, online courses about diabetes education, and face-to-face training for diabetes education, were reported to be the most desired at 61.6%, 55%, 48.3%, respectively. Over half of nurses report that respond to questions regarding food choices and diabetes. School nurses responded they would be welcome additional resources to address parent and student questions regarding diabetes. Diabetes resources are essential to school nurses in the state of Maryland. Coordination with a CDE would be helpful for updating and maintaining the accuracy of carbohydrate counts for school menus, creating handouts and visual aids for parents and students, and providing information about food choices and diabetes. A future application of this study could be to provide desired resources to school nurses, yet additional research would be necessary to evaluate nurses' satisfaction.

P9

Evaluation of High Salinity Relying as a Post-Harvest-Processing Method to Reduce the Abundance of Vibrio Bacteria in Chesapeake Bay Oysters (*Crassostrea virginica*)

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Vibrio vulnificus and *Vibrio parahaemolyticus* are two naturally occurring estuarine bacteria that can accumulate in oysters and cause illnesses in consumers. The objective of this study was to develop a low cost method to reduce the abundance of Vibrio bacteria in oysters. Studies were conducted to determine the effect of high salinity relaying in the Chesapeake Bay to reduce *V. vulnificus* and *V. parahaemolyticus* numbers in oysters. Oysters were collected from approved harvest water; temperature abused for 4 hours, and then transferred to high (28-34 ppt.) and moderate (13-18 ppt.) salinities. After 7, 14, 21 days of relaying, oysters were analyzed for *V. vulnificus* and *V. parahaemolyticus* using Multiplex Real Time PCR, and for the total coliforms and *Escherichia coli* using the petrifilm. The water samples were analyzed for total coliforms, *E .coli*, and total *Vibrio* spp. using the membrane filtration procedure. The counts of *V. vulnificus* and *V. parahaemolyticus* ranged from 3-438,399 MPN/g with 2-5 log reductions, and the total mortalities of oysters were not higher than 4%. The counts of *E. coli* and total coliforms in oyster and water samples ranged from <10 to 18,000 cfu/g and <10 to 340 cfu/100ml, respectively. No association was observed between the reduction of total coliforms, *E. coli,* and *Vibrio* bacteria in oysters. These results suggest that relaying of oysters to high salinity water could be an effective post-

harvest mitigation strategy in reducing *V. vulnificus* and *V. parahaemolyticus* in oysters. Additional validation studies should be conducted to get approval from the International Shellfish Sanitation Conference (ISSC) to use this method by seafood industry and regulatory agency.

P10

***Building Better Bones Now!:* The Effects of an Osteoporosis and Bone Health Educational Program on the Knowledge, Beliefs, Behaviors, and Self-efficacy of Middle School Girls**

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Osteoporosis presents in older age, however prevention needs to occur before reaching peak bone mass. Educating young girls is an important aspect of prevention. The aim of our study was to develop an educational program targeted towards knowledge, behaviors and beliefs of middle school aged girls, on bone health and osteoporosis prevention. Subjects (n=23) attended an osteoporosis and bone health educational program, *Building Better Bones Now!*, created by the investigators. It consisted of two 30-min. sessions with lecture-style teaching, interactive activities, and pre and post-tests. Pre-tests included a Demographic Questionnaire, Bone Health and Osteoporosis Knowledge Questionnaire (KQ), Osteoporosis Health Belief Scale (OHBS), and Osteoporosis Preventing Behaviors Survey (OPBS). Tests following the conclusion of the program (post-test 1) included the KQ, OHBS, OPBS, and Osteoporosis Self-Efficacy Scale (OSES). Tests 4-weeks after the conclusion of the program (post-test 2) included the KQ, OHBS, and OPBS. Significant differences were found in the KQ between pre-test and post-test 1 and 2 (36% and 35% increase, respectively). Significant differences were found on the severity (between pre-test and post-test 2), benefits of exercise (between pre-test and both post-test 1 and 2), barriers to calcium intake (between pre-test and both post-test 1 and 2), and health motivation (between pre-test and both post-test 1 and 2) sections of the OHBS. The OSES classified subjects' self-efficacy as moderately high. Results demonstrated subjects gained knowledge after the educational session from pre-test to post-test 1, and retained knowledge over the 4 week period of no intervention. With regards to beliefs, from pre to post-test, subjects had decreased perceived severity of osteoporosis and barriers to calcium and increased perceived benefits of exercise and health motivation. The study addressed middle school girls, a population where research of this type is minimal. Study results showed significant increase in bone health and osteoporosis knowledge of the subjects following the educational session.

P11

Cognitive and Balance Screening Among College Football Players

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Introduction/Rationale for the Study: With the growing prevalence of sports-related concussion, valid and reliable tools are required to accurately diagnose concussion injuries immediately after injury. Objective: The purpose of this pilot cross-sectional study was to determine the reliability and concurrent validity of the King Devick (KD) sideline assessment tool with another established computerized diagnostic tool utilized in concussion management, the ImPACT battery. Methods: Subjects included 30 Division III college football players (mean age 20.2 $\pm$ 1.4) from a local rural Division III Maryland university. Athletes performed a circuit battery of tests and included a demographic questionnaire, the KD test, ImPACT test, and dynamic posturography with two forceplate systems. Statistical tests included: demographic analyses, Spearman rho correlations to analyze associations between KD performance and neurocognitive measures, and multiple regression. Significance was set at the 0.05 level. Results: Preliminary reliability ICC's were > 0.90. Nine (30%) players reported a history of diagnosed concussion. The mean performance KD time was 39.9 $\pm$ 7.1 seconds. Significant correlations were noted between KD scores and neurocognitive verbal memory (rho = -0.37; $p<.05$), visual motor speed (rho = -0.49; $p=.007$), and reaction time (rho = 0.58; $p=.001$). There was also a significant correlation between postural sway and oculomotor function (rho = -0.44). Reaction time predicted 33 percent of the variance in KD performance ($p<.001$). Conclusions: Findings from this pilot study support

preliminary reliability and concurrent validation of the King Devick Test with neurocognitive performance. The instrument affords a quick and accurate sideline screening mechanism for athletes displaying acute signs of concussion by identifying oculomotor impairment. Future Directions: Follow-up tracking of concussed athletes is warranted for further longitudinal validation during concussion recovery.

P12

Effect of Chlorpyrifos on estrogen receptors function and expression in human breast cancer: A research proposal

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Chlorpyrifos (CPF) is an organophosphorus (OP) insecticide, acaricide, and miticide, currently used to control insect pests on a variety of food and feed crops. Chlorpyrifos is a potent developmental neurotoxin at low levels of exposure, below those that trigger foetal cholinesterase inhibition. It is an endocrine disrupter with anti-androgenic and oestrogenic properties that reduces serum levels of cortisol and T4 thyroid hormone. Studies demonstrated that OPs are able to generate oxidative stress affecting the different antioxidant enzymatic systems. CPF may induce damage by DNA, RNA, lipid and proteins oxidation, which in turn, alters the cell physiology and provokes cell death. A moderate increase of ROS has been found to stimulate cellular proliferation. On the other hand, estrogens have been postulated to induce antioxidant effects in several tissues; however, their actions on estrogen-dependent tissues are still not clear. The overall goal of this study is to investigate whether Clorpyrifos (CPF) interferes with estrogen receptors function by altering the cellular steady state level of ERα and ERβ expression. Our specific aims are to: (i) examine whether CPF could modify cell proliferation cell cycle progression in employing estrogen-dependent (MCF-7) and estrogen-independent (MDAMB-231) breast cancer cell lines, (ii) examine the effects of CPF on the ERα and ERβ expression and (iii) test whether CPF-induces cell proliferation by estrogen receptors phosphorylation in MCF -7 breast cancer cell. The study will utilize a number of molecular techniques. The expected results will provide evidence on the action of CPF as environmental breast cancer risk factor.

P13

Effects of Manzamine Derivatives In Blocking The Replication Of Herpes Simplex Virus Type -1 (HSV-1)

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Manzamine alkaloids are a unique class of compounds that contain a beta carboline (β-carboline) moiety. These compounds have been shown to possess antimicrobial, antiviral, antiparasitic, anti-inflammatory, and pesticidal properties. Some of the proposed mechanisms of action are the inhibition of glycogen synthase kinase 3 beta (GSK-3β) and cyclin dependent kinase 5 (CDK-5) as well as the decrease of tau proteins hyperphosphorylation in human neuroblastoma cell lines. Our lab has shown that Monoamine A, the first representative compound from this class, has potent anti-HSV activity. However the mechanism is still unknown. Furthermore, monoamine A is not readily commercially available, has many reactive functional groups, is highly unstable, and would be a relatively large drug molecule. These and a few other characteristics make this compound a poor drug candidate. Therefore, most research geared towards determining its mode of action relies heavily on the use of analogs or other modified structures. Our strategy is to utilize the β-carboline moiety, specifically β-carboline carboxylic acid form as a starting material to understand its role in inhibiting the replication of HSV and potentially describe its mode of action. Since this compound is commercially available and its modification has been widely reported, we hope that this compound will lead to manzamine analogs that have higher specific and antiviral activity and that it could also be used to identify the mechanism of action. We tested a commercially available β-carboline carboxylic acid compared to gifted Manzamine A samples for antiviral activity. Preliminary results show that both compounds exhibit antiviral activity at concentrations similar to antiviral drugs currently on the market.

P14

Evaluation of the Most Commonly Prescribed Extemporaneously Compounded Products A Case Study from the Delmarva Peninsula

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Extemporaneous drug formulation is essential to provide optimal pharmaceutical care to infants, children and other special populations when medications are not available in a suitable dosage form. This study examined the prescription patterns of extemporaneously compounded preparations from representative sites on the Delmarva peninsula. Professional pharmacy students (113 students) assigned to community pharmacy and hospital clinical sites were asked to collect the following data at their respective rotation sites: 1) The number of extemporaneously compounded prescriptions during a period of one month. 2) List the most commonly prescribed extemporaneously compounded products including: generic name, dosage form, stability dating, dose regimen, route of administration, age group and indication. A data base was constructed and each compounded prescription was allocated to a therapeutic category based on the American Hospital Formulary Service. Data from a total of 600 prescriptions were available from the 113 entries. The top most frequently prescribed therapeutic categories were gastrointestinal agents, skin and mucous membrane agents and anti-infective agents, accounting for 41, 26 and 14% of all prescriptions, respectively. Community pharmacies accounted for 45, 85 and 29% of prescriptions in the GI, skin care and anti-infective agents individual categories, respectively. While hospital pharmacies accounted for 55, 24 and 71%, of prescriptions in the GI, skin care and anti-infective agents individual categories, respectively. Lidocaine, the active ingredient in GI cocktail used to treat dyspepsia was the most commonly filled prescription. In the new era of personalized medicine extemporaneous compounding will continues to play an important role in patient therapy.

P15

Identifying Risk Factors and Major Outcomes in *Clostridium difficile* Infections Associated with the Virulent BI/NAP1/027 Strain

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C. difficile is the most common cause of infectious diarrhea in the acute care setting. An increase in severity and associated mortality of *C. difficile* infections has been associated with the emergence of the virulent BI/NAP1/027 strain which produces higher concentrations of endotoxins that cause inflammation and mucosal damage. The objective of this study is to identify patient outcomes and risk factors associated with this strain. Methods: a sample of 180 patients who were hospitalized with a diagnosis of *C. difficile* was examined by a retrospective cohort analysis. Patients were assigned into one of two cohorts: NAP1 strain *C. difficile* and Non-NAP1 *C. difficile*. Risk factors included specific prior antibiotic usage (vancomycin, carbapenems, quinolones, clindamycin and cephalosporins), source of *C. difficile* infection (community-onset, healthcare facility-associated, hospital onset, community-acquired and healthcare facility associated) patient age, and gender. Patient outcomes included recurrence, complication and mortality. Four risk factors associated with the NAP strain were identified: 1) patent age over 50, the use of 2) carbapenems, 3) vancomycin and 4) .healthcare facility related C. difficile. Patient mortality was the only outcome that was significantly higher in the NAP1 group (OR 3.78, p = 0.0042) than in the non-NAP1 *C. difficile* group. The use of floroquinolones and clindamycin had a lower risk of NAP1 *C. difficile*.

P16

Innovation of Matrigel Neuronal Cell Culture to Achieve Distal Axon Infection Resulting In Nonproductive Herpes Simplex Virus Type-1 (HSV-1)

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The HSV-1 is a member of the Herpes virus superfamily that infects humans. The virus is the most common cause of cold sores and is extremely contagious. The virus is spread when the infected host is producing and shedding the virus. The virus can spread through contact with saliva, making it very common and contagious. Through studying the lytic and latent cycles of the virus we can have a better understanding as to its method of transmission and impact future methods of treating infected hosts.

