Peach State Louis Stokes Alliance for Minority Participation

THE POWER of STEM

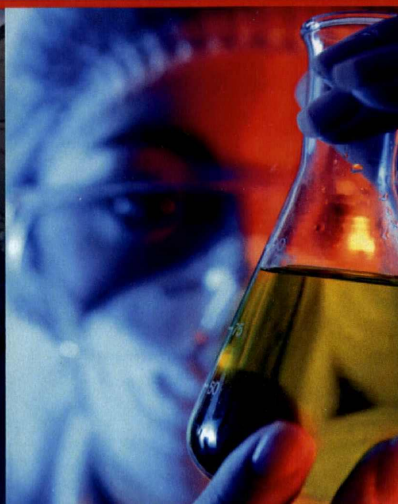
Hilton Atlanta/Marietta Hotel & Conference Center

Marietta, Georgia

October 10-12, 2013

Co-Hosted by
Southern Polytechnic State University
and Kennesaw State University

8th Annual Fall Symposium & Research Conference



PSLSAMP

Peach State Louis Stokes

Peach State Louis Stokes Alliance for Minority Participation

Lead Institution

The University of Georgia
www.pslsamp.uga.edu

Jere W. Morehead
Principal Investigator

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Partner Institutions

Fort Valley State University
http://past.fvsu.edu/academics/arts-sciences/chemistry
Dwayne Daniels, Ph.D.
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Georgia Institute of Technology
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The mission of the Peach State Louis Stokes Alliance for Minority Participation (Peach State LSAMP) is to increase the number of underrepresented minority students who complete baccalaureate degrees in science, technology, engineering, and mathematics (STEM) fields and to encourage those graduates to pursue graduate studies in STEM.

The mission is accomplished with funding from the National Science Foundation (NSF) and via a collaborative effort of seven University System of Georgia public institutions including Fort Valley State University, Georgia Institute of Technology, Georgia Perimeter College, Kennesaw State University, Savannah State University, Southern Polytechnic State University, and the University of Georgia (lead).

Peach State LSAMP Outcomes and Accomplishments
July 1, 2012 - June 30, 2013

- Enrollment of underrepresented minorities in STEM disciplines at Peach State LSAMP institutions increased by 21% over the previous year with a total of 8215 students enrolled.
- Baccalaureate degrees awarded to underrepresented minorities in STEM disciplines at Peach State LSAMP institutions increased by 53% over the previous year with a total of 1030 degrees awarded.
- There were 365 Peach State LSAMP Scholars funded Alliance-wide.
- There were more than 183 summer and academic undergraduate research opportunities (including study abroad) provided for Peach State LSAMP Scholars who provided over 143 presentations at research conferences.

Peach State Louis Stokes Alliance for Minority Participation
University of Georgia
210 Holmes/Hunter Academic Building | Athens, Georgia 30602
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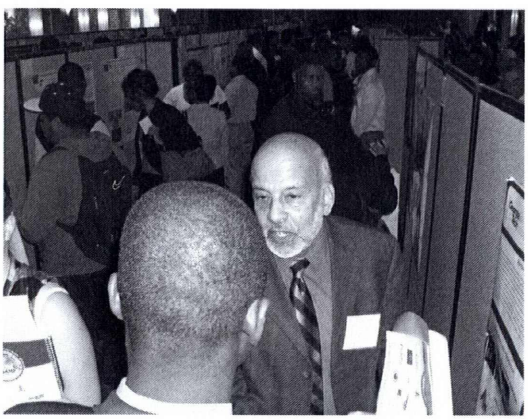
8th Annual Peach State LSAMP Fall Symposium & Research Conference

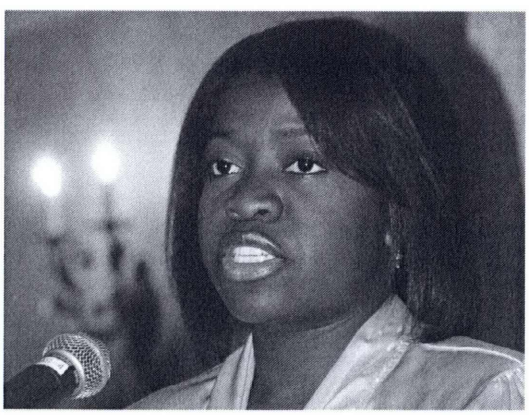
"The Power of STEM"

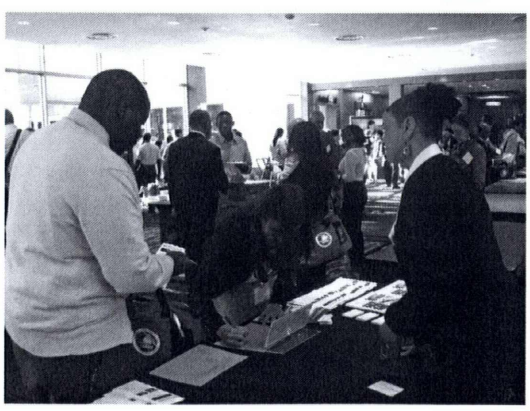
October 10th–12th, 2013

Co-Hosted by:

Kennesaw State University and Southern Polytechnic State University







CONTENTS

Message from the National Director
Louis Stokes Alliances for Minority Participation (LSAMP)
National Science Foundation

October 10, 2013

It is with great pleasure that I welcome you to the 8th Annual Symposium and Research Conference hosted by the Peach State Louis Stokes Alliance for Minority Participation (Peach State LSAMP) in Marietta, Georgia. The National Science Foundation (NSF) is committed to preparing a diverse, globally engaged science, technology, engineering, and mathematics (STEM) workforce, integrating research with education, and building capacity. The Peach State LSAMP's annual research conference is completely aligned with our Strategic Plan and national commitment to strengthening workforce development in the United States of America.

An event such as this provides an excellent opportunity for students to meet and engage outstanding professionals in STEM fields in discussions of science and technological phenomena in areas such as microbiology, physics, mathematical modeling, aviation systems development, and STEM education, among other professional development topics. I am convinced that this conference will continue its great tradition of excellence in support of the STEM disciplines.

NSF is proud to partner with institutions and organizations in supporting students, faculty, and administrators in Georgia through the LSAMP national program which encompasses more than 40 alliances nationwide. As the new STEM innovators of this generation, please seize every opportunity to reach new goals in science and technology while attending the Peach State LSAMP conference themed, *"The Power of STEM."*

I wish you the best for a successful fall 2013 symposium and research conference.

A. James Hicks
Director
National LSAMP Program

The University of Georgia

Office of the President

October 10, 2013

Dear Peach State LSAMP Conference Participants:

Welcome to the 8th annual Peach State Louis Stokes Alliance for Minority Participation (LSAMP) Fall Symposium & Research Conference. This is always an exciting time when we provide two days for networking, professional development, and sharing the extraordinary research in which our undergraduate students have been immersed. We are very thankful for the National Science Foundation's continued support of this program.

The University of Georgia (UGA) is honored to serve as the lead institution for the Peach State LSAMP Alliance. As the nation's first-chartered public institution of higher education, we take this role and responsibility of educating the citizens of this state seriously. Our committed faculty, staff and administrators are dedicated to cultivating a nurturing academic environment in an effort to prepare thriving young researchers and scientists for success.

The primary goal of the Peach State LSAMP program is to increase the number of underrepresented minority students who pursue and complete baccalaureate degrees in science, technology, engineering and mathematics (STEM) disciplines. UGA and our partners in the Alliance at Fort Valley State University, Georgia Institute of Technology, Georgia Perimeter College, Kennesaw State University, Savannah State University, and Southern Polytechnic State University value diversity, and we are committed to this goal. We all are excited about the positive impact this collaborative program has had to date.

Congratulations to all of the student presenters. Over these next couple of days, be sure to explore all that the conference offers including graduate school tours and opportunities, professional development workshops, and research presentations. I am certain that the conference hosts, Kennesaw State University and Southern Polytechnic State University and the Alliance Steering Committee have created an experience that will be invaluable.

Sincerely,

Jere W. Morehead

President Jere W. Morehead, University of Georgia
Principal Investigator and Chair,
Peach State LSAMP Governing Board

Kennesaw State University

Office of the President

October 10, 2013

Dear Participants:

On behalf of the 25,000 students and almost 2,000 members of the faculty and staff of Kennesaw State University (KSU), welcome to the 2013 Eighth Annual Peach State Fall Symposium and Research Conference of the Louis Stokes Alliance for Minority Participation! Thank you for your attendance at and participation in this extremely important meeting.

The conference theme, *"The Power of STEM,"* clearly and succinctly addresses the importance of science, technology, engineering, and mathematics in the contemporary world. With three days of presentations, conference sessions, exhibitions, and opportunities for networking and education, the Eighth Annual Peach State LSAMP Symposium and Research Conference promises to be a hallmark event in STEM education in Georgia.

We at Kennesaw State University are completely dedicated to improving and advancing the cause of STEM education in Georgia, the United States, and the world. We recognize that both economic growth and the resolution of many of the problems faced by contemporary twenty-first century society require solutions based on scientific, technological, engineering, and mathematical capabilities and advances. Like you, we at KSU are dedicated to education, research, and service in the STEM disciplines.

Once again, welcome to the 2013 Eighth Annual Peach State Fall Symposium and Research Conference of the Louis Stokes Alliance for Minority Participation! I wish you well for an enlightening and enjoyable meeting!

Sincerely,

Daniel S. Papp

Daniel S. Papp, Ph.D.
President,
Kennesaw State University

SPSU SOUTHERN POLYTECHNIC STATE UNIVERSITY

Office of the President

October 10, 2013

Dear PSLSAMP Participants:

It is a pleasure to welcome you to the Peach State Louis Stokes Alliance for Minority Participation's (PSLSAMP) 8th Annual Fall 2013 National Symposium and Research Conference. I am particularly excited about this years's conference theme, *"The Power of STEM."* Your presence here is underscored by your achievement and recognition as a member of this prestigious National Science Foundation Program. I applaud the efforts and contributions that Louis Stokes Alliance for Minority Participation program provides toward increasing the number of minority students attaining baccalaureate degrees and pursuing advanced degrees in science, technology, engineering, and mathematics (STEM) disciplines.

Southern Polytechnic State University's mission is to educate students, at the graduate and undergraduate levels, preparing them with the knowledge and experience they need to solve real-world problems, to be leaders in the scientific and economic development of an increasingly technological planet, and to have the ability and vision to apply their knowledge to transform the future.

Southern Polytechnic, one of the seven partner institutions in PSLSAMP, currently supports 75 students in the program. Of those students, 12 participated in our Summer Research Program, all of whom will give presentations at this conference. This past year, three of our graduating seniors were accepted into graduate programs in STEM fields. I'd like to congratulate all of the scholars who will be presenting their research at this year's conference.

We are proud to be a partner in the Alliance and to serve, once again, as the hosting institution for this important conference.

Sincerely,

Lisa A Rossbacher

Lisa A. Rossbacher, Ph.D.
President,
Southern Polytechnic State University

Peach State Louis Stokes Alliance for Minority Participation

National Science Foundation • The University of Georgia • Georgia Perimeter College • Georgia Institute of Technology • Fort Valley State University • Kennesaw State University • Savannah State University • Southern Polytechnic State University

October 10, 2013

Dear Peach State LSAMP Conference Participants,

I am excited, as always, to welcome you to the 8th Annual Peach State LSAMP Fall Symposium and Research Conference. Our conference theme this year is "*The Power of STEM*." Students, as our theme suggests, you are our future researchers, scientists, technologists, engineers, and mathematicians who have the power to change the world! The Peach State Alliance has created a conference agenda to assist you in your journey.

The Peach State LSAMP is now in its ninth year of funding from the National Science Foundation. Our Alliance Steering Committee is comprised of a committed and very devoted group of faculty, staff and administrators from Fort Valley State University, Georgia Institute of Technology, Georgia Perimeter College, Kennesaw State University, Savannah State University, Southern Polytechnic State University and The University of Georgia (the lead institution) – all public higher education institutions in the University System of Georgia. This conference represents a pinnacle moment for us to celebrate the accomplishments of our LSAMP scholars each year.

THANK YOU to all of the dedicated faculty, staff and administrators from our Alliance institutions who provide seminars, workshops, tutorial sessions, tours, undergraduate research opportunities, and mentoring for our LSAMP scholars. In addition, I am very grateful for the many hours of conference planning and preparation that the Peach State Alliance Office staff, our co-hosts: Kennesaw State University and Southern Polytechnic State University, the Office of Institutional Diversity and the Marietta Conference Center staff have provided. I can't say thank you enough! Finally, this conference and the rich Peach State LSAMP programming are made possible with the continued support of the National Science Foundation. It is a privilege to receive external funding support to address the need to broaden participation in STEM.

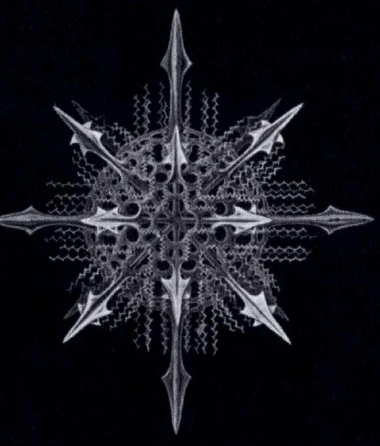
If we can do anything to make your stay in Marietta, GA more pleasant, please let us know. Thank you for coming to our Fall Research Conference.

Sincerely,

Angela Y. Birkes-Grier

Angela Y. Birkes-Grier, Ph.D.
Director, Peach State LSAMP


The University of Georgia
Office of Institutional Diversity
Congratulates
all student presenters and award winners
attending the
8th Annual Peach State
LSAMP Fall
Symposium &
Research Conference
THE UNIVERSITY OF GEORGIA
Institutional
Diversity



Don't stop now

Master of Science in Integrative Biology

at

Kennesaw State University

College of Science and Mathematics

Department of Biology and Physics

The Master of Science in Integrative Biology offered by the Department of Biology and Physics combines traditional research-based graduate training in the field of biology with a strong emphasis on the rapidly emerging paradigm of integrative biology that spans scales (e.g. molecules, cells, populations, ecosystems) and disciplines (e.g. genetics, physiology, and physics) within biology and outside of biology. It is expected that a student's thesis research will be influenced and enhanced by this approach, so that graduates will be more versatile than conventionally-trained individuals because they can provide connectivity in interdisciplinary teams and adaptability to changing workplace needs in industry, research, and education.

The Master of Science in Integrative Biology program is designed to allow students to complete course work and their thesis research within two academic years. Teaching Assistantships with tuition remission are available on a competitive basis.

For more information on the program and how to apply, go to
science.kennesaw.edu/biophys/ms-integrative-bio
Deadline for all application materials is 15 January 2013

SOUTHERN POLYTECHNIC STATE UNIVERSITY

SPSU-PSLSAMP wishes much success to the

PSLSAMP Scholars during the

Eighth Annual National Symposium

and Research Conference 2013

Dr. Lisa Rossbacher – President
Dr. Zvi Szafran – Vice President for Academic Affairs
Dr. Thomas Nelson – Dean of School of Arts and Sciences
Dr. Han Reichgelt – Dean of College of Computing and Software Engineering
Dr. Richard Cole - Dean of School of Architecture, CET and Construction
Dr. Tom Currin – Dean for the Division of Engineering
Dr. Jeff Ray – Dean of School of Engineering Technology and Management
Ms. Betsy Adams – Director of Sponsored Programs
Dr. Philip E. Patterson – Director, PSLSAMP Program
Mr. John Hart – Administrative Professional

Thursday, October 10, 2013		
12:00 pm – 5:00 pm	**Conference Registration and Check-In**	Conference Registration Desk
1:00 pm – 3:30 pm	**Poster Set-up**	JMW Ballroom
1:30 pm – 2:30 pm	**Judges Meeting**	Breakout B
2:00 pm – 3:00 pm	**Peach State LSAMP Student Focus Groups–Freshman/Sophomore** **Peach State LSAMP Student Focus Groups–Junior/Senior**	Breakout C Breakout D
3:00 pm	**Hotel Check-in (early check-in if rooms available)**	Hotel Front Desk
4:00 pm – 6:00 pm	**Poster Presentations**	JMW Ballroom
6:30 pm – 9:00 pm	**Dinner On Your Own**	
	Graduate School Tours (Dinner Provided)	KSU/SPSU (Meet in Hotel Lobby)
	Peach State Alliance Administrators' Meeting & Dinner	Private Dining I