After the HSV-1 lytic cycle, the virus establishes a lifelong latency by infecting the distal axons of sensory neurons and establishing latency in the cell bodies. In this project we are investigating the effects of distal axon infection *in vitro* with SH-SY5Y cell cultures on lytic and latent cycles of the virus. SH-SY5Y is a cultured human neuroblastoma cell line that can be induced to differentiate into neuron like cells with long functional axonal outgrowths. We have established innovated novel, *in vitro* methods for achieving a distal axonal infection. Our method consists of combining SH-SY5Y cells with a gelatinized commercially available protein matrix, BD matrigel, to create a uniform suspension of cells in the matrigel. As the gel warms it becomes more viscous and creates a barrier dense enough that the virus cannot penetrate. By using previously described differentiation techniques we have promoted the expansion of the distal axons of the SH-SY5Y cells to emerge from the matrigel mimicking an *in vivo* like environment. This method will allow us to conduct future research on the lytic and latent cycles of HSV and provide a new, convenient, cost effective method for performing distal axonal infections to the virology community.

P17

Medical Marijuana Patient Counseling Points for Healthcare Professionals Based on Trends in the Medical Uses, Efficacy, and Adverse Effects of Cannabis Based Pharmaceutical Drugs

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The purpose of this study is to review and summarize the medical uses, efficacy, and adverse effects of the three approved cannabis based medications and marijuana in order to develop common patient counseling and educational points for the medical use of marijuana. A literature review was conducted utilizing key search terms related to the study's purpose. A total of 68 abstracts were included for review. Based on these abstracts, dronabinol's (Marinol) most common medical uses include weight gain, chemotherapy-induced nausea and vomiting (CINV), and neuropathic pain. Nabiximols's (Sativex) most common medical uses include spasticity in multiple sclerosis (MS) and neuropathic pain. Nabilone's (Cesamet) most common medical uses include CINV and neuropathic pain. Smoked marijuana's most common medical uses include neuropathic pain and glaucoma. Orally ingested marijuana's most common medical uses include improving sleep, neuropathic pain, and bladder control in MS. Marijuana shares similar medical uses with the approved cannabis based medications but the efficacy of marijuana for these medical uses has not been fully determined due to limited and conflicting literature. Finally, with the known adverse effects and properties of marijuana it can be concluded that medical marijuana should be used with caution in patients with psychiatric, cardiovascular, respiratory, and immunologic disease states.

P18

Muscle Activation during Common Knee Strengthening Exercises: An Electromyographic Study

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The vastus medialis obliquus (VMO) muscle is recognized for providing knee control and has been shown to be most active during the final phase of knee extension range of motion. Weakness of this muscle can lead to knee dysfunction, pain, and functional mobility issues. In this study, a controlled laboratory approach incorporating surface electromyography (EMG) was used to evaluate muscle activity of the VMO during three variations of a commonly utilized knee rehabilitation exercise, the short-arc quadriceps (SAQ). The variations included the addition of tibial internal rotation (IR), hip adduction (HA), and hip extension (HE). Twenty healthy, active, pain-free adults (mean age ± SD, 24.2 ± 1.6, and range 22 to 27 years) partici-

pated in the study. EMG data were collected from the dominant lower extremity of all subjects (10 males, 10 females) and normalized to a percent of the maximum voluntary isometric contraction. Computerized voice commands were used to record and synchronize the data collection process. The SAQ exercise was compared to the other exercise variations using a Wilcoxon signed-rank test. A one-way ANOVA was used to examine differences in muscle activity between genders. The mean VMO muscle activity values were 13.1% (SAQ), 12.5% (IR), 13.7% (HA) and 18.4% (HE). The only exercise that produced a significant increase in VMO activation, compared to the SAQ, was HE (P=.000). A significant difference in VMO activation between groups was identified during the IR exercise (P=.023) with females (mean activation ± SD, 15.2 ± 5.5) displaying greater muscle activation levels than males (mean activation ± SD, 9.9 ± 3.8). The SAQ exercise is recognized as a useful intervention to strengthen the VMO, promoting knee stability and reducing pain. In this study, surface EMG was used to evaluate VMO activity during 3 different variations of the SAQ exercise. The HE exercise showed a significant increase in VMO activation. A comparison between genders showed that females produced significantly greater VMO activation during the IR exercise. The results from this study may lead to a better understanding of knee rehabilitation exercises for the VMO.

P19

Parkinson's Disease:
An Exercise Intervention Program

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This study examined the effects of an exercise program on increasing functional mobility in patients with Parkinson's Disease (PD). A secondary goal of this study was to monitor adherence to a home exercise program and its effects on selected outcome measurements. Seven participants (4 males, 3 females) met the inclusion criteria of an idiopathic diagnosis of PD as well as completion of pre- and post-testing. The participants had a mean Hoehn and Yahr Stage of 2.28 ± 0.75. The exercise intervention program consisted of 1-hour group sessions, once a week for 6 weeks, with a home exercise program consisting of 5 exercises to be completed daily. Dependent measures included Hoehn and Yahr Staging Scale, Mini Balance Evaluation Systems Test and Parkinson's Disease Questionnaire. No significant differences were found between pre- and post-test scores of the outcomes measures. Although not statistically significant, the post Mini Balance Evaluation Systems Test scores revealed that participants with a HEP compliance and attendance rate of ≥ 50% performed better than those with ≤ 50% compliance/attenance. The participants showed no changes in their fall risk or their perception of quality of life. Compliance and attendance showed a positive relationship with Mini Balance Evaluation Systems Test scores, suggesting that the lack of significant findings may be due to poor adherence rates within this study. Among the study limitations are the small sample size and the inability to observe the quality of practice for the home exercise program.

P20

Physical Performance and Balance Confidence among Nonagenarians

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Introduction/Rationale for the Study: Given the population of older adults in the United States is living longer and staying more active in the community, there is a need to establish age-referenced physical performance values to track gait and balance performance. Moreover, balance confidence constraints and associated fear of falling can significantly impede functional mobility. Objectives: The purpose of this cross-sectional study was to 1) Determine age-referenced gait, balance, and balance confidence values for community-dwelling older adults age 90 years and older and 2) Describe relative fall risk in this population. Methods: Fifty-four participants (age 92.02± 2.10; 31 female-57%) completed the: demographic questionnaire, Timed Up and Go (TUG) Test, Dynamic Gait Index (DGI), and Activities-specific Balance Confidence (ABC) Scale. Statistical analyses included descriptive statistics, confidence intervals, relative fall risk, and Pearson Product correlations for variable associations. Significance was set at the 0.05 level. Results: Findings of the study demonstrated the following mean times: 20.1 ± 8.8

seconds on the TUG Test, 15.5 ±3.2 seconds on the DGI, and a mean ABC scale score of 65.7 ± 19.4 percent. Pearson product-moment correlation demonstrated a significant inverse relationship between the ABC scale and TUG time (r= -.35, p=.01). All physical performance mean times fell within fall risk ranges. Conclusions: Data provide reference norms for the oldest old population of elders. Future Directions: Performance data warrant follow-up for fall prevention strategies and interventions to facilitate continued community-dwelling residence.

P21

Real-time Ultrasound Imaging of Abdominal Musculature during an Abdominal Stabilization Exercise Progression in Young, Healthy Individuals: A Pilot Study

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The transversus abdominis (TA) plays a crucial role in lumbar stability. Previous research has addressed thickness changes using real-time ultrasound (RTUS) of the external oblique (EO), internal oblique (IO), and TA during different positions; however, no studies have measured abdominal muscle thickness as they correlate with a progression of exercises. The primary purpose of this study was to investigate EO, IO, and TA mean thickness and percent thickness change (PTC) from rest for each muscle across test positions. Additionally, to determine which muscle had the greatest PTC from rest, muscles were compared within each test position. Another purpose was to determine if correlations exist between resting thickness and abdominal strength. Nineteen young subjects volunteered. Modified manual muscle test (MMT) was performed to determine abdominal strength. EO, IO, and TA thickness were measured using RTUS during rest and a progression of 8 abdominal stabilization exercises (drawing in, levels 2, 3 a-c, and 4 a-c). A bio-feedback device was used to standardize lumbar position. Repeated-measures ANOVAs (P<.05) with t-tests and Bonferroni corrections revealed the following significant differences in PTC from rest: EO greater in position 4b than drawing-in, levels 2, 3a, 3b, 3c, and 4a; EO greater in level 4c than levels 3a and 3c; IO greater in level 4b than 4a; and, TA greater in level 4b than levels 3c, 4a, and 4c. When comparing PTC within each test position the TA was significantly greater than EO and IO in drawing-in, levels 2, 3a, 3b, 4a, and 4b. Correlations between MMT and resting EO thickness showed a significant (.004) moderate negative correlation (-.62). This study demonstrates that the 7th exercise (4b) produced the greatest PTC in the EO when compared to the previous 6 lower levels. The TA showed significantly greater PTC than EO and IO in 7 out of 8 exercises. These results demonstrate the response expected in the TA during the drawing-in maneuver which was performed during each exercise. This study also suggests that IO and TA thickness changes may not correspond to the level of difficulty in the exercise progression.

P22

Regulation of T-type calcium channel expression during IL-6 induced neuroendocrine differentiation of prostate cancer cells

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Prostate cancer is the most common cancer among men. At early stages, the growth of prostate cancers is androgen dependent and therefore therapies designed to reduce the androgen concentration/receptor activation are effective in promoting tumor regression. At later stages, however, the growth of prostate cancers becomes androgen independent, leading to increased mortality. The switch to an androgen-refractory state is associated with neuroendocrine differentiation of prostate cancer cells. Several factors including interleukin-6 (IL-6) and increased cAMP production promote neuroendocrine differentiation of prostate cancer cells. How these factors promote neuroendocrine differentiation is not completely understood. In this work we investigated whether IL-6 evoked neuroendocrine differentiation of prostate cancer cells results in the stimulation of T-type calcium channel expression in the prostate cancer cell line LNCaP. Treatment of LNCaP cells with IL-6 for four days evokes considerable morphological and molecular changes consistent with neuroendocrine differentiation, including the

presence of rounded cell bodies, the appearance of long dendritic-like processes and the expression of chromogranin-A. IL-6 evoked neuroendocrine differentiation of LNCaP cells results in a 3-fold increase in the protein expression of the T-type calcium channel subunit Cav3.2. Transcripts for the Cav3.2 but not Cav3.1 or Cav3.3 subunits can be detected in IL-6-treated LNCaP cells. Real time PCR analysis indicates no change in Cav3.2 mRNA expression between control (non-stimulated) and IL-6 stimulated LNCaP cells, suggesting that T-type calcium channel expression is regulated by a post-transcriptional mechanism. Electrophysiological recordings reveal that increased Cav3.2 protein expression following IL-6 stimulation of LNCaP cells does not result in increased expression of functional channels in the membrane. Functional expression of Cav3.2 channels is facilitated by stimulation of LNCaP cells with forskolin an agent that increases intracellular cAMP. These results indicate that changes in T-type calcium channel expression and intracellular calcium during neuroendocrine differentiation of LNCaP cells are regulated by the interplay of multiple factors. Thus, it appears that T-type calcium channels could be a target for future therapeutic strategies against prostate cancers refractory to anti-androgen therapies.

P23

The Effect of Dynamic Stretching on the X-Factor and Golf Performance: A Case Series

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The X-factor and club-head speed are recognized components of optimal golf performance. Recent findings suggest that club-head speed has been shown to be positively associated with driving distance and individuals with a larger X-factor are more likely to produce greater club-head speeds. The X-factor is identified as the amount of trunk rotation range of motion between the shoulders and the pelvis at the top of the backswing. In this study, a case series approach incorporating a three dimensional motion analysis assessment was used to evaluate the X-factor and club-head speed before and after a dynamic stretching exercise routine. Three middle-aged amateur male golfers between the ages of 48 and 59 years (mean, 53.3 years) with a right handed swing strategy were recruited. Subjects used their regular driver and after obtaining baseline data, performed a series of 5 dynamic stretching exercises, targeting motions incorporated within the golf swing. The golfers were assessed during one session before and immediately after the exercise routine in order to obtain post X-factor and club-head speed data. A follow up phone questionnaire was completed 6 months after the assessment to better understand the impact and utilization of the warm-up exercise routine. The club-head speed of all the golfers successfully improved after the exercise routine. The X-factor improved in 2 of the 3 golfers. Three months after introducing the warm-up exercises, 2 of the 3 golfers were still performing some part of the routine. All of the golfers reported they would recommend the warm-up routine to other golfers and found the hip exercises to be most helpful. The X-factor is recognized as an important contributor to golf performance. However, most of the research has been performed on younger golfers. Middle-aged golfers may benefit from a warm-up routine that focuses more on hip range of motion. This case series provided preliminary data to support further investigation of a dynamic stretching warm-up routine for golfers designed to optimize performance and prevent injury.