Friday, October 11, 2013		
7:00 am – 12:00 pm	**Conference Registration**	Conference Registration Desk
7:00 am – 10:00 am	**Exhibitor Set-up**	Prefunction I
7:00 am – 8:30 am	**Breakfast**	Hamilton's
8:30 am – 9:45 am	**OPENING SESSION – KEYNOTE SPEAKER: DR. JIMMIE DAVIS, JR** **Moderator: Dr. Michelle Cook** Lead Co-Principal Investigator, Peach State LSAMP Associate Provost & Chief Diversity Officer Office of Institutional Diversity The University of Georgia **Welcome from Co-Hosts:** **Dr. Mark R. Anderson** Dean, College of Science and Mathematics and Professor of Chemistry Kennesaw State University **Dr. Zvi Szafran** Vice President, Academic Affairs Southern Polytechnic State University **Greetings: Dr. Angela Y. Birkes-Grier** Alliance Director, Peach State LSAMP The University of Georgia **Words of Inspiration: Angel Sanchez** Peach State LSAMP Scholar Southern Polytechnic State University **Introduction of Speaker: Guissela Arita Fajardo** Peach State LSAMP Scholar Kennesaw State University **Keynote Speaker: Dr. Jimmie Davis, Jr.** Lead Signal Processing Engineer The MITRE Corporation	JMW Ballroom

9:45 am – 10:00 am	**Morning Break (Prize Drawings)**	Prefunction I
10:00 am – 11:45 am	**Oral Presentations Part I**	Breakouts C, D, E, F, G, H
	MIDDLE SCHOOL WORKSHOP *The Power of Robotic Sensors* **Mr. Barton Sudderth** Founder and CEO Millennium Training Systems, Inc.	Breakout I
	HIGH SCHOOL WORKSHOP *HydroRobotics Design and Analysis* **Mr. Garry Harris** President, HTS Enterprises and Executive Director, Center for Sustainable Communities	Breakout J
10:00 am – 11:45 pm	**Graduate and Career Exhibitor Fair**	Prefunction I
12:00 pm – 1:30 pm	**LUNCHEON – KEYNOTE SPEAKER: DR. CHERYL D. DOZIER** **Moderator: Dr. Army Lester** Professor of Biology Kennesaw State University **Welcome: Gedeon Nyengele** Peach State LSAMP Scholar Georgia Perimeter College **Words of Inspiration: Qiana Butler** Peach State LSAMP Scholar Fort Valley State University **Introduction of Speaker: Gabrielle Dupiche** Peach State LSAMP Scholar Savannah State University **Keynote Speaker: Dr. Cheryl D. Dozier** President and Peach State LSAMP Co-PI Savannah State University	JMW Ballroom
1:30 pm – 5:00 pm	**Graduate School & Career Exhibitor Fair**	Prefunction I
1:30 – 3:15 pm	**Oral Presentations Part II**	Breakouts I, J
3:15 pm – 3:45 pm	**Afternoon Break (Refreshments & Prize Drawings)**	Prefunction I
3:45 pm – 4:45 pm	**CONCURRENT SESSIONS I**	
	DEVELOPING WINNING PERSONAL STATEMENTS **Moderator: Ms. Faye Chatman** Program Director, Franklin College of Arts & Sciences The University of Georgia – Griffin Campus **Presenter: Mr. Tarrance Mosley** Alumni Career Coordinator Kennesaw State University	Breakout C

	COMMON CENTS TIPS FOR GOOD CREDIT AFTER COLLEGE: GETTING THE CREDIT YOU NEED **Moderator: Ms. Tia Jackson-Truitt** Program Manager, Engineering Education Outreach College of Engineering Campus Coordinator, Peach State LSAMP Georgia Institute of Technology **Presenter: Ms. Tarra Jackson** President and CEO Prosperity Now Financial Management Services	Breakout D
	EMORY MD/PhD PROGRAMS **Moderator: Dr. Felicia Benton-Johnson** Director, Engineering Education Outreach College of Engineering Campus Director, Peach State LSAMP Georgia Institute of Technology **Presenters: Ms. Maxine Wright-Thompson** Associate Director of Admissions MD/PhD Program Emory University School of Medicine	Breakout E
	THE ROAD TO ACADEMIA PANEL **Moderator: Dr. Reynold C. Verret** Provost & Vice President for Academic Affairs Professor of Biochemistry Savannah State University **Panelists:** **Dr. Alvin Harmon** Interim Chair, Department of Biology Science, Mathematics, and Health Professions Division Atlanta Metropolitan State College **Dr. Deidra R. Hodges** Assistant Professor, Electrical Engineering Dept. of Electrical and Mechatronics Engineering Southern Polytechnic State University **Dr. Army Lester** Professor of Biology College of Science & Mathematics Campus Co-Director, Peach State LSAMP Kennesaw State University **Dr. Marshall Shepherd** UGA Athletic Association Professor of Geography and Research Meteorologist President, American Meteorological Society Director, UGA Atmospheric Sciences Program The University of Georgia **Dr. Cheryl A. Swanier** Associate Professor of Mathematics and Computer Science Fort Valley State University **Dr. David Veazie** Professor of Mechanical Engineering and Director, Center for Advanced Materials Research and Education (CAMRE) Southern Polytechnic State University	Breakout I

	SUCCESSFUL TRANSITIONS FOR GRADUATE SCHOOL, THE BRIDGE TO THE DOCTORATE (BD) FELLOWSHIP, AND BEYOND **Moderator: Dr. Dwayne Daniels** Chair, Chemistry Department Campus Director, Peach State LSAMP Fort Valley State University **Panelists:** **Dr. Sonja Montas-Hunter** Assistant Dean, University Graduate School Florida International University **Dr. Justin Boone** RF/Microwave Design Engineer Northrop Grumman Electronic Systems **Dr. Al-Askhir Rogers** Senior Processing Engineer Draper Laboratory	Breakout J
	CONTROL OF NITRIC OXIDE SIGNALING IN CARDIOVASCULAR FUNCTION **Moderator: Dr. Kuppuswamy Jayaraman** Professor, Engineering and Technology Campus Director, Peach State LSAMP Savannah State University **Presenter: Dr. John Salerno** Neel Distinguished Professor of Biotechnology Kennesaw State University	Breakout F
5:00 pm – 6:00 pm	**CONCURRENT SESSIONS II**	
	DEVELOPING WINNING PERSONAL STATEMENTS **Moderator: Ms. Faye Chatman** Program Director, Franklin College of Arts & Sciences The University of Georgia – Griffin Campus **Presenter: Mr. Tarrance Mosley** Alumni Career Coordinator Kennesaw State University	Breakout C
	COMMON CENTS TIPS FOR GOOD CREDIT AFTER COLLEGE: GETTING THE CREDIT YOU NEED **Moderator: Ms. Tia Jackson-Truitt** Program Manager, Engineering Education Outreach College of Engineering Campus Coordinator, Peach State LSAMP Georgia Institute of Technology **Presenter: Ms. Tarra Jackson** President and CEO Prosperity Now Financial Management Services	Breakout D
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	THE ROAD TO ACADEMIA PANEL **Moderator: Dr. Reynold C. Verret** Provost & Vice President for Academic Affairs Professor of Biochemistry Savannah State University **Panelists:** **Dr. Alvin Harmon** Interim Chair, Department of Biology Science, Mathematics, and Health Professions Division Atlanta Metropolitan State College **Dr. Deidra R. Hodges** Assistant Professor, Electrical Engineering Dept. of Electrical and Mechatronics Engineering Southern Polytechnic State University **Dr. Army Lester** Professor of Biology College of Science & Mathematics Campus Co-Director, Peach State LSAMP Kennesaw State University **Dr. Marshall Shepherd** UGA Athletic Association Professor of Geography and Research Meteorologist President, American Meteorological Society Director, UGA Atmospheric Sciences Program The University of Georgia **Dr. Cheryl A. Swanier** Associate Professor of Mathematics and Computer Science Fort Valley State University **Dr. David Veazie** Professor of Mechanical Engineering and Director, Center for Advanced Materials Research and Education (CAMRE) Southern Polytechnic State University	Breakout I
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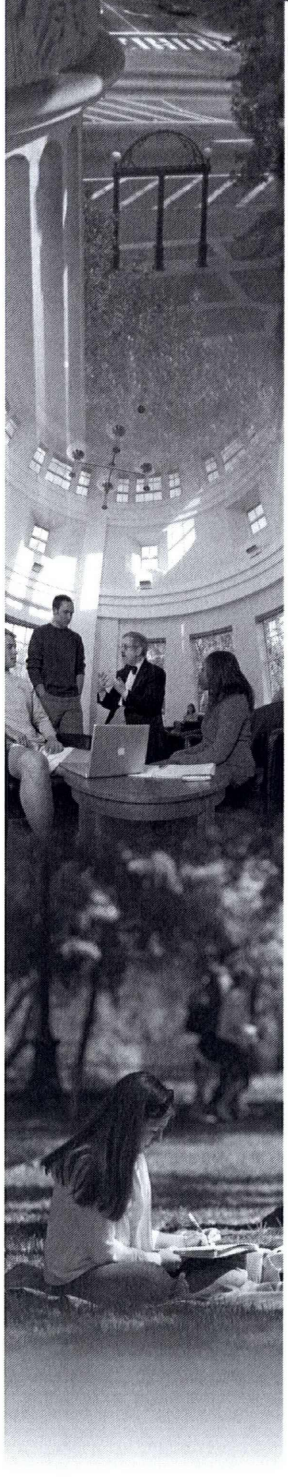
6:00 pm – 7:00 pm	**Break**	Free Time
7:00 pm – 7:30 pm	**Group Pictures**	Veranda Lawn
7:30 pm – 9:00 pm	**DINNER – KEYNOTE SPEAKER: DR. S. JAMES GATES, JR.** **Moderator: Dr. Phillip E. Patterson** Chair, Physics Department Campus Director, Peach State LSAMP Southern Polytechnic State University **Words of Inspiration: Michael Alemayehu** Peach State LSAMP Scholar Georgia Institute of Technology **Introduction of Speaker: Mareena Whisby** Peach State LSAMP Scholar Kennesaw State University **Keynote Speaker: Dr. S. James Gates, Jr.** University System of Maryland Regents Professor, John S. Toll Professor of Physics, and Director, Center for String and Particle Theory University of Maryland	JMW Ballroom
9:15 pm – 11:00 pm	**Judges' Wrap-Up Meeting**	Breakout B
	Student Network Social (Prize Drawings)	Breakout J

Saturday, October 12, 2013		
7:00 am – 8:30 am	**Breakfast**	Hamilton's
8:30 am – 10:30 am	**CONCURRENT SESSIONS III**	
	GUARANTEED 4.0 MINI SESSION I **Moderator: Ms. Ciera V. Scott** Doctoral Student, Counseling Psychology Program Campus Coordinator, Peach State LSAMP The University of Georgia **Presenter: Mr. Stafford Braxton** Instructor *Guaranteed 4.0 Learning System*	JMW Ballroom
	LSAMP ADMINISTRATOR'S MEETING **(ALL LSAMP Administrators are invited)**	Breakout C
10:30 am – 10:50 am	**Hotel Check-out**	Hotel Front Desk

AGENDA CONTUNUED ON NEXT PAGE

11:00 am – 12:45 pm	**CLOSING PLENARY AND AWARDS CEREMONY** **Moderator: Dr. Premila N. Achar** Associate Professor of Biotechnology Department of Biology and Physics Campus Co-Director, Peach State LSAMP Kennesaw State University **Words of Inspiration: Tyler Clarke** Peach State LSAMP Scholar Southern Polytechnic State University **Introduction of Speaker: ValaRae Partee** Peach State LSAMP Scholar The University of Georgia **Keynote Speaker: Dr. Erika T. Camacho** MLK Visiting Assistant Professor Department of Mathematics Massachusetts Institute of Technology Assistant Professor School of Mathematical & Natural Sciences Arizona State University	JMW Ballroom
	Presentation of Awards	
	Closing Remarks: Dr. Angela Y. Birkes-Grier Alliance Director, Peach State LSAMP The University of Georgia	
12:45 pm	**Conference Participants are Dismissed**	

UGA GRADUATE SCHOOL



The University of Georgia Graduate School
is a proud partner in the
Peach State Louis Stokes Alliance
for Minority Participation

Congratulations to all research participants!

We want YOU at UGA!

We offer top-ranked programs in the STEM fields through the Franklin College of Arts and Sciences, the College of Agricultural and Environmental Sciences, the Biomedical and Health Sciences Institute, the Complex Carbohydrate Research Center, and the Interdisciplinary Toxicology Program, to name a few.

We are ranked highly by Diverse Issues in Higher Education for conferring Ph.Ds to African Americans.

We provide campus visitation to prospective students as well as admissions counseling and information on research and professional development opportunities at UGA. Contact our Outreach and Diversity Office at grecruit@uga.edu or call 706/425-3206.

We foster an environment of intellectual and professional growth.
Come see what awaits you at UGA!

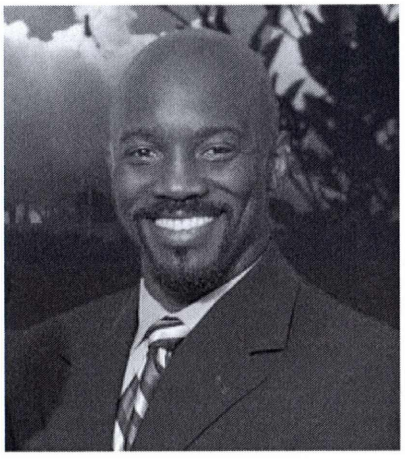
The University of Georgia Graduate School
grad.uga.edu

1785

ERIKA CAMACHO, PH.D. grew up in East Los Angeles and was taught by Jaime Escalante at Garfield High School. She received her Ph.D. in Applied Mathematics from Cornell University. She has held positions at Los Alamos National Laboratory, Loyola Marymount University, and ASU. She is currently an MLK Visiting Assistant Professor of Mathematics at Massachusetts Institute of Technology (MIT).). She co-founded and co-directed the Applied Mathematical Sciences Summer Institute (AMSSI), dedicated to the recruitment of undergraduate women, underrepresented minorities, and those that might not otherwise have the opportunity. She is summer co-director of the Mathematical & Theoretical Biology Institute (MTBI) focused on similar efforts. Her current research is at the interface of mathematics, biology, physiology, and sociology and involves mathematically modeling degenerative eye diseases, Type-2 Diabetes, gene networks within yeast, social networks, alcohol effects on a neuron firing, and fungal resistance under selective pressure. Her leadership, scholarship, and mentoring has won her national recognition including the SACNAS Distinguished Undergraduate Mentoring Award in 2012 and the National Hispanic Women Corporation Latina Leadership Award in 2011, recognition as one of 12 Emerging Scholars of 2010 by Diverse: Issues in Higher Education, and a citation for mentoring and guiding undergraduates in research by the U.S. National Security Agency. Some of her local recognitions include the Dr. Manuel Servin Faculty Award for excellence in exemplifying achievement in research, mentorship of Hispanic students, leadership at ASU and in the community in 2013, the New College of Interdisciplinary Arts and Sciences Faculty Service Award in 2013, the 40 Hispanic Leaders Under 40 Award in 2012 and the ASU Faculty Women's Association Outstanding Faculty Mentor Award in 2011.

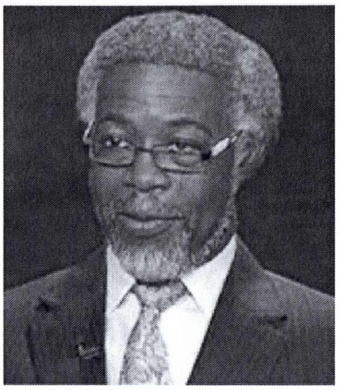
DR. JIMMIE L. DAVIS, JR., serves as President of STEMflorida, Inc., and works professionally with the MITRE Corporation, a not-for-profit corporation devoted to science and engineering research in the public interest. Dr. Davis currently leads a research and development task to design, evaluate, assess, analyze, characterize system performance, and ultimately better integrate communications and navigation for the Joint Tactical Radio System (JTRS) and the Global Positioning System (GPS).

As an All-American quarterback at Morehouse College he mastered both academics and athletics bringing national press attention and a host of prestigious honors and awards – among them: the National Football Foundation & Hall of Fame Scholar-Athlete Award, the National Collegiate Mathematics Award, and the Eddie Robinson Academic and Athletic Achievement Award. After earning his Bachelor and Master degrees, he earned his Doctorate of Engineering degree in Electrical Engineering from the University of Massachusetts Lowell while investigating performance models for Internet services in the Center for Advanced Computation and Telecommunications.