P24

The Relationship between Adherence to Clinical Guidelines and Patient Outcomes in *Clostridium difficile* infections (CDI)

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Clostridium difficile infections (CDI) are the most common cause of healthcare-associated diarrhea and cost the United States healthcare system over $3 billion every year. In recent years, there has been a dramatic increase in the severity, recurrence, and mortality of CDI across the United States (1). The aim of this retrospective cohort case study was to assess the relationship between physicians' adherence to antibiotic prescribing guidelines and CDI patient outcomes. The study looked at data from 180 patients treated for CDI at a major teaching hospital in the Southwestern US Treatment guidelines were followed in 54% of patients and not followed in

46%. The study found statistically significant correlations between guideline-usage and three primary outcomes: complication rate, recurrence rate, and mortality rate. The data suggests a strong positive correlation between the adherence to guidelines and reduced Incidence of CDI driven hyposplenism, ILEU (colitis), and megacolon. Following guidelines also dramatically decreased the rate of recurrence and the rate of morbidity in this patient population. This study suggests that guidelines should receive greater consideration from providers who are contemplating unorthodox alternatives in treatment and dosing regimen of drugs.

P25

Understanding the Mechanism of Latency: The Role of Differentiation on ICP4 & ICP22 Gene Expression

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The Herpes Simplex Virus-1 (HSV-1) life cycle, known as latency, is a state of dormancy in which viral gene and protein expression, and viral replication is low or non-existent. However, the mechanism by which this comes about is still unclear. The goal of this research study is to understand the mechanism of latency of the herpes simplex virus in a host cell. The genes in focus are the ICP4 and ICP22 immediate-early genes which are transcribed within a few hours of viral infection. ICP4 is the major HSV-1 transactivator of all post-immediate-early genes. It promotes transcription of the viral genome, bringing transcription factors to the viral DNA, thus recruiting RNA Polymerase II. It is also responsible for repressing the transcription of host immune response genes. ICP22 has many functions which include acting as a transcription repressor, as well as aiding in the accumulation of late viral proteins. It represses transcription by reducing RNA Polymerase II Serine phosphorylation which negatively affects the elongation process of transcription. Both ICP4 and ICP22 share the same promoter sequence which are however, read in opposite directions for the respective genes. In this study, we are using SEAP (Secreted Embryonic Alkaline Phosphatase) assays to test the effects of differentiation on ICP4 and ICP22 gene expression. SEAP is utilized in the laboratory as a reporter gene to examine the activity of the promoter region of a gene as well as to evaluate gene expression in a cell culture. It has been shown that transcription of viral genes is reduced in differentiated (neuronal) cells. The overall goal is to see if differentiation is enough to cause ICP4 or ICP22 to be suppressed. If that is found to be true, it would shed some light in understanding latency.

P26

Mathematical Modeling and Analysis of Type 2 Diabetes

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The patho-physiology of Type 2 Diabetes is modeled using a system of non-linear deterministic differential equations. The model variables include the quantity of glucose in blood plasma (x1), the quantity of glycogen in the liver/ tissues (x2), the concentration of the hormone glucagon (x3) and the concentration of insulin in the blood plasma (x4). The appropriate interaction constants are used to depict the physiology of Type 2 Diabetes. The non-linear equations are analyzed using the principles of the Hartman -Grobman Theory. In particular, the principles of Linearized Stability are used to compute the criteria under which hypoglycemia and hyperglycemia occur. The effect of gluconeogenesis and glycogenolysis on the plasma glucose concentration and on the morbidity of Type 2 Diabetes is demonstrated by theorems and computer simulations. The goal of this research is to provide quantitative analyses of Type 2 Diabetes such as to enable the design of equipment to monitor the disease.

P27

Mathematical Modeling of HIV-1 AIDS Epidemiology

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The long-term clinico-psychosocial behavior in an AIDS

prevalent population is analyzed using the techniques of mathematical modeling. The groups included in the analysis are: persons in the high risk behavioral group ; persons with full-blown AIDS ; persons in the HIV sero-positive group that have not yet developed AIDS; persons recruited from the high-risk behavior group as a result of aggressive intervention program. Epidemiological interactions between the four groups in the model are described by nonlinear Ordinary Differential Equations. Hartman – Grobmann linearization concepts and Linear Algebra techniques are used to study the stability characteristics of the long-term dynamical outcomes of the model. In particular, the Hopf-Andronov-Poincare bifurcation of the model in the neighborhood of the desirable epidemiological outcome is clearly computed and the critical parameters are presented. The results of this research can be used to predict the epidemiological outcomes, such as AIDS persistence in compact and non-compact populations during programmed psychosocial intervention.

P28

Accumulation of Polychlorinated Biphenyls (PCBs) and Contaminants of Emerging Concern (CECs) in Gray Seals (*Halichoerus grypus)* and the Potential Utility of Non-Invasive Methods as a Means of Determining Exposure

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Gray seals represent significant apex predators' on both sides of the North Atlantic, with three major populations; eastern Canada to northeast U.S., northwestern Europe and the Baltic Sea. Their diet consists of a wide variety of fish and cephalopods in coastal and offshore waters. Marine contaminant studies have established that polychlorinated biphenyls (PCBs) are present in gray seal habitats and in their prey in the waters off the northeast U.S. coast. However, contaminants of emerging concern (CECs) are also being more frequently detected, but with little understanding of effects to the environment. Gray seals are indicator species and can reveal accumulated contaminants in the marine environment. What remains unknown is the degree to which the gray seal is being exposed to PCBs and CECs and the effects of that exposure. Determining exposure rates depend on establishing a method to assess exposure. This project is designed to determine the relative concentrations of PCBs and CECs in the tissues of gray seals (fresh dead stranded and fishery bycaught animals). First, PCB and CEC levels will be compared across tissues. Second, non-invasive samples such as scat, hair and nail clippings will be obtained and compared to the other tissue samples. The goal is to determine if PCB and CEC levels can be found in the non-invasive samples, if these samples can be used to determine exposure and if the non-invasive methods can be used as a tool to evaluate PCB and CEC contaminants in the gray seal population off the northeast U.S. coast.

P29

Antioxidant Potentials in Corn Distiller's Grains from Fuel Ethanol Production

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Corn is a primary feed ingredient for fuel ethanol production in the US and its co-products, distillers dried grain with soluble (DDGS), wet distillers grain (WDG) and syrup-type condensed soluble (CDS), have been intensively used for farm animal production. Corn is one of the most abundant sources of functional phenolic compounds, but their majorities are cell -wall bound, solvent-unextractable. Due to starch conversion to ethanol and CO_2 during processing, most other components in corn are concentrated in DDGS around 3 times. However, little information is available on phenolic profiles and antioxidant capacities in the corn co-products. The objective of this study was to determine the concentrations of solvent-extractable (Free) and cell wall-bound (Bound) phenolics and their antioxidant capacities (DPPH radical scavenging capacity, oxygen radical absorbance capacity and hydroxyl radical averting capacity) in three major corn co-products. Defatted freeze-dried flour samples were extracted with 80% ethanol to obtain Free phenolic fraction. The residue was treated with NaOH and extracted with ethyl acetate for Bound phenolic fraction. Phenolic concentrations and antioxidant capacities were 2-5 times greater in Bound fraction than in Free fraction of corn, DDGS, and WDG, but they were 4-20 times higher in Free fraction of CDS. Phenolic concentrations

and antioxidant capacities in Free fractions were the highest in DDGS, followed by CDS, WDG, and corn. Those in Bound fractions were the highest in DDGS, followed by WDG, corn, and CDS. Phenolic concentrations and antioxidant capacities in Free and Bound fractions of DDGS were 3-5 times higher than in corn. This result indicates that the fuel ethanol production process does not affect or may even increase phenolic concentrations and/or antioxidant capacities in corn, and, therefore, the corn co-products, especially DDGS, have high potential as good sources of functional phenolics to contribute to farm animal health. However, higher Bound phenolics may indicate their low bioavailability in DDGS and WDG. Future study will focus on improving the availability of Bound phenolics in DDGS and WDG.

P30

Developing a Habitat Suitability Model for Black Sea Bass in the Chesapeake Bay

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Juvenile black sea bass are associated with reef and hard-bottom structures in estuaries connected to the mid-Atlantic Bight, including the Chesapeake Bay. Because of inter-annual variability in estuarine mixing, salinity and temperature, not all estuarine reefs are available to black sea bass juveniles. We have developed a habitat suitability model to investigate if the historical decline in black sea bass landings is associated with a decrease in available habitat. The habitat suitability model was written in R by applying a growth rate potential model linked to the interpolated temperature and salinity data from the Chesapeake Regional Ocean Modeling System (ROMS). The estimates of these oceanographic parameters were overlaid with benthic habitat data from the bay to evaluate the best areas for juvenile black sea bass development. This will help us better predict black sea bass habitat in the Chesapeake Bay which can be useful in fisheries and ecosystem management. Moreover, the model will help address missing information about aspects of their life history.

P31

Evaluation of the enzyme aconitase in regulating the metabolic responses of an oyster pathogen, *Perkinsus marinus*

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A key regulatory component in the Krebs cycle pathway is the mitochondrial aconitase enzyme, which has been posited to balance energy needs, along with the generation of precursors for amino acid and fatty aid synthesis. Citrate in particular serves as a regulatory molecule as it is exported from the mitochondria to the cytoplasm for lipid synthesis, and is also an inhibitor of PFK1 in feedback regulation of glycosis. The presence of a cytosolic aconitase (c-Acon), which serves as a competitor for citrate substrate, has also been recognized for years, but its precise function in this process has yet to be delineated. It is believed that cytosolic aconitase is regulated by protein kinase C (PKC), as evidenced by its altered function when PKC-sites in the protein are phosphorylated. We are interested in establishing the role of this orthologue in *Perkinsus marinus*, the causative agent of Dermo disease, which has significantly impacted oyster populations along the eastern seaboard. We will analyze its role in metabolism through demonstrating its function as an aconitase, its sub-cellular localization and ultimately its impact on cellular citrate distribution. An understanding of intermediary metabolism in this parasite is also predicted to yield important insights into how c-aconitase may be involved in stress response systems, based upon evidence that the phosphorylated form of the enzyme impacts generations of reducing agents for radical detoxification. *P. marinus* is a close evolutionary relative of the dinoflagellates, yet its c-Acon shows high homology with that from all other kingdoms of life. Thus our studies have the potential to illuminate the role of this enzyme across the tree of life.

P32

Policing, Race, and High Discretionary Traffic Stops: The Perceived Effect of Social Distance on Officer

Decision Making

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Several factors may influence an officer's decision to stop a vehicle. Vehicle stops can be divided into two categories of police discretion; low-discretion and high-discretion stops (Farrell, McDevitt & Ramirez, 2000). Police officers have very limited discretion with regards to low-discretion stops, however high-discretion stops are based on an officer's professional judgment, experience, and presenting circumstances associated with each individual pull over. Recently, litigation associated with police profiling and high-discretionary stops of African American drivers suggests that the professional discretion of police officers is resulting in "bad stops" or pull overs which do not warrant disparate treatment of minorities, or cost-ineffective decisions of policing agencies (2013 NAACP) (Farrell, McDevitt & Ramirez, 2000). Upon analysis, high-discretionary stops by the police are difficult to study; however the current research posits that such stops may be better understood if police rationale can be interpreted within a model to explain high-discretionary officer decision making. Dr. Daniel E. Georges-Abeyie (2006) suggests that both intentional and unintentional biases and stereotypes (as indicators of social distance) can go undetected during high-discretion stops. To this end, the current research focuses on the the Abeyie model of 27 factors of social distance delineation to determine which elements of social distance are important within "the traffic-stop" from an officer's perspective.

P33

HPLC Determination of the Phytoplankton Functional Community Structure in the Maryland Coastal Bays

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The composition, distribution and variability of several phytoplankton functional groups were studied in the Coastal Bays of Maryland from Feb 2012-December 2013, using a suite of diagnostic pigment indices. Size structure and community composition was derived from high pressure liquid chromatography (HPLC) analysis of seven biomarker pigments: *Fucoxanthin, Peridinin, Alloxanthin, Zeaxanthin, 19'-Hexanoyloxyfucoxanthin, 19'-Butanoyloxyfucoxanthin* and *Chlorophyll.* Three size classes were delineated; micro-(>20µm), nano-(2-20µm) and picophytoplankton (<2µm). For both years, microphytoplankton dominated the phytoplankton community all year round, but a sharp decline was observed in July and October of 2012, at the same time when the picophytoplankton fraction increased. The contribution of nanophytoplankton to total biomass was generally low, but its fraction was significantly higher ($p<0.05$) in 2012 than in 2013. Temporally, an inverse relationship was observed between micro- and picophytoplankton. The diatom index was highest (0.55-0.80) in winter, but decreased from spring through fall, while the flagellate index was highest in fall. At all sites, PSC was found higher than PPC (photosynthetic pigment index vs photoprotective pigment index indicating high productivity of the Bays.