DR. CHERYL D. DOZIER was named the 13th president of Savannah State University (SSU) on May 9th, 2012, after serving one year as interim president and quickly instilling a culture of service, strength and unity across the Savannah State campus. Dozier has launched a number of programs aimed at increasing student graduation and retention rates, improving customer service and strengthening external relationships to advancing the legacy of academic excellence and community engagement set in place when SSU was founded in 1890. She is an active member of numerous professional and civic organizations — including the board of the United Way of the Coastal Empire, Savannah Economic Development Authority, Telfair Museums, Rotary, Savannah Chamber of Commerce, president emeritus of the Georgia Association for Women in Higher Education and the Mid-Eastern Athletic Conference (MEAC) Council of Presidents. Prior to taking the helm at Savannah State, Dr. Dozier was a faculty member and administrator at the University of Georgia since 1994. Her last position was associate provost and chief diversity officer for the Office of Institutional Diversity. In that role — to which she was appointed in 2006 after four years as assistant vice president of academic affairs at the Gwinnett University Center. Dr. Dozier led UGA's efforts to evaluate existing programs and develop new initiatives to support diversity and equity. Her knowledge, interest and expertise in diversity and international and global issues also aided Dr. Dozier as director of the interdisciplinary Ghana Study Abroad Program at UGA, a position in which she collaborated with faculty at four Ghanaian universities for more than a decade.

SYLVESTER JAMES "JIM" GATES, JR., is an American theoretical physicist. He received two B.S. degrees and a Ph.D. degree from Massachusetts Institute of Technology. His doctoral thesis was the first thesis at MIT to deal with supersymmetry. Gates is currently a University System Regents Professor, the John S. Toll Professor of Physics at the University of Maryland, College Park, and serves on the U.S. President's Council of Advisors on Science and Technology, and on the Maryland State Board of Education. He is known for his work on supersymmetry, supergravity, and superstring theory. In 1984, working with M.T. Grisaru, M. Rocek, W. Siegel, Gates co-authorized Superspace, the first comprehen-sive book on the topic of supersymmetry. He is a member of the board of trustees of Society for Science & the Public and the Board of Directors for Fermi National Accelerator Laboratory.



Gates has been featured extensively on many NOVA PBS programs on physics, notably "The Elegant Universe" in 2003, and "The Fabric of the Cosmos" in 2011. In 2006, he completed a DVD series titled Superstring Theory: The DNA of Reality for The Teaching Company to make the complexities of unification theory comprehensible to non-physicists. In 2012, he was named a University System of Maryland Regents Professor, only the sixth person to be so recognized since 1992. He is past president of the National Society of Black Physicists, and a NSBP Fellow, as well as a Fellow of the American Physical Society, the American Association for the Advancement of Science, and the Institute of Physics in the U.K. He has been elected to membership in the American Academy of Arts and Sciences, and the American Philosophical Society. Prof. Gates was presented the Medal of Science, the highest award given to scientists in the U.S., by Pres. Obama at a White House ceremony in 2013 and elected to the National Academy of Sciences, becoming the first African-American physicist so recognized in its 150-year history.

Dr. Justin Boone earned his Bachelor of Science Degree in Electrical Engineering from Southern University A&M College (May 2009), and received his Master of Science Degree in Electrical Engineering at the University of South Florida in May (2011). He then received his Doctor of Philosophy Degree in Electrical Engineering at Florida International University (August 2013), where he conducted research in the areas of RF/Microwaves and Nanotechnology for three-dimensional structures. Dr. Boone currently works for Northrop Grumman Electronic Systems as a RF/Microwave Design Engineer.

Mr. Stafford Braxton, a native of historic Yorktown, VA, received his undergraduate degree in Business Administration from Virginia Commonwealth University in Richmond, VA. Self-described as a closet artist, he found his artistic expression in photography and has been photographing weddings & special events for over 25 years. He has also been an educator, teaching in both the public & private sectors on the middle school level. He became acquainted with the *Guaranteed 4.0 Learning System* in the late 80's and has been presenting the life-changing principles since the mid-90's; he has been transforming the academic lives of many – one student at a time.

Dr. Alvin Harmon, the Interim Department Chair of Science and Health Professions at Atlanta Metropolitan State College received his B.S. degree in Biology from Morehouse College; earned his Ph.D. degree from Georgia State University in Biology, with a concentration in Neuroscience; and completed a postdoctoral fellowship at Emory University School of Medicine in Behavioral Pharmacology. Dr. Harmon currently serves as the campus coordinator at Atlanta Metropolitan State College for the Georgia LSAMP alliance. During his time in this position, over 90 percent of the LSAMP students at AMSC have graduated from the institution or transferred to a baccalaureate degree granting institution. Dr. Harmon serves as the chair of the institution's faculty council, he represents AMSC to the biological sciences advisory board of the USG, he serves as the faculty representative to the Atlanta Metropolitan State College foundation, he has participated in numerous institutional committees, and he is a member of Omega Psi Phi Fraternity, Inc.

Mr. Garry A. Harris is the president of HTS Enterprises, a consulting firm that provides diverse energy engineering and power generation technical services including research, policy and education services. He is the founder and Director of the Institute for Energy Efficiency and Renewable Energy; Executive Director of the Southeast Energy Education Initiative, Managing Director of the Energy Horizons Laboratory and Research and Development Center and Energy Horizons Power Generation Service Division. He is also the founder and Managing Director for the Center for Sustainable Communities. Mr. Harris holds a BS in Nuclear Engineering from the University of Virginia, an MS in Technology Management and an MS in Quality Engineering. He is seeking a Ph.D. in Energy Policy from the Georgia Institute of Technology. He has also completed post graduate course work at both Harvard and Emory Universities. He is a 2009 Graduate of Leadership Atlanta and a member of the Omega Psi Phi Fraternity and the 100 Black Men of Atlanta. Mr. Harris was selected and listed in *Who's Who in Black Atlanta* and nominated on several occasions among Men of Influence in metro Atlanta and White House Champion of Change.

Dr. Deidra Hodges is an Assistant Professor in the Department of Electrical and Mechatronics Engineering at Southern Polytechnic State University (SPSU). Dr. Hodges holds a Ph.D. degree in Electrical Engineering from the University of South Florida. Hodges also received M.S. and B.S. degrees in Electrical Engineering from Columbia University and a B.S. in Physics from Dillard University. Hodges was awarded a National Science Foundation (NSF) Broadening Participation Research Initiation Grant in Engineering (award #1125775) in 2011 for the Development of CZTS Thin Films and Solar Cells. Hodges was also awarded a NSF Major Research Instrumentation grant (award #1228956) in 2012 for the acquisition of a thin film materials deposition system. Hodges was also a recipient of SPSU's Outstanding Faculty of the Year Award and Cobb County's Teacher of the Year in 2012.

Ms. Tarra Jackson, known as Madam Money, is a financial expert as well as an energetic and charismatic international speaker. Her passion is to educate young adults about money and credit through fun, interactive workshops, webinars and social media. Tarra is the host of a popular Twitter chat, #CashChat, which takes place every Friday. She is sought after by her social media networks and followers for practical tips and information about how to enhance or improve personal finances and credit. She is currently the President / CEO of Prosperity Now Financial Management Services, which is a financial coaching and workshop facilitation firm. Tarra has served on numerous communities as an executive of financial institutions in Delaware and Georgia.

Dr. Army Lester received his Ph.D. in biology from Atlanta University and has since been a faculty at Kennesaw

State University (KSU). During his tenure at KSU, Army has focused his energies on excellence in teaching and service. His teaching philosophy is one that seeks to empower students by engaging them in a personalized applied approach to learning. Army's students often can be found working with him on a number of community outreach projects where the college students learn through practical experience. He has directed several different student success programs such as the KSU Peach State LSAMP program and the KSU NASA Fellows program. His work has been cited in publications such as the *Chronicle of Higher Education, Black Enterprise*, and the *Atlanta Journal-Constitution*. He has been recognized by awards that include the Citizen of the Year, Living the Dream Award, KSU Preston Community Leadership Award and Distinguished Service Award, Omega Man of the Year, and Outstanding Young Americans Award. Army's commitment to teaching and service has been fueled by a variety of leadership training programs to help develop his servant leadership mentality such as Leadership Kennesaw State, Leadership Cobb, Leadership Georgia, and the Kellogg National Leadership/Fellowship Program.

Dr. Sonja Montas-Hunter is the Assistant Dean of the University Graduate School at Florida International University in Miami. In her role, she is responsible for the Graduate Student Professional Development Program, Recruitment and the Graduate Minority Opportunity Program. She oversees the credentialing process of Teaching Assistants and reviewing thesis/dissertation forms. Dr. Montas-Hunter comes from Miami-Dade College (MDC), Hialeah Campus, where she served as Assistant Dean of Academic and Student Affairs. Prior to MDC, Dr. Montas-Hunter served as Executive Director of Barry University's Office of Migrant Education. More recently, she wrote and received the Council for Graduate School Doctoral Initiative on Minority Attrition and Completion Award. Dr. Montas-Hunter earned a B.A degree in English from Hunter College-CUNY; MA in English from Radford University; and a Ph.D. in Higher Education Leadership from Barry University.

Mr. Tarrance Mosley currently serves as the Alumni Career Services Coordinator at Kennesaw State University (KSU). He received his B.S. in Biology from the University of Alabama at Birmingham, and his MBA from American Intercontinental University. Prior to arriving at KSU, he served as Director of Health Sciences Advising at Auburn University in Montgomery. He spent 10 years as an officer in the U.S. Air Force, and is currently a civilian instructor in leadership and communication for the U.S. Air Force Reserve.

Dr. Al-Aakhir A. Rogers is a Senior Member of the Technical Staff at Draper Laboratory in St. Petersburg, FL, responsible for developing and integrating new processes for multi-chip-module (MCM) and iUHD (integrated ultra high density) technologies. Prior to joining Draper Laboratory, Dr. Rogers completed his doctoral degree in Electrical Engineering at the University of South Florida (USF) in August 2011. His dissertation title was *Evanescent Wave Coupling Using Different Period Subwavelength Gratings for an Optical MEMS Accelerometer*. During his doctoral studies, Dr. Rogers has published several peer-reviewed journal articles, conference proceedings, was named co-inventor on a patent, and has presented his research across the world. Also, he has been recognized with several honors, including an Alfred P. Sloan Minority Ph.D. Fellow, Bridge to the Doctorate Fellowship, a NSF East Asia Pacific Summer Institute (EAPSI) Fellowship. As an NSF EAPSI fellow, he completed an internship at the Instrument Technology Research Center (ITRC), National Applied Research Laboratories in Taiwan. Dr. Rogers is a co-inventor on an issued patent utilizing evanescent wave coupling for an accelerometer device. His sensor was the first of its kind and demonstrated comparable results with current commercial accelerometer devices. Additionally, he is the primary inventor on a provisional patent utilizing evanescent wave coupling for anti-tampering.

Dr. John C. Salerno is the Neel Distinguished Professor of Biotechnology at Kennesaw State University. He received a Bachelor of Science degree in Physics from Massachusetts Institute of Technology and a Doctor of Philosophy degree in Biophysics from the University of Pennsylvania School of Medicine. Dr. Salerno has been an NIH Trainee for research, was twice awarded as an NIH Fellow, received the Rensselaer Early Career Award for research and has been invited to give numerous talks. He is a member of the American Society of Biochemistry and Molecular Biology, AAAS, AAUP and was formerly a member of the Biophysical Society and ACS. Dr. Salerno has published over a hundred journal articles and numerous proceeding papers, book chapters, monographs and patent applications. He currently serves as an advisor for research development and an advisor for graduate programs at Kennesaw State University.

Dr. Marshall Shepherd, the 2013 president of the American Meteorological Society, is a leading international expert in the area of weather, climate and atmospheric related sciences, and recently briefed the U.S. Senate on climate and extreme weather. In 2004, he received one of the nation's highest scientific awards (PECASE Award)

at the White House from President Bush for pioneering research on urban-hydroclimate relationships. Dr. Shepherd is the UGA Athletic Association Professor of Geography at the University of Georgia and director of the University's Atmospheric Sciences Program. Dr. Shepherd serves on the National Oceanic and Atmospheric Administration Science Advisory Board, the Earth Science Subcommittee of the NASA Advisory Council, the NASA Goddard Space Flight Center Visiting Expert Committee and numerous other high level committees. He has appeared on *Face the Nation, The Today Show, Larry King Live*, CNN, The Weather Channel and in numerous other media outlets. At UGA, he conducts research and teaching in atmospheric sciences, climatology, water cycle processes and urban climate systems. Dr. Shepherd received his B.S., M.S. and Ph.D. from Florida State University, Department of Meteorology.

Mr. Barton Sudderth ("Mr. Bart") founded and became CEO of Millennium Training Systems (MTS) in 1999. MTS was created to assist the development and implementation of programs to improve Science, Technology, Engineering and Math (STEM) literacy for America's students. Mr. Bart and his copyrighted "Share, Read and Build" approach to learning have helped thousands of students across the United States gain STEM awareness. As an Educational Consultant and Coach, Mr. Bart has led the World Championship 100 Scholars Robotics Alliance of 100 Black Men of Atlanta's Project Success Program since 2005. Mr. Bart's teams have competed with teams from all over the world. The 100 Black Men of North Metro, Inc., presented Mr. Bart its 2011 Mentoring Award in recognition of his contributions. Mr. Bart has also been featured in *CNN's Black in America* programs.

Dr. Cheryl A. Swanier is an associate professor in Fort Valley State University's Department of Mathematics and Computer Science. She conducts research in Human Computer Interaction with an emphasis in visual programming of educational simulations with end user programming and educational gaming technologies. She is a recipient of the 2013 NCWIT Undergraduate Research Mentoring Award. Swanier is also the recipient of the 2013 Champion of Change for Tech Inclusion Award given by the White House. She has been selected as the 2013 STARS Outstanding Faculty Liaison Award as well as the 2013 STARS Award for Outstanding Commitment and Dedication to the Mission of STARS. Ebony Magazine selected Dr. Swanier as one of the 2013 Power 100 recipients.

Dr. Swanier works with outreach initiatives to improve computer science education at all levels. One of these initiatives is the ARTSI Alliance, Advancing Robotics, Technology for Societal Impact. Swanier established the first robotics lab at Fort Valley State University.

Dr. Swanier is a member of the NCWIT Academic Alliance and the NCWIT Pacesetters. Swanier provides mentoring to undergraduate students. She facilitates presentations to provide undergraduates with opportunities to gain information on research experiences, internships and on exploring the graduate experience.

Dr. David Veazie is a Professor of Mechanical Engineering and the Director of the Center for Advanced Materials Research and Education (CAMRE) at the Southern Polytechnic State University in Atlanta, Georgia. He received his B.S. in Mechanical Engineering from Southern University in 1986, and his M.S. and Ph.D. in Mechanical Engineering from Georgia Institute of Technology in 1987 and 1993, respectively. He worked for AT&T Bell Laboratories in New Jersey as a member of the Technical Staff and was a National Research Council (NRC) Postdoctoral Fellow at the NASA Langley Research Center. In 1994, he joined Clark Atlanta University's Department of Engineering, and was the Director of the Mechanical Testing Laboratories (MTL) and Associate Director of the NASA funded High Performance Polymers and Composites (HiPPAC) Center.

Ms. Maxine Wright Thompson's duties and responsibilities include recruitment of outstanding underrepresented applicants nationwide who are interested in becoming physician scientist in the MD/PhD Program at Emory University School of Medicine. She is directly involved in all aspects of recruitment and the admission's process of viable candidates seeking to train and impact the world with their discoveries. Maxine obtained her Bachelor of Arts degree in Religion from Spelman College in Atlanta, Georgia and Master in Divinity with a Certificate in Faith and Health from Candler School of Theology at Emory University. Her work continues by asking the question, "How is your faith impacted by your health and how is your health impacted by your faith?" It starts the conversation to explore ways we are connected by both body and spirit. She lived and worked for ten years in the Middle East (Riyadh, Saudi Arabia) and travelled to more than 42 countries experiencing diverse peoples and cultures. Ms. Thompson serves as Nominations Chair of the Southern Region of NAMME (National Association of Minority Medical Educators) and member of the Advisory Board of the Black Church Studies Program at Candler School of Theology, Secretary of Author and Finisher, Inc. and is a Certified Professional Life Coach.

THE EMORY MD/PHD PROGRAM

The MD/PhD program at the Emory School of Medicine is an NIH sponsored Medical Scientist Training Program. It combines the advantages of rigorous preparation in clinical medicine with interdisciplinary training in the basic and social sciences. This program is designed to provide highly qualified students with the in-depth, high-caliber research training and medical education needed by academicians of the future.