P34

Impact of *Lactobacillus reuteri* strains with antioxidant supplementation on cancer cell proliration and oxidative stress *in vitro*

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Breast cancer has the second highest cancer-related mortality in woman in the USA. Breast cancer originates from breast tissue found in the inner lining of milk ducts and lobes. Currently, complementary and alternative medicines such as probiotics have been explored as possible treatment options for breast cancer. Probiotics are defined "live active microorganisms that when administered orally have a beneficial effect on the host." Antioxidants are molecules that have the capability of reducing or inhibiting oxidative stress. Although probiotics have a beneficial effect alone when coupled with antioxidant supplementation, overall human health is further enhanced. This study is designed to determine, in an in-vitro model, whether heat-killed fractions from *Lactobacillus reuteri*

with antioxidant supplementation (HKLrF+A), have a beneficial effect on the preventing the growth of human breast cancer cells through the inhibition of cytotoxicity induced by oxidative stress and antioxidant activity. This study will consist of *Lactobacillus reuteri* strains: *Lactobacillus reuteri* DSM 20016 and *Lactobacillus reuteri* SD2112. Each strain will be supplemented with three antioxidants: resveratrol, Vitamin C, and Vitamin E. In addition, two breast cancer cell lines 1) MDA-MB-468 and 2) MCF-7 will be used in this study. The specific aims of this study will be accomplished by measuring the amount of oxidative stress, antioxidative activity, rates of cell proliferation, the determination of cellular death pathways, and the production of interlukin-8. It is hypothesized that HKLrF+A will reduce the amount of oxidative stress and increased amounts of antioxidative activity. It is also expected that there will be a statistically significant difference in the decrease of cell proliferation in the cancer cells treated with HKLrF+A. It is believed that some of the breast cancer cells will die thru the cellular death process of necrosis after exposure to HKLrF+A, but the majority of the breast cancer cells will die thru the cellular process of apoptosis. There will also be a statistically significant increase in the amount of interlukin-8 production when cells are exposed to HKLrF+A.

P35

Population Biology of Mysids in the Maryland Coastal Bays

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Mysids are omnivores that feed on phytoplankton, zooplankton, and detritus. At high densities, they can negatively affect the abundance of zooplankton community by preying on copepods, rotifers and cladocerans. However, although mysids form major components of the diet of many commercially important fish species in estuaries and lagoons of the mid-Atlantic region, information is scarce on their abundance, life history, and ecology. Macroinvertebrate samples were collected from nine sites in the Maryland Coastal Bays from May to November 2010 using an epibenthic sled towed behind a boat at 2 knots for 5 minutes. Samples were fixed in 10% buffered formalin in the field and taken to the lab for analysis. A total of 5020 specimens were identified of which 1668 (33%) were mysids comprising of 82% *Neomysis americana* and 18% *Americamysis bahia*. *N. Americana* abundance was highest in May, but by November, the abundance had decreased dramatically by >90%, perhaps due to fish predation. The number of embryos in the brood pouch of *N. americana* ($r=0.77$, $p<0.001$), and *A. bahia* ($r=0.25$, $p=0.001$) increased significantly with body size.

P36

Spatial distribution and seasonal abundance of Summer Flounder (*Paralichthys dentatus*) in the Maryland Coastal Bays (MCBs)

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The goal of this work was to determine the relationship between environmental variables and distribution and abundance of young-of-the-year (YoY) Summer Flounder (*Paralichthys dentatus*), a commercial, recreational and ecological important species using two decades of data collected by the Maryland Department of Natural Resources. Samples were collected monthly, with otter trawl from April to October, at 20 sites. Arcview software was used to create maps showing the spatial distribution of Summer Flounder. Significant differences in abundance were observed between bays and sites with the analysis of the mean catch per unit effort (CPUE) of Summer Flounder. YoY Summer Flounder CPUE (Mean±SE) in MCBs increased from April (0.49±0.23), peaked in June (7.39±1.16), and by October CPUE had declined to (0.82±0.12) due to emigration from the MCBs into coastal waters. The sites with the highest mean CPUE were located in New Port Bay (77.17±9.97), followed by sites in the north Bays, Isle of Wight (28.17±5.87, 34.82±7.26) and Assawoman (19.91±4.15) close to the mouth of St. Martins River and other creeks. Several environmental variables as salinity, water temperature and dissolved oxygen were measured and analyzed its relationship with the abundance

and distribution of YoY summer flounder. The most related environmental factor with the fish abundance was salinity explaining up to 73% of the variability in abundance. The influence of the water temperature and dissolve oxygen explained only up to 20% and 13% of the variability of fish abundance, suggesting that YoY summer flounder never face critical thermal or hypoxia conditions in Maryland Coastal Bays.

P37

Synthesis, Structure, Characterization and Catalytic Activity of Manganese Complexes of Tridentate Ligands
For epoxidation of Olefins with Hydrogen Peroxide.

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The crucial roles of manganese complexes in biological systems are widely known and intensively studied. The active sites of several enzymes are constituted of manganese complexes including the water oxidizing complex in the photosynthetic enzyme assembly in green plants and algae and the enzyme catalase which catalyzes the dismutation of hydrogen peroxide, a toxic byproduct of oxygen metabolism in cells. These important discoveries have inspired far reaching investigations in chemical laboratories that include the synthesis of manganese complexes to mimic the structure and catalysis of the manganese enzymes beside other useful catalytic properties of the synthetic complexes. We have synthesized a series of Schiff bases and their Mn (II) and Mn (III) complexes. The crystal structures of the manganese complexes were determined by X-ray crystallography. We have studied the catalysis of epoxidation of cyclohexene by Mn (III) complexes of the Schiff bases using H_2O_2 as oxidant to produce cyclohexene epoxide. The yields of cyclohexene epoxide as a function of the electronic properties of the substituents on the phenol ring of the Schiff bases were compared. The yield of cyclohexene epoxide is shown to increase with increasing electron donating ability of the substituent group. The complex with electron withdrawing substituent ($-NO_2$) showed the lowest yield, while the complex with the strongest electron donating methoxy substituent group showed the highest yield of the epoxide. We report the structures, the cyclic voltammograms and the results of the yields from catalyzed epoxidation experiment with correlation of epoxidation yield with the cyclic voltammetric potentials and the electron donating/withdrawing properties of the substituents on the Schiff base ligands.

P38

The Influence of Nitrogen and Potassium Treatment on the Antioxidant Content and Capacity of *Aronia Melanocarpa* Grown in Maryland

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Black chokeberry or *Aronia Melanocarpa* is a small fruit-bearing shrub in the rose family. Although it is native to Maryland, its range is now from Newfoundland, west to Ontario, south into Alabama, east to Georgia, and it is hardy to Zone 3. Aronia is a landscape quality plant, susceptible to few pests and diseases that persist in a variety of soils and temperate climatic conditions. The Aronia fruit has nutraceutical qualities, heightening its marketability and sales potential as a value-added product. There is currently great interest in fruits and vegetables that contain high concentrations of flavonoids, anthocyanins and other polyphenols considered potent antioxidants. Our preliminary research has shown that aronia has an antioxidant content sixteen times greater than that of the blueberry and about five times more than that of the cranberry, therefore making Aronia an ideal candidate for organic fruit and nutritional supplement production. Some recent studies have implicated the relationship between in-field plant nutrient fertility and antioxidant production in Aronia. Here we present the data for the antioxidant content and capacity of *Aronia Melanocarpa* as a function of the age, amount of time spent in the sun or shade, and nitrogen treatment levels of crops compared to those treated with potassium. Another variable being tested is the use of fertilizer, comparing fruits grown organically as opposed to treatment with traditional chemical fertilizers. We have shown that both the level of nitrogen treatment or potassium treatment in the soil influences the antioxidant content and that the treatment of the crops with potassium influenced the growth tremendously

within its first year. Detailed measurements and an analysis of anthocyanins and polyphenols as well as total flavonoids, total cyanides, and ORAC factor will be presented and discussed. The aim of the project is to determine the optimal treatment conditions corresponding to the highest antioxidant content in Aronia, thus finding a balance between the various treatments.

P39

Water-soluble HPMA copolymer based conjugates targeted to uMUC1 overexpressing pancreatic cancer cells

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Current therapies of pancreatic cancer are limited by poor response, lack of selectivity and high toxicity of chemotherapeutics. Targeted drug delivery can provide an increased response while limiting side effects. The goal of the present study was to evaluate the targetability and efficacy of N-(2-hydroxypropyl) methacrylamide (HPMA) copolymer-(EPPT1)-Gemcitabine conjugates as novel macromolecular drug delivery systems against pancreatic cancers. The synthetic peptide ligand EPPT1 (YCAREPPTRTFAYWG) has appreciable affinity (K_d = 20 μM) for the underglycosylated glycoprotein receptor uMUC1 which is selectively overexpressed on the surface of pancreatic cancer cells making it a favorable candidate for targeted delivery of anticancer drugs like Gemcitabine (Gem). Polymer conjugates with drug and peptide ligand were synthesized by radical precipitation copolymerization using corresponding comonomers. Gem was attached to the polymer via an intracellularly degradable tetrapeptide (Gly-Phe-Leu-Gly) spacer. Size exclusion chromatography was used to purify the polymers and to determine their hydrodynamic molecular weight and polydispersity. Drug and peptide content were determined by amino acid analysis and UV spectrophotometry. The binding efficiency (flow cytometry) and anticancer efficacy of the conjugates were evaluated in uMUC1 positive CaPan-2 and Panc1 pancreatic cancer cells. HPMA-EPPT1 peptide conjugates (Mw=41-44 kDa; polydispersity=1.7-2.1) showed active targeting to both pancreatic cancer cells in a concentration and peptide content dependent manner. HPMA-Gem drug conjugates inhibited cancer cell growth with a potency that was comparable to free Gem (IC_{50}=0.004-0.01 μM). These results suggest that the polymer conjugated Gem retained its bioactivity in vitro which could be further enhanced in conjunction with the EPPT1 targeting peptide. Together these studies support the idea that HPMA copolymers with optimized peptide content could potentially be a novel carrier that can deliver Gemcitabine and improve its therapeutic effect to combat pancreatic cancer.

P40

A Resolution On Retention Problems At HBCUs: Systematic, Student-Oriented Decision Process

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Low student retention rate at the average American institution of higher learning is endemic, and it has an adverse effect on graduation rate too. Combined, both low retention and low graduation rates continue to pose a challenge to funding resources and threaten the growth and survival of some Historically Black Colleges and Universities (HBCUs). Though much research has been done in an effort to resolve the problems of low retention and graduation rates, there is a gap in the proposed strategies to improve students persistence to graduation. There is a need to apply a more objective evaluation model to analyze and postulate a more effective resolution to the problem. Consequently, this study proposes to adopt a multiple criteria decision making (MCDM) methodology to analyze the factors affecting low retention and graduation rates. MCDM dates back to the late 1970s, and it has proved effective in the fields of industrial engineering, computer sciences, and operational research. Students' needs and preferences will be the focus of the study. The proposed MCDM approach

will be used to evaluate the feasibility of students' needs and preferences in the context of technology, implementation, and operation.

P41

Adult Attachment and Life History Strategies: The Influence of Mortality Salience and Socioeconomic Status on Reproductive Desires

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Using a sample of one hundred and seventy-six undergraduate students, 145 females (74 had children, 71 did not have children), 31 males (8 had children, 23 did not have children), this study sought to examine the relationship between mortality cues, adult relationship attachment and reproductive desire. Questionnaires assessing reproductive timing desires, socioeconomic status (both current and childhood SES), and adult relationship attachment (the Relationship Scales Questionnaire (RSQ)) were utilized. The hypotheses were not supported. However, supplemental analysis revealed notable differences between participants' reproductive attitudes towards having children in the next few years. Overall, when primed with mortality cues participants expressed a stronger desire to reproduce; and among individuals without children, participants in the mortality condition expressed a desire to have children at younger ages.

P42

Digital Media Use While Studying: The Effects on Exam Performance

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In the past 50 years there has been a significant cultural shift in the amount of digital media consumed by the general public. In the last decade, this change has become considerably apparent among younger adults due to their increased reliance on social media, such as Facebook, Twitter, and text messaging for social interactions. Many younger individuals experience a nonstop deluge of digital media interactivity that occurs concurrently with their daily routines. Consequently, many activities that require focus and concentration, such as driving or studying, have become an exercise in multitasking. Although many people feel that multitasking makes them more productive, research shows, that heavy multitaskers often have more difficulty focusing and inhibiting irrelevant information. This study explored digital media use and study habits of 115 University of Maryland students. Data were collected using a survey distributed after participants received their graded exams. Participants reported using an average of 5 digital media devices while studying for the exam. Results indicated a significant negative correlation between the number of digital media devices used while studying and subsequent performance on the exam. That is the more digital media devices a participant used while studying, the lower their grade. Furthermore, a significant difference in exam performance was found between individuals considered light multitaskers, 0 to 4 digital media devices, and heavy multitaskers, 7 or more digital media devices. These results suggest that heavy multitasking with digital media devices while studying can have a significant negative impact on exam performance.