COMMON CENTS TIPS FOR GOOD CREDIT AFTER COLLEGE: GETTING THE CREDIT YOU NEED

This money sense session provides everything you wanted to know about establishing good credit after getting out of college. The facilitator will share practical tips and information about how to enhance or improve personal finances.

DEVELOPING WINNING PERSONAL STATEMENTS

A winning personal statement is an effective tool for enhancing your resumes and applications. The personal statement allows for employers, application reviewers, and graduate schools to get to know what motivates you. This interactive workshop will cover the basics of writing an effective personal statement that may get you to the interview or the next step in the application process.

SUCCESSFUL TRANSITIONS FOR GRADUATE SCHOOL, THE BRIDGE TO THE DOCTORATE FELLOWSHIP, AND BEYOND

Professional Development should be an integral element of your higher education experience as you figure out what to do next. For many minority students, professional development is often put on the back burner. But, having a professional development plan will unlock doors to many opportunities. This presentation will discuss the different phases that make up the journey of professional development and help you think about your own professional development plan as you transition into graduate school and prepare for the BD Fellowship.

THE ROAD TO ACADEMIA PANEL

This workshop features faculty with diverse backgrounds in STEM disciplines. The panelists will discuss their educational backgrounds, experiences, and the various paths of preparation they had as they pursued positions in higher education.

MOLECULAR CONTROL OF NITRIC OXIDE SIGNALING IN CARDIOVASCULAR FUNCTION

Nitric Oxide is the primary controller of vascular tone (and hence blood pressure) in humans. It is also important in angiogenesis (development of new blood vessels), in regulation of cardiac function, and in regulation of insulin secretion. The primary controller of endothelial nitric oxide synthase (eNOS) is the calcium biosensor calmodulin, but in addition there are many additional signals, including covalent modification by kinases in response to external and internal signals. After discovering the major control elements of this signal generator and the closely related neuronal NOS, my research group has worked on finding out how the regulatory inputs worked together to control NO signaling.

GUARANTEED 4.0 MINI SESSION I

This is a "mini" Guaranteed 4.0 session that is part of an educational series which details a unique learning method that is guaranteed to deliver a 4.0 GPA. The focus of these seminars is not "how to study", but rather, for the students To LEARN HOW TO LEARN and ultimately achieve a mindset of academic excellence and success.

HYDROROBOTICS DESIGN AND ANALYSIS HIGH SCHOOL WORKSHOP

SeaPerch is an innovative underwater robotics program following a curriculum that equips students with engineering concepts, problem solving, teamwork, and technical applications. Students will build an underwater Remotely Operated Vehicle (ROV) from a kit comprised of low-cost, easily accessible parts.

THE POWER OF ROBOTIC SENSORS MIDDLE SCHOOL WORKSHOP

The Millennium Training Systems Middle School Workshop will present the prevalence of robotics in our lives today. This workshop will engage the students in a hands-on experience of how sensors give robots to ability to be useful.

1. **Deborah Adedeji (KSU)** The Effect of Ar tagging on the H5O2+ Protonated Water Cluster
2. **Jimmy Adeoti (KSU)** Comparative Study of the Main Ingredients in Energy Drinks Using Various Analytical Methods
3. **Akosua Amponsah (SSU)** Investigating the Role of Estrogen & How it Impacts Obesity
4. **Coretha Antchouey (KSU)** Mutagenesis Reveals Roles for R208 and V109 in the Proton Selectivity Mechanism of the Human Voltage Gated Proton Channel, hHv1
5. **Lauren Beasley (KSU)** Sensor Kinase FlgS Interacts with Flagellar Proteins: Implications for Regulation of Flagellar Biogenesis in H. pylori
6. **Christopher Benson II (UGA)** Activin A-Nodal Signaling in Mouse Embryonic Stem Cells
7. **Shakema Bowman (SSU)** Synthesis of Benzofuran Carboxylic Acids
8. **Jarvis Brewer (SSU)** Developing a Non-Intrusive Method to Increase the Privacy of Android Camera Enabled Applications
9. **Sterling Brooks (SSU)** Measurement Science of the Wenner 4-Probe Surface Conductivity Test Applied to Concrete Cylinders
10. **LaToya Brown (SSU)** The Greater You Sleep, the Less you Weep!
11. **Jasmine Butler (SSU)** Utilizing Dijkstra's Algorithm to Determine the Shortest Route to Buildings on Savannah State University's Campus (SSU)
12. **Shanice Caldwell (SSU)** Drug Repurposing
13. **Brandon Clark (FVSU)** RoMi: Refraction Microtremor Using Rotational Seismometers
14. **Davon Clearly (SSU)** Applications of Differential Equations
15. **Rachael Daniels (SSU)** Investigating the Role of Pipki Regulating in Regulating KCNQ5 Protein Levels
16. **Patrick Dean Jr. (SSU)** Fetching Objects with Robots
17. **Trent Demeritte, Jr. (SSU)** Strength of Metals
18. **Alethea Duc (KSU)** Mapkap kinase 2 regulation by oxidation
19. **Robert Dumas II (SSU)** Comparative Measurements of Effective EPS Extractions with Ion Chromatography and Spectrophotometry
20. **Chidi Ekeledo (UGA)** Interaction of B-DNA and ssDNA with Carbon Allotropes via Molecular Simulation
21. **Obioma Ekeledo (UGA)** Interoception as Motivational Signals for Memory
22. **Blessing Enya (SSU)** Historical Trends and Prediction in Savannah's Temperature
23. **Felix Etinge and Jazmynn Love (SSU)** Visualization of Flow around Cylinders using Solid Works Flow Simulation
24. **Shanee' Ferguson and Frederick Fluker (SSU)** Smart Road Signs
25. **Mercedes Gainor (UGA)** Hydrocarbon Ices under Simulated Titan Conditions
26. **Mina Ghobrial (KSU)** Testing Algorithms to Predict Onset of Cerebral Malaria in Murine Model
27. **Reesheda Gilbert (KSU)** Antifungal Agent Against Aspergillus Species in Georgia Peanuts
28. **Michael Gilbert (SSU)** Evaluation and Design of an Isolated Power Converter to function in a Wireless Phone Charger
29. **Stephen Gitau and Ezigbobi Umejiaego (KSU)** Endothelial Nitric Oxide Synthase Control by Phosphorylation of Control Elements

30. **Brian Golson (SPSU)** Box Wing Design Left vs. Drag

31. **Jasmine Hall (FAMU)** cDNA Cloning and Characterization of Flavanone 3' Hydroxylase (F3H) Gene From Muscadine Grapes

32. **Tony Hansberry (FAMU)** Rate-Based Blood Transfusion Trigger Improves Prediction for Massive Transfusion Protocols

33. **Nathaniel Hardy, III (SSU)** Electric Circuit Analysis in MATLAB and Simulink

34. **Evan Hayes (FVSU)** Speaking the Language of Hedgehog: Sutherlandia Extract Inhibits Prostate Cancer Cell Proliferation by Affecting the Paracrine Hedgehog Signaling Pathway

35. **Clarence Hicks (FVSU)** High Frequency Propagation Regeneration in Valeriana officinalis - Rare Medicinal Plant

36. **Lauren Hutchinson (KSU)** A Dibenz[a,c] Phenazine-Supported N-Heterocyclic Carbene and its Rhodium and Iridium Complexes

37. **Obumneme Imonugo (KSU)** The Anti-Fungal Properties of Egg White: A Hypothesis for the Evolutionary Benefits of Avian Egg Rotation

38. **Rueben Israel-McBee (SSU)** Anti-Adipogenic Activity of Terminalia Pallida Fruit

39. **Catherine Johnson, Muaaz Masood (UGA)** An Analysis of the Associated Disorders, Sports Injuries, and Corrective Surgical Procedures for the Human Vertebral Column.