P43

Women Leaders in Iraqi Civil Society and U.S. Women in Arms

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This comparative study examines similarities between women in seemingly contradictory circumstances—women in Iraq and women in the United States (US) Army. Both groups of women belong to masculine hegemonic organizations. To conduct this research, I will collect life stories of both groups of women, focusing on the tacit or unstated rules in the workplace, family, or legal structures that inhibit gender equality in the local context. As part of the interview process, I will use unseating methods (a historical fact followed by a targeted question) in the interviews to approach tabooed subtopics, resulting in unstated or rehearsed narration of politicized ideologies. My study will examine the ways women struggle with gender inequality and approach organizational change in male dominated organizations. I surmise that these women

struggle for equality, but purposefully do not disrupt the larger social order by maintaining "approved" gender identities (which are rooted in time, space, geography, and ideology). I argue that these gender compromises perpetuate hegemonic masculine constructs that do not provide gender equality. For example, Iraqi men who conduct honor killings are likely to receive weak judicial sentencing. The US Army offers a similar example in the prosecution of rape, which is often denied or trivialized by organizational leaders. Both the Iraqi judicial system and the US Army have a legal lexicon that facilitates victim blaming; moreover, both systems allow for investigator misconduct, often hindering the prosecution of rape or honor killings. Understanding these similarities, this comparison offers excellent lessons for western hegemonic organizations like the US Army, because they too struggle with gender stigmatization in terms of rape cases and with gender inequality within the organization as a whole. Both the US Army and Iraqi society have codes of silence that perpetuate inequality and invisibility; knowing this, subtopics in my dissertation will include cultural codes of silence, barriers to entry, representation and identity politics, legal stigmatization, and gendered organizational structures with male or masculine subjectivity preferences such as strict grooming standards, emotionless engagement, gender neutral or gender eliminating clothing. Last, I argue that women are essential participants in political discourse, whether their contributions are active, passive, or even unintended, as demonstrated in Althusser's (1970) article "Ideology and Ideological State Apparatuses. I surmise, however, that the manner of women's participation, often facilitated by the socialization process dominated by male hegemonic structures, creates both invisibility and complacency among women due to their acclimatization and acceptance of behavioral norms in their societies—all resulting in behavior pacification. I posit that an effective way to understand women's marginalization is to delve into life, as women actually live through the collection of life stories.

UNDERGRADUATE PRESENTATIONS

P44

An exploration of beverage selection by students attending a Historically Black College or University (HBCU)

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Previous research has indicated that college students attending predominantly white institutions (PWI) tend to select more unhealthy beverages than healthy beverages when choosing a drink. The purpose of this study was to investigate the types of beverages consumed by students attending the University of Maryland Eastern Shore (UMES), a Historically Black College or University (HBCU). A validated beverage questionnaire was distributed over an 8 week period to students studying in a Computer Lab. Out of a total of 35 surveys collected only 27 surveys were valid for analysis. Survey results for the top 5 beverages consumed by students at an HBCU were consistent with other beverage intake studies. Unlike the results from pervious beverage studies, students at UMES reported water as their top choice, which is inconsistent with results from PWI. However, the average caloric intake from beverages at UMES was 755 calories per day, over one-fourth of a typical college student's daily caloric needs. Additionally, 25.9 percent of the participants consumed more than 1,000 calories from beverages. These finding suggest that while water is the beverages of choice for the majority of students surveyed, they are still consuming many high calorie beverages of various nutritional content. Further research is planned to explore factors that influence college student's beverage selection

P45

Regulation of T-type Calcium Channel Expression by DNA-Altering Compounds in Cancer Cells

Ezechielle Kiessu[1*], Erika Weaver[1], Jennifer Hearne[1], and Miguel Martin-Caraballo[2]
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[2]Department of Pharmaceutical Sciences, University of

Maryland Eastern Shore, Princess Anne, MD 21853

Gene-altering compounds are considered potential therapeutic tools in the treatment of various cancer tumors. Histone deacetylase inhibitors such as sodium butyrate (NaBu) and the DNA methyltransferase inhibitor 5-azacytidine (5-azaC) regulate cell survival and differentiation of cancer cells by yet to be fully understood mechanisms. Changes in intracellular calcium could potentially regulate regulate cell survival and differentiation by gene-altering compounds. It is becoming evident that T-type calcium channels constitute an important route for calcium influx in tumor cells that can trigger changes in cell proliferation and differentiation. This work was designed to test whether NaBu and 5-azaC promotes the expression of T-type Ca^{2+} channels in prostate cancer cells. Our study demonstrates that NaBu increases the expression of the Cav3.2 T-type Ca^{2+} channel subunit by a transcriptional mechanism. The effect of NaBu on Cav3.2 protein expression was concentration-dependent. NaBu stimulates the expression of the Cav3.2 T-type Ca^{2+} channels both in an androgen-dependent (LNCaP) and an androgen-independent (PC3) cell line. Inhibition of T-type Ca^{2+} channels had no effect on the number of apoptotic cell number. Further experiments will seek to determine the effect of 5-azaC on T-type Ca^{2+} channel expression. These results demonstrate that gene-altering compounds can regulate the expression of T-type Ca^{2+} channels.

P46

Application of Shock Waves to Passing Lane Efficiency on Highways

Sarah Confrancisco[1]*, Katherine Murphy[1]* and Charles Rusk[1]*
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To determine the efficiency of the passing lane on a highway, we synthesized fluid dynamics and a physical application of shock waves. Using a queuing model and the LWR model, we put together our own model that compared the rate of change of a vehicle A and a vehicle B in different traffic situations (i.e. light traffic and heavy traffic.) By applying each vehicle's rate-of-change velocity to a shock wave graph, we could analyze the span of the shock wave created. This created different conditions in which we could judge said efficiency. We looked for a way to maximize traffic flow without compromising safety. The assumptions made in this analysis included an infinite roadway that is straight, with no specific entrances or exits although flux may occur to demonstrate changes in traffic patterns. We applied our analysis of light and heavy traffic to three different systems where the level of impact human judgment had varies; a utopian system, a pragmatic system, and an intelligent system were considered. From this we were able to conclude the passing lane is inefficient for a scenario closest to reality and in order to maximize traffic flow while maintaining a reasonable level of safety, the rule should be scrapped.

P47

Machine Vision-Based Automatic Two-Dimensional Shapes Recognition Software System (SARS)

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In the field of artificial intelligence, we are especially, interested in mimicking our human intelligence into machines such as computers, robots, industrial machine and smart devices etc. Human vision system is considered to be one of the most sophisticated biological systems in the human body. The problem of enabling machines with vision capabilities similar to those of human has been the subject of research and gained high interest in many domains and applications for several decades. Applications of machine vision include autonomous robotic systems, visual surveillance and security systems, robotics surgery, UAVs and smart homes, etc. Our goal in this research work is to design and develop a machine vision software system that would be capable of acquiring digital images of different registered shapes from a controlled environment and be able to recognize them with an accepted level of satisfactory. The shapes subject to the study are two dimensional such as: square, rectangle, triangle, circle, pentagon, hexagon, octagon, start, etc. The software system (SARS) is developed under the Intelligent Systems Integrated Development Environment (iSIDE) which is based on MatLab

programming language. The heart of SARS is an image processing algorithm we developed and tested for the initial set of our sample images and was found to be promising.

P48

Parental Involvement and Mathematics Learning

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This paper is concerned with improving student academic progress in mathematics and providing parents with resources to better understand today's mathematics to help the students better their mathematical abilities. Parental involvement is considered an important influence on academic progress which leads to more time spent on homework and understanding with a positive effect on grades. Parents help educators improve student's mathematics skills and achievements. The goal is to help parents better understand the math curriculum today by applying the National Council of Teachers of Mathematics (NCTM) standards and Maryland's Common Core Standards. The study demonstrates how today's instructional approaches are different from the earlier years. Objectives and assessment outcomes keep changing throughout the years which impacts teaching-learning process. Like teachers, parents will be able to focus more on mathematical instructional approaches to build confidence and apply mathematical thinking to solve real life problems.

P49

Self-Scheduling of Parallel Loops in Heterogeneous Computer Systems

Leondra Morse[1]*
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Scientific applications are often computation intensive with large control loops inside them requiring powerful computing systems. Distributed computing systems are a less expensive alternative compared to parallel computers for executing these scientific applications. However, the computers that comprise a distributed system may be heterogeneous with varying processing speeds and workloads. Hence, the scheduling software that allocates the control loops to the available processors of the distributed computing system for concurrent execution should be distributed in nature and should take the available processing speeds of the computers into account. In this paper, we study a distributed loop self-scheduling scheme for parallel loops and evaluate its performance by comparing with other existing schemes. The Mandelbrot set computation is used as the test problem.

P50

Using Sonar to Assist the Visually Impaired

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Department of biological Sciences, Salisbury University, Salisbury, MD 21804

For the visually impaired, movement required to accomplish daily tasks can be difficult due to unseen obstacles. This issue has been addressed through innovations that allow for easier navigation in the lives of these people. A device worn on the hand could be another one of these innovations; by using technology allowing for distance detection through ultrasonic pulses, we will build a tool that assists in choosing a path of motion without seeing the area. This can be done by creating a program for a microcontroller that will take information from ultrasonic pulses and transfer it to a motor that will rotate a cushioned extension to the left or right side of the glove. By feeling the extra pressure on the left or right side of the hand, the user can then determine on which side an obstacle is approaching. This pressure will be proportional to the distance of the object, having more pressure applied to the user's hand with a closer object.

P51

Effect of "Brown tide" (*Aureococcus anophagefferens*) on survival rate of copepods

Abena Acheampong[1]* Efeturi Oghenekaro[1], Ozuem

Oseji[1] and Paulinus Chigbu[1]
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Copepods feed on phytoplankton and are prey for larval, juvenile, and some adult fishes. During blooms of phytoplankton species, copepod survival could increase or decrease depending on the palatability of the food source. The principal purpose of this experiment was to determine the survival rate of copepods in the Maryland Coastal Bay (MCBs) during the occurrence of Brown tide (*Aureococcus anophagefferens*) blooms. The laboratory experiment was carried out at room temperatures (18-23^{0}C) using filtered seawater (27-30 PSU) in culture well plates each of which contained one copepod. Copepods (*Acartia tonsa*) were exposed to three feeding conditions each with ten replicates: *Rhodomonas salina* (75,000 cells/ml) as control diet, filtered seawater containing no *Aureococcus* and filtered seawater containing low concentrations (0.1595µg/l) of *Aureococcus*. Preliminary results show that copepods exposed to low concentrations of *Aureococcus* had the highest mortality rate and copepods fed with the control diet (*R. salina*) had the least mortality rate. *A. anophagefferens* is a poor quality food for *A. tonsa*; its effects on other copepod species remain unknown. Future studies would examine the effects of higher concentration levels of *Aureococcus* on other copepods species in the MCBs.

P52

Generation and Characterization of an IgG Monoclonal Antibody that binds to Fucosylated LacdiNAc (LDNF) Glycan Antigens of *Schistosoma mansoni*.

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The human parasitic trematodes, *Schistosoma mansoni*, synthesize glycoproteins and glycolipids with a large assortment of complex glycan structures. Although many of the glycans have been shown to be immunogenic in schistosome infected humans and animals, the role of the glycans in the immunobiology and development of the parasites largely remains unknown. This lack of knowledge is due primarily to the lack of the requisite reagents needed for the purification and tracking of the glycans in different developmental stages of the parasites. We have initiated studies to generate specific, high affinity antibodies to glycan structures of the parasites to facilitate the tracking and purification of the glycans. We now report the generation and characterization of an IgG monoclonal antibody, L6B8, that binds specifically to the fucosylated lacdiNAc (LDNF, GalNAcb1-4[Fuca1-3] GlcNAc-R) glycan antigens of the parasites. The hybridoma clone secreting monoclonal antibody L6B8 was prepared from splenocytes derived from Swiss Webster mice infected for 10 wk with *S. mansoni*. The clone was identified by ELISA analysis of hybridoma culture supernatants using the carbohydrate-rich soluble schistosome egg antigen (SEA) and neoglycoproteins bearing synthetic schistosome-type glycan structures as antigenic targets. Antibodies in the culture supernatant bound SEA in a periodate-sensitive fashion indicating the monoclonal antibody bound to a glycan epitope. Further, the antibody bound to a neoglycoprotein bearing LDNF epitope but not to other neoglycoproteins bearing schistosome-type glycan structures. To confirm the specificity of monoclonal antibody L6B8, the hybridoma clone was grown in serum free media and antibodies in the culture supernatant were purified over columns of MepHypercel. The purified antibody was screened against 443 different glycan structures on the glycan array of the Consortium for Functional Glycomics of Emory University, Atlanta, Georgia. Monoclonal antibody L6B8 bound only to LDNF glycans among the 443 different glycan structures on the array confirming the specificity of the antibody for LDNF glycan epitope. L6B8 binds to LDNF epitopes on intact and extracts of schistosomes as assessed by immmunohistology, ELISA and Western blot analyses. The availability of a specific monoclonal antibody to LDNF glycan epitope provides a very useful tool for the study of the role of the glycan in host-schistosome interactions.