40. **Marion Johnson (SSU)** Synthesis and Characterization of Cationic Porphyrin: A Potential Candidate for Photodynamic Therapy of Tumor

41. **Paris Johnson (FVSU)** Localization and Expression of Fluorescently Tagged Markers of an Engineered Binding Site in Zea Mays

42. **Nakiara Jordan (SSU)** Tic-Tac-Toe GUI

43. **Matthew Joseph (UGA)** The Effects of Autophagy and Necroptosis in the Murine Model of Placental Malaria

44. **James Jovon (FVSU)** Investigation of the Shallow Subsurface of the Bushveld Complex using the Gravity Method

45. **David Lindsey (TCC)** Synthesis of Metal-Organic framework (MOFs) using core substituted NDI molecules and their use as chemo-sensors

46. **Christian Lyle (SSU)** The Synthesis of a Porphyrin Using 4 (4-Fluorophenoxy) benzaldehyde: Its Chemical and Physical Properties

47. **Mauro Mancilla (TCC)** Airflow in the Big City

48. **Ulysius McGhee (FVSU)** The Study of SGS3-Like Genes in RNA-Directed DNA Methylation Pathway in Arabidopsis

49. **Megan Mickanen and Verra Ngwa (KSU)** Novel modes of eNOS regulation

50. **Kiara Miller (SSU)** Exploring the Role of Catecholamines in Ultrasonic Vocalization Production in Parkinsonian rats

51. **Roshini Mohan (SSU)** Identification and Expression of LLT1 in Prostate Cancer Tissues

52. **Olivia Moline (FAMU)** Prostate Cancer Knowledge, Myths and Misconceptions among Haitian Men.

53. **Maleek Montgomery (SSU)** Design and Stress Analysis of a Load-Carrying

54. **Vladimir Moricette (KSU)** Role of Nitric Oxide Synthase Control Elements Defined by Deletion of the Autoinhibitory Element and C Terminal Extension

55. **Ashley Morris (SSU)** Two-Tone Coloring of Graph Products

56. **PoTeea C. Morris-Hunter (SSU)** Evaluation of Functional Antibodies Specific to Bordetella pertussis Antigens

57. **Joseph Nesbit (FVSU)** Can Land Applying Spent Iron and Water Treatment Residuals Decrease Nutrient Runoff from Poultry Houses?

58. **Dickson Nosegbe (GPC)** Magnetic Ground State of Triangular Nanomagnets

59. **Amarachi Ochiobi (GPC)** T7 RNA Polymerase Expression and Purification

60. **Loughlin Onyeokoro (FVSU)** Extraction Efficiency of Extracellular polymeric secretions (EPS) – Using the Ethanol Precipitation Method

61. **Cecilia Pantoja (GT)** Immunomodulation Through the use of Functionalized Microparticles

62. **ValaRae Partee (UGA)** Physically & Chemically Modified Chitosan Composites for Adsorption and Surface Decontamination of Heavy Metal Contaminants

63. **Benjamin Pickard (FVSU)** Fabrication and Characterization of Lactoferrin Fibers

64. **Mariah Pollard (SSU)** Hydrogen Peroxide as a Model of Cell Death for the Study of the Neuroprotective Properties of Phytoestrogens

65. **Ramon Reddick (UGA)** Purification of Xyloglucan-Specific Endo-B-1, 4 -Glucanase After Expression in Escherichia Coli

66. **Cecil Reid (GT)** For Youth, For Life

67. **Katherine Rhoades (KSU)** c-Jun n-Terminal Kinase Binds to and Inhibits Endothelial Nitric Oxide Synthase

68. **Jasmine Roberts, Tiffany Villanueva (SSU)** Development of the Personalized Sign Language Translator Utilizing the Motion Sensing Device

69. **Ke'Erra Rozier (FVSU)** A Passion for Tomatoes: The Scientific Process of Improving Flavor

70. **Jessica Saintibert (TCC)** Brookhaven Atmospheric Tracer Sampler: Urban Atmospheric Dispersion Study

71. **Shavonda Seabrooks (SSU)** Maximum Power Transfer Theorem

72. **Asia Stinson (SSU)** Obesity: GLP-1's Adiopogenic Effects

73. **Mandisa Taqqee (SSU)** The Modification of Asiprin

74. **Chantia Taylor (SSU)** Nanodisc New Tools for Membrane Protein Study

75. **Erica Thompson (GT)** The Importance of Training and Certification for Construction Inspectors

76. **Fabian Todd (FVSU)** Engineering Nanoscale Imprinted Polymer Particles

77. **Ezigbobiara Umejiaego (KSU)** Comparison of Protein Purification Systems for Supporting Fermentation Development in the Biologics Industry

78. **Sheena Vasquez (GPC)** Growth Inhibition & Hydrogen Peroxide Production of Lactobacillus johnsonii in Presence of Phenolic Acids

79. **Arthur Wesley (SSU)** RFID Technology

80. **Andrea Williams (FVSU)** Determining Phosphate Source Utilization of Vibrio fischeri

81. **Shericka Williams (FVSU)** Identification of Proteins in Differentiated SH-SY5Y Neuroblastoma Cells Treated Chronically with Mu-Opiod Agonist DAMGO

82. **Timothy Wright (SSU)** VHDL Models Implemented in FPGA Hardware

83. **Travis Young (SSU)** Prevalence and Distribution of Health hazardous Waterborne Microbial Contents in Water Samples Collected from Savannah Water Bodies

1. **Nader Abdullahi (GT)** HIV-1 Tat Protein increases Cathepsin S Production in THP-1 Monocytes

2. **Jamal Adan, Beza Gerbemedhine, Sterling Jones, Sheena Vasquez (GPC)** Analysis of Environmental Water Sources for Microbial Presence

3. **Michael Alemayehu (GT)** Equivalent Circuit Method for Electrical Conductivity of Composites with Nanofillers

4. **Jillian Anderson (ASU)** Primary Mobile Phone User Identification

5. **Oluwadare Babjide (UGA)** Analysis of P1 Function in Mycoplasma Pneumonia Adherence and Gliding

6. **Bruce Baptiste, Dickson Nosegbe, Cherish Prickett (GPC)** Piezoelectric Crystal Developments and Applications

7. **Shantonio Birch (GT)** Mechanical Integrity of Poly (methyl methacrylate) (PMMA-Based) Flexible Capacitors

8. **Juhi Brahmbhatt, Vanda Johnson (SSU)** A Digital Elevation Model and the Human Body Energy Expenditure for Climbing up a Mountain

9. **Shelby Brewer (UCONN)** Habitats and Fish Composition in North Fishtail Bay of Douglas Lake

10. **Shanice Brewster (FVSU)** Quantitative Structure Activity Relationship (QSAR) Study of a Select Group of Flavonoids

11. **Qiana Butler (FVSU)** A Putative Chemical Basis for Differential Infection of Parasitized vs. Non-Parasitized Plodia interpunctella by Entomopathogenic Nematodes

12. **Kengelle Chukwurah (UGA)** On the Modeling of Protein

13. **Dwayne Davis (FVSU)** The Correlation Between Pupillary Unrest with Respiration and Heart Rate Variability

14. **Carlos Diaz-Ruis (GT)** Self-assembling Nanoparticles for Intra-Articular Delivery of Anti-Inflammatory Proteins

15. **Fabien Durand (GT)** Cleaning Mechanisms

16. **Aleema Dyer (KSU)** Rotating the Chicken Egg as a Plausible Mechanism for Increasing Shelf Life

17. **Joshua Ebin (GPC)** Fluid Penetration into Porous Media During Slot Die Coating

18. **Christopher Ferrier-Williams (SPSU)** Green Roof Research

19. **Francis Teshaun (SPSU)** Personal Health Medical Device

20. **Eled Gebrehiwot (UGA)** Gelatin-Chitosan Scaffolds for Cartilage Tissue Engineering

21. **Crystal Gillom (FVSU)** A Comparison of Insect Hosts for Efficient In Vivo Production of Entomopathogenic Nematodes

22. **Vanessa Gutierrez (UGA)** Inducible RNAi Constructs for Knockdown of HAN Gene in Arabidopsis

23. **Dolphurs Hayes (SSU)** Interaction of Cytochome C with a Photosensitizer for Photodynamic Therapy

24. **Shelby Henry, Nathan Louis, Brandon Pearson, Bernie Prieto (SPSU)** Smart Sensors Design and Development

25. **Marcus Herndon, Tahri Turner (SPSU)** Sun Seeking Solar Cells

26. **Edidiong Inyang (FVSU)** Factors that Affect Paralysis of Indianmeal Moth Larvae (Plodia Interpunctella) by Gregarius Parasitoid (Habrobracon Hebetor)

27. **Herby Jean (USF)** Removal of Bacteria from Stormwater using Biochar

28. **Solome Mekbib (KSU)** Increasing