P53

Influence of Environmental Factors on Larval Crab Distribution in the Maryland Coastal Bays

Jessica Mazile[1*], Efeturi Oghenekaro[1], Ali Ishaque[1] and Paulinus Chigbu[1]
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Monthly plankton samples collected from 13 sites in the Maryland Coastal Bays were used to assess the distribution of crab zoea. Lady crab (*Ovalipes* spp.), Xanthid mud crab (*Neopanope* spp.), Fiddler crab (*Uca* spp.), Porcelain and Pea crabs (*Pinnixia* spp.) were found in the samples. Zoea occurred in samples from late winter through early fall with peak mean density occurring in summer at 24.1^{0}C and 34.7 psu. The lowest densities of crab zoea occurred in winter. Densities were higher in the northern Bays than in southern Bays. In Newport Bay, zoea abundance was relatively low and was found only from late spring through summer. In contrast, zoea abundance was highest in Sinepuxent Bay, near Ocean City inlet where high salinity levels were relatively high, during all the seasons. This suggests that the bay is an essential habitat for the rearing of the crab larvae.

P54

Seasonal Distribution of Some Common Ticks on Dog, Cats, and People in Somerset County Maryland

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Ticks are arachnid ectoparasites that feed on vertebrate blood. Ticks have complicated life cycles, but each of the three stages feed on vertebrate hosts. Ticks are important ectoparasites in this region because they can carry many devastating zoonotic diseases. Some of the diseases found in this area are Babesiosis, Rocky Mountain spotted fever, Lyme disease, and tularemia, and Ehrlichosis. This research is to determine the tick species diversity found on humans, dogs, and cats in Somerset County Maryland. Our purpose is to find which ticks are common on humans and pets. Ticks species found were *Amblyomma americanum* (Lone star), *Amblyomma maculatum* (Gulf Coast tick), *Rhipicephalis sanguineus* (Brown dog tick), *Ixodes scapularis* (deer tick or black-legged tick), and *Dermacentor variabilis* (American dog tick). These ticks were mostly adults and nymphs. No red dog tick nymphs were found. The most common tick was the female Lone star tick. Male and female were found in equal numbers for the dog tick. This information can be useful in predicting tick occurrences and avoiding tick-borne diseases.

P55

Seasonal Population of Common Fleas on Dogs, Cats, and People

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[1]Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

Fleas are insects which act as ectoparasites on vertebrates. They feed off blood as adults. These insects have a complete life cycle in which the eggs and larvae are left in the habitat of the host. Only the adult males and females feed on vertebrates. Fleas can transmit pathogenic microbes that can devastate populations as seen in the Bubonic Plague or 'black death' during the Middle Ages. This disease is caused by bacteria, *Ysersina pestis*, growing in the gut of the fleas. These bacteria are transmitted to the host animal while the flea feeds on the blood of its host. The Cat flea, *Ctenocephalides felis* , and the dog flea *C. canis* may interbreed. Both species feed on the same host animal without showing host specificity. These fleas can vector tapeworms to humans and their pets. People may get fleas into their food (from a pet) without knowing and ingesting tapeworms accidently. Millions of dollars each year are spent on pest control efforts in homes in order to control fleas. This research was conducted to determine the seasonality of the occurrence of these two common fleas in Somerset County. Since people keep dogs and cats as pets, fleas will feed on any vertebrate host; therefore this is a great opportunity for a zoonotic disease to spread. The information obtained in this work will aid planning outdoor activities and the correct time to apply pesticides as necessary to control fleas.

P56

Studying the Magnetic Resonance properties of Superparamagnetic Iron Oxide (Fe2O3) Nanoparticles

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[1*] Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853
[2]Center for Materials for Information Technology (MINT), University of Alabama, AL 35487

Ferromagnetic Resonance (FMR), which measures the resonance field by detecting the precessional motion in response to a microwave field, is used to analyze the effects of the polymer matrix concentration of polyacrylic acid (PAA) and presence of bias field on the magnetic properties of citrate coated iron oxide nanoparticles. The nanoparticles were dispersed into three different levels of PAA concentration: citrate coated iron oxide nanoparticles in water (0 mg PAA matrix, nanoparticles in low PAA 1mg), and high PAA (5mg) matrix the polymer matrix aided in fixing the nanoparticles into place, which restricted mechanical movement. In addition, a bias field created by two permanent magnets was used to harden samples of nanoparticles with PAA while subject to a magnetic field. Our results indicated that nanoparticles in solution (not fixed) had the overall highest line width compared to the nanoparticles dispersed in polymer matrix, in both samples with and without a bias field. The larger line width could be due to the large inhomogenity in the dipole-dipole interaction found in the freely moving nanoparticles. It was also observed that the arrangement of the bias field relative to the external field during measurements had an effect on the magnetic properties. Further studies are in progress to better understand the effect of the bias field on the magnetic properties

P57

Summer Phytoplankton Community Composition in the Maryland Coastal Bays as determined by Microscopic and HPLC techniques.

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Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne MD 21853

The study of the community composition of phytoplankton is essential for understanding the structure and dynamics of the aquatic ecosystem and for evaluating the nutrient condition of the water body. The methods for estimating the phytoplankton community composition include the use of techniques such as microscopy, high performance liquid chromatography (HPLC) and satellite color based remote sensing (Sea-WiFS) each of which has drawbacks. A complete understanding of the phytoplankton community composition is best achieved by a combination these techniques. In this study, we describe the phytoplankton community composition in the shallow system of the Maryland Coastal Bays (MCBs) during summer of 2013, determined using a combination of microscopy and HPLC. Thirteen (13) pigments including *fucoxanthin*, *peridinin*, a*lloxanthin* and *zeaxanthin* which are bioindicators of different phytoplankton taxa were analyzed, and results compared to microscopic counts in the month of August. At most sites, the pigments *prasinoxanthin* and *violaxanthin* (indicating prasinophytes and eustigmatophytes respectively) were found in the HPLC results, but taxa belonging to both groups were not observed in microscopic counts. Pigment concentrations were higher in the Northern Bays than in the Southern Bays. Apart from the chlorophylls, *zeaxanthin* (indicating cyanobacteria) had the highest concentrations (1.05µg/l) of the other pigments. Microscopic counts showed that the pico-phytoplankton, *Synechococcus* sp. dominated the phytoplankton community at some sites with densities as high as $5.02x10^6$ cells/liter, which is in consonance with the pigment results.

P58

UV-absorption of Theobromine in different pH

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The purpose of this research is to study the UV/VIS absorption of 3, 7 –dimethyl xanthine, also known as Theobromine; at pH range of 3 – 10 in the presence of a phosphate buffer. Also 3, 7 –dimethyl xanthine would be also studied in different concentration ranges of molarity in the presence of pH 7 phosphate buffer. The UV absorption generated would enable the study of the interaction of Theobromine (3, 7 –dimethyl xanthine) with DNA in presence of phosphate buffer in various pH ranges and concentrations. The effect would enable a view and understanding of the effect of Theobromine to DNA in the body in respect to pH and concentration ranges.

HIGH SCHOOL STUDENT PRESENTATIONS

P59

Dinoflagellates in Newport Bay; community structure and environmental impact

Danielle Brittingham[1]*, Kristen Lycett[2], and Joseph Pitula[2]
[1]Crisfield High School, Crisfield, MD 21817
[2]Department of Natural Science, University of Maryland Eastern Shore, Princess Anne, MD 21853

In June 2013 we looked at dinoflagellate populations in Newport Bay in order to compare how different months affect species composition. Newport Bay is a rural area containing chicken farms and includes the town of Berlin. We believe this is a major factor in the population levels of certain dinoflagellates due to the high level of nutrients that end up in the watershed. As a result of this study, we found *Karlodinum veneficum*, a toxin producing species. It is a possibility that nutrients in the Newport Bay area can enhance prey population levels, stimulating bloom formation of *Karlodinium*. This genus is able to harm fish as it releases Karlotoxin, the natural purpose of which is to paralyze prey. The presence of *Karlodinium* in this ecosystem can have major impacts on the commercial and recreational fisheries and therefore must be monitored.

P60

Ecology of the Bay Anchovy in Maryland Coastal Bays

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[1]James River High School, Richmond, VA,
[2]Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

The Bay anchovy, *Anchoa mitchilli,* is the most abundant fish in the Chesapeake Bay and estuaries of the Atlantic coast and the Gulf of Mexico. It occurs from the coastal waters of Cape Cod to south of the Yucatan. Bay anchovy have an opportunistic life history strategy, exhibited by early maturation, batch spawning, rapid larval growth, and rapid population turnover. It is a small (< 110 mm), short lived (< 3 years), pelagic fish. Both male and female bay anchovy mature at about 40 – 45 mm fork length (44 – 50 mm total length). Bay anchovy spawn from May to September, and are considered serial spawners that can produce eggs 50 or 60 times during this period. Although it is not commercially exploited in the United States, it may serve as a key species that significantly influences water quality and living resources in ecosystems such as the Chesapeake Bay. Thus, it is one of the most ecologically important species in the Mid-Atlantic region. Bay Anchovy serves as an important link between primary production (algae) and piscivore (bluefish, weakfish, striped bass, summer flounder) production in coastal and estuarine environments. The objective is to determine the spatial distribution, abundance, age, sex and size composition of adult bay anchovy population in the Maryland Coastal Bays during the spawning season.

P61

Estrogenic Effluents Effect on Sex Ratios and Transsexual White Perch

Even Reeves and Eric May
Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

Effluents that lead into the Chesapeake Bay from the Migathy, Middle, Corsica, and Sassafras rivers may contain environmental estrogens (EEs) (Sonnenschein and Soto, 1998). Estrone, estriol, and estradiol are three major estrogenic hormones that could be affecting sex ratios of White Perch (Morone Americana) near/in the Chesapeake Bay and turning some male White Perch into transsexual individuals. This project will discover if there are any differences in sex ratios between two urbanized rivers (. Migathy and Middle), two agricultural rivers (Corsica and Sassafras), and two natural rivers (Honga and Rhode). Early detection of estrogenic effluent levels can ultimately be the difference between endangering the species of animals that occupy the Chesapeake Bay, and helping those species thrive.

P62

SYMPOSIUM COMMITTEES

Symposium Convener
Dr. Jennifer Keane-Dawes
Dean, School of Graduate Studies

Registration
Mrs. Donna Price, ***School of Graduate Studies, UMES***
Mr. Preston Gross, ***School of Graduate Studies, UMES***
Ms. Wele Elangwe, ***School of Graduate Studies, UMES***
Ms. Alverta Polk, ***School of Agricultural & Natural Sciences, UMES***
Ms. Dale Maginns, ***School of Business and Technology, UMES***
Ms. LeeAnn Vreeland, ***School of Arts and Professions, UMES***

Book of Abstracts
Ms. Amelia Potter, Producer, ***School of Agricultural & Natural Sciences, UMES***
Mrs. Donna Price, Abstract Coordinator, ***School of Graduate Studies , UMES***
Ms. Wele Elangwe, Editor, ***School of Graduate Studies , UMES***

Information Technology
Mr. Phil Taylor, ***Information Technology, UMES***
Mr. Eric Williams, ***Information Technology, UMES***
Mr. Joe Smith, ***Information Technology, UMES***
Mr. James Webster, ***Information Technology, UMES***
Mr. Jeremy Townsend, ***Information Technology, UMES***

Logistics
Dr. Eric May, Committee Chair, ***School of Agricultural & Natural Sciences, UMES***
Ms. Amelia Potter, Event Sessions Organizer & Program, ***School of Agricultural & Natural Sciences, UMES***
Mrs. Donna Price, Event Planner, ***School of Graduate Studies, UMES***
Ms. Wele Elangwe, Event Co-Planner, ***School of Graduate Studies, UMES***

Moderators
Dr. LaKeisha Harris, Committee Chair, ***School of Pharmacy & Health Professions, UMES***
Indicated overleaf by sessions

Judges
Dr. Andrea Johnson, Committee Chair, ***School of Agricultural & Natural Sciences, UMES***
Indicated overleaf by sessions

Faculty Awards
Dr. Paulinus Chigbu, Committee Chair, ***School of Agricultural & Natural Sciences, UMES***
Dr. Eric May, ***School of Agricultural & Natural Sciences, UMES***
Dr. Maryam Rahimi, ***School of Pharmacy and Health Professions, UMES***
Dr. Victor Hsia, ***School of Pharmacy and Health Professions, UMES***
Dr. Emmanuel Onyeozili, ***School of Arts and Professions, UMES***
Dr. Karen Verbeke, ***School of Arts and Professions, UMES***
Dr. Joseph Arumula, ***School of Business and Technology, UMES***
Dr. Satish Penmatsa, ***School of Business and Technology, UMES***

Support Services
Graduate Students Association
Undergraduate Students

JUDGES FOR ORAL AND POSTER COMPETITIONS

Dr. Andrea K. Johnson, *School of Agricultural and Natural Sciences, UMES* - **Chair of Judges**

Group 1 – POSTER Sessions 1- 6 and ORAL Sessions IA (O1—O6)
Dr. Bradley Stevens, *School of Agricultural and Natural Sciences, UMES*
Dr. Maryam Rahimi, *School of Pharmacy and Health Professions, UMES*
Dr. Maurice Clark, *School of Agricultural and Natural Sciences, UMES*
Dr. Joseph Arumula, *School of Business and Technology, UMES,*

Group 2 – POSTER Sessions 7-12 and ORAL Sessions IB (O7—O12)
Dr. Eric May, *School of Agricultural and Natural Sciences, UMES*
Dr. Linda Trotman, *School of Pharmacy and Health Professions, UMES*
Dr. Michael Lane, *School of Arts and Professions, UMES*
Dr. Donna Satterlee, *School of Agricultural and Natural Sciences, UMES*

Group 3 – POSTER Sessions 13-18 and ORAL Sessions IC (O13—O18)
Dr. Linda Johnson, *School of Agricultural and Natural Sciences, UMES*
Dr. Junior Hopwood, *School of Arts and Professions, UMES*
Dr. Donna Parker, *School of Pharmacy and Health Professions, UMES*
Dr. Mary Auk, *School of Agricultural and Natural Sciences, UMES*

Group 4– POSTER Sessions 19-24 and ORAL Sessions ID (O19—O24)
Dr. Mobolaji Okulate, *School of Agricultural and Natural Sciences, UMES*
Dr. Todd Matthews, *School of Arts and Professions, UMES*
Dr. Joseph Dodoo, *School of Agricultural and Natural Sciences, UMES*
Dr. William Talley, *School of Pharmacy and Health Professions, UMES*

Group 5 – POSTER Sessions 25-30 and ORAL Sessions IE(O25—O30)
Dr. Margarita Treuth, *School of Pharmacy and Health Professions, UMES*
Dr. Michael Rabel, *School of Pharmacy and Health Professions, UMES*
Dr. Margaret Sexton, *School of Agricultural & Natural Sciences, UMES*
Dr. Maryam Taabodi, *School of Agricultural and Natural Sciences, UMES*

Group 6 – POSTER Sessions 31-36 and ORAL Sessions IIA (O31—O36)
Dr. Byungrok Min, *School of Agricultural & Natural Sciences, UMES*
Dr. Nianhong, Chen, *School of Agricultural & Natural Sciences, UMES*
Dr. Kimberly Poole-Sykes, *School of Arts and Professions, UMES*
Dr. Donna Long, *School of Agricultural & Natural Sciences, UMES*

Group 7– POSTER Sessions 37-42 and ORAL Sessions IIB (O37—O42)
Dr. Kausiksankar Das, *School of Agricultural and Natural Sciences, UMES*
Dr. Joyce Bell, *School of Arts and Professions, UMES*
Dr. Joseph Pitula, *School of Agricultural & Natural Sciences, UMES*
Dr. Victoria Volkis, *School of Agricultural & Natural Sciences, UMES*

Group 8– POSTER Sessions 43-48 and ORAL Sessions IIC (O43—O48)
Dr. Enrique Escobar, *School of Agricultural and Natural Sciences, UMES*
Dr. Jennifer Hearne, *School of Agricultural and Natural Sciences, UMES*
Dr. Adel Karara, *School of Pharmacy and Health Professions, UMES*
Dr. Yan Waguespack, *School of Agricultural and Natural Sciences, UMES*

Group 9– POSTER Sessions 49-54 and ORAL Sessions IID O49—O55)
Dr. Deborah Sauder, *School of Agricultural and Natural Sciences, UMES*
Dr. Peter Stanford, *School of Pharmacy and Health Professions, UMES*
Dr. Mohammad Ali, *School of Business and Technology, UMES*
Dr. Uche Udeochu, *School of Agricultural and Natural Sciences, UMES*

Group 10– POSTER Sessions 55-60
Ms. Theresa Dadson, *Library Science, UMES*
Dr. Ali Ishaque, *School of Agricultural and Natural Sciences, UMES*
Dr. Terry Smith, *School of Arts & Professions, UMES*
Dr. Simeon Shoge, *School of Arts & Professions, UMES*

Back-Up Judges
Dr. Dia-eldin Elnaiem, *School of Agricultural and Natural Sciences, UMES*
Dr. Thomas Loveland, *School of Business and Technology, UMES (oral only)*
Dr. Doug Ruby, *School of Agricultural and Natural Sciences, UMES (oral only)*
Dr. Jeurel Singleton, *School of Agricultural and Natural Sciences, UMES (oral only)*

MODERATORS FOR ORAL AND POSTER COMPETITIONS

Dr. LaKeisha L. Harris, *School of Pharmacy and Health Professions, UMES* - **Chair of Moderators**

Group 1 – ORAL Session IA (O1—O6) and POSTERS 1-6
Dr. Dean Cooledge, *School of Arts and Professions, UMES*
Ms. Christine Foote, *Graduate Student, School of Pharmacy and Health Professions, UMES*

Group 2 – ORAL Session IB (O7—O12) and POSTERS 7-12
Dr. Salina Parveen, *School of Agricultural and Natural Sciences, UMES*
Ms. Karra Grant, *Graduate Student, School of Agricultural and Natural Sciences, UMES*

Group 3 – ORAL Session IC (O13—O18) and POSTERS 13-18
Dr. Jacqueline Brice-Finch, *School of Arts and Professions, UMES*
Ms. Jhamyllia Rice, *Graduate Student, School of Agricultural and Natural Sciences, UMES*

Group 4 – ORAL Session ID (O19—O24) and POSTERS 19-24
Dr. Marcos Cheney, *School of Agricultural and Natural Sciences, UMES*
Ms. Kristin Lycett, *Graduate Student, School of Agricultural and Natural Sciences, UMES*

Group 5 – ORAL Session IE (O25—O30) and POSTERS 25-30
Dr. Caddie Putnam-Rankin, *School of Arts and Professions, UMES*
Ms. Staci Turner-Fooks, *Graduate Student, School of Pharmacy and Health Professions, UMES*

Group 6 – ORAL Session IIA (O31—O36) and POSTERS 31-36
Dr. Dean Cooledge, *School of Arts and Professions, UMES*
Ms. DeLauren McCauley, *Graduate Student, Department of Chemistry and Biochemistry, UMBC*

Group 7– ORAL Session IIB (O37—O42) and POSTERS 37-42
Dr. Salina Parveen, *School of Agricultural and Natural Sciences, UMES*
Karra Grant, *Graduate Student, School of Agricultural and Natural Sciences, UMES*

Group 8– ORAL Session IIC (O43—O48) and POSTERS 43-48
Dr. Jacqueline Brice-Finch, *School of Arts and Professions, UMES*
Dr. Nanda Cortes, *Department of Biological Sciences, UMBC*

Group 9– ORAL Session IID (O49—O55) and POSTERS 49-55
Dr. Tyrone Chase, *School of Arts and Professions, UMES*
Ms. Tedra Booker, *Graduate Student, School of Agricultural and Natural Sciences, UMES*

Group 10– ORAL Session IIE (O56—O60) and POSTERS 56-61
Dr. Marcos Cheney, *School of Agricultural and Natural Sciences, UMES*
Ms. Christine Foote, *Graduate Student, School of Pharmacy and Health Professions, UMES*

Group 11 – Back Up Moderators
Dr. Marcos Cheney, *School of Agricultural and Natural Sciences, UMES*
Dr. LaKeisha Harris, *School of Pharmacy and Health Professions, UMES*

INDEX BY PARTICIPANT

INDEX BY PARTICIPANT

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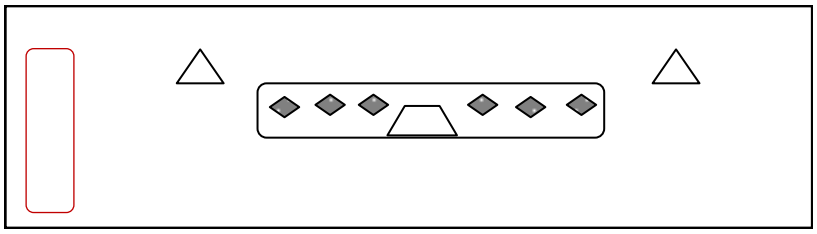
Theater

(Student Services Center
First Floor-East Wing)

Opening Ceremonies
7:30—8:55 AM



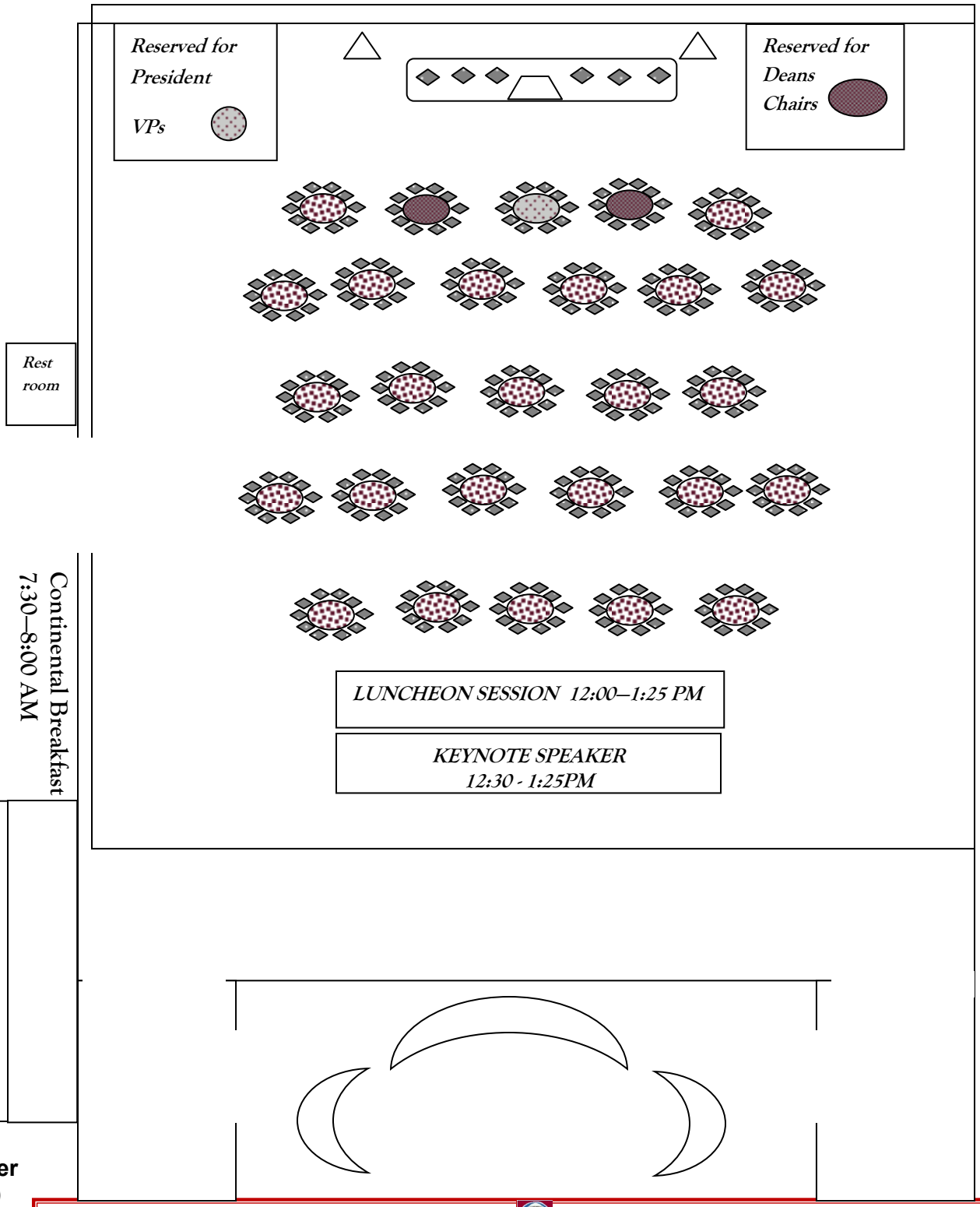
Oral Presentation Group A
Session I 10:35 AM – 11:55 AM
Session II 1:30 PM – 2:45 PM

Rest room

REGISTRATION TABLES

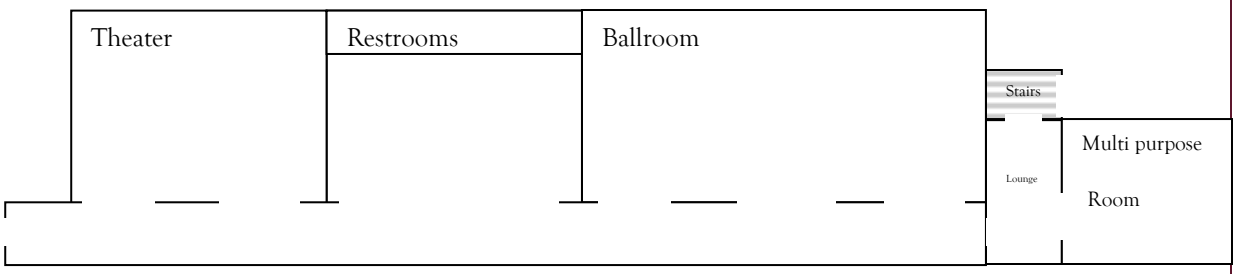
REGIST
(Student Ser
First Floor-
7:30 AM to

Ballroom

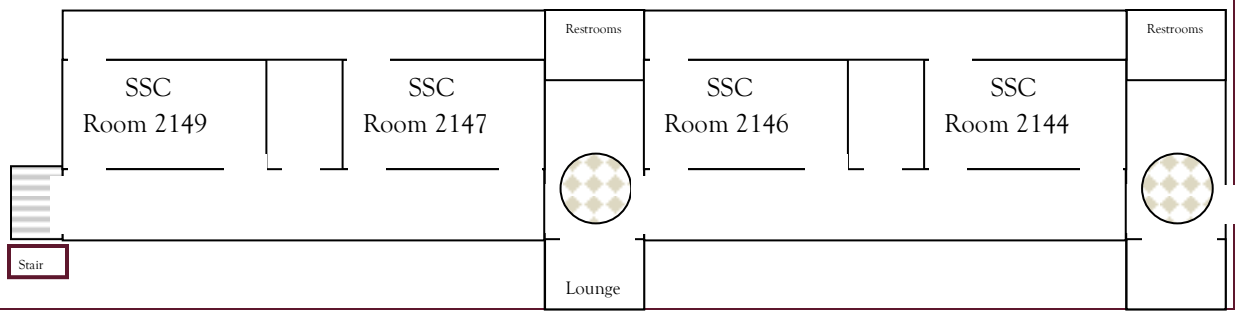


RATION
rvices Center
-East Wing)
o 12:30 PM

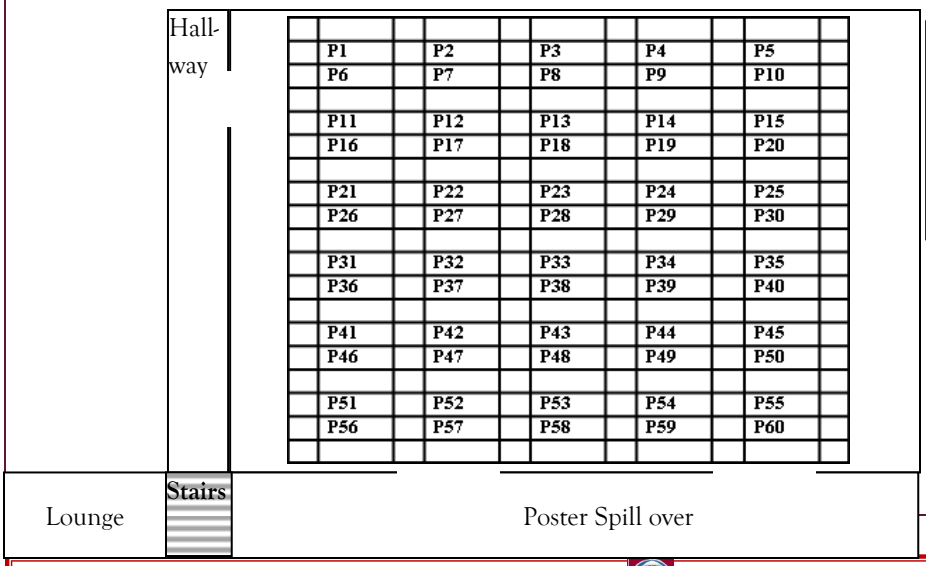
Student Services Center First Floor Plan



Student Services Center Second Floor Plan



Multipurpose Room
(Student Services Center Room 1140)

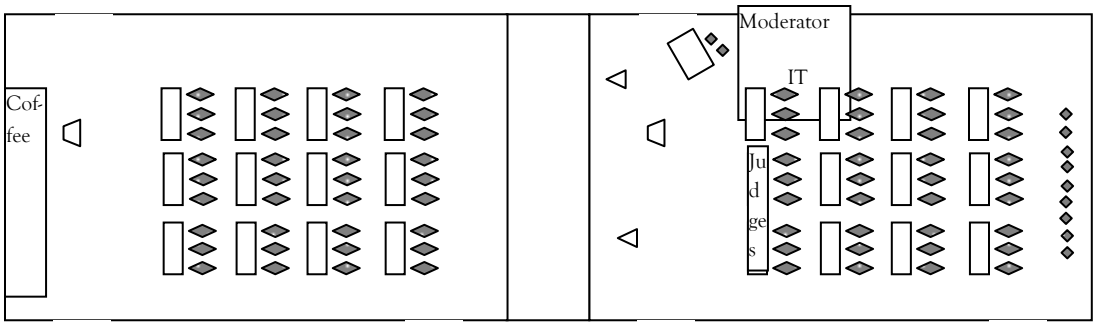


POSTER

PRESENTATIONS

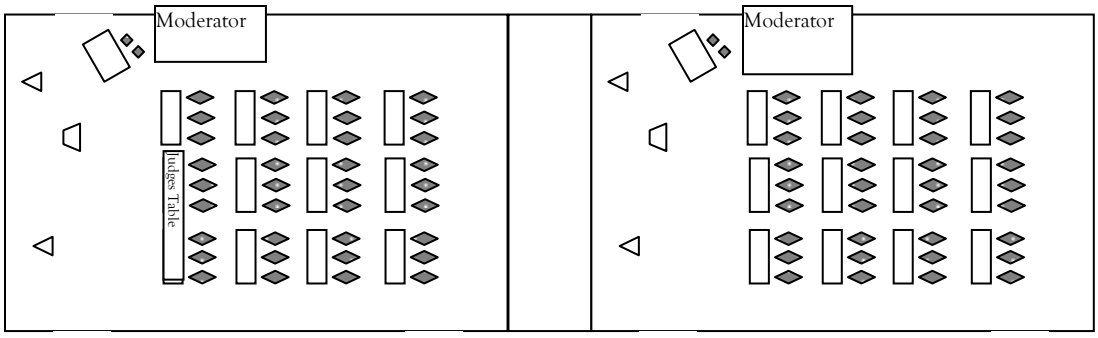
9:00 AM -10:30 AM

Oral Presentation Group B and C
(Student Services Center Room 2149, 2147)
Session I 10:35AM – 11:55 AM
Session II 1:30 PM – 2:45 PM



Group B (SSC Room 2149) Group C (SSC Room 2147)

Oral Presentation Groups D and E
(Student Services Center Rooms 2146 & 2144)
Session I 10:35 AM – 11:55 AM
Session II 1:30 PM – 2:45 PM



Group D (SSC Room 2146) Group E (SSC Room 2144)

Graduate Panel Session 2:45 PM – 3:30 PM
(Student Services Center Rooms 2144)

UMES CAMPUS MAP

Buildings on Map...

NOTE: Parking Lot Designations are indicated by Letters

1. Kiah Hall
2. Richard Henson Center
3. Ella Fitzgerald Performing Arts Center
4. Student Development Center
5. Nuttle Hall
6. Court Plaza
7. Wicomico Hall
8. Tawes Gym
9. William P. Hytche Center
10. Student Services Center
11. Bird Hall (Admissions and Financial Aid)
12. John T. Williams Admission Building
13. Waters Hall
14. Murphy Hall
15. George Washington Carver Science Building
16. Somerset Hall
16. Wilson Hall
17. Frederick Douglass Library
18. Trigg Hall
19. Thomas/Briggs Arts and Technology Center
20. Early Childhood Research Center
21. Student Apartments
22. Plaza Hall
23. Residence Life/Student Clusters
24. Agricultural and Research Facilities
25. Tanner Airway Science Center
26. Sports Facilities
27. Linda Brown Building
28. University Terrace
29. Food Science and Technology Building
30. Physical Plant
31. Hazel Hall
32. Public Safety
33. Swine Research Facilities Center
34. Crop Reasearch and Aquaculture Building
35. Agriculture Research Building
36. Banneker Hall
37. Spaulding Hall
38. Temporary Classroom Building 1
39. Purchasing
40. Alumni House
41. Poultry Research Center
42. Charles Drew Student Health Center
43. Commercial Greenhouse
44. Hawks Landing
45. President's House
46. Harford Hall
47. Access & Success Building
48. WESM Radio Station

UMES INFORMATION:

CAMPUS ADDRESS:

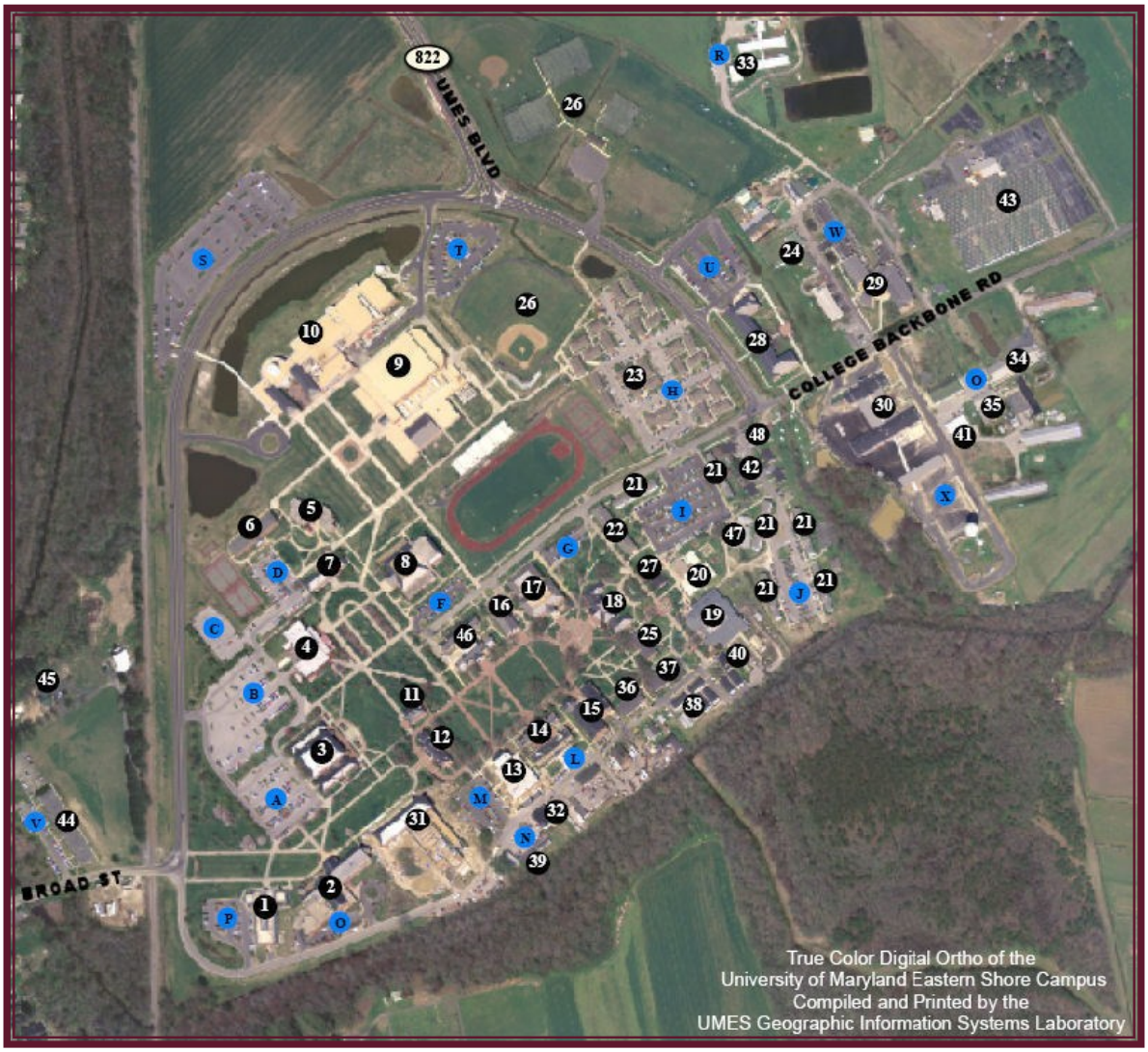
UMES

University Drive

Princess Anne, MD 21853

CAMPUS FASCIMILE:

410-651– 7739



UMES Campus Map

The UMES campus includes over 47 buildings on 700-plus acres

See you next year

April 2015

for

Graduate Education Week

University of Maryland Eastern Shore
2014 Regional Research Symposium

http://www.umes.edu
Princess Anne, Maryland
April 17, 2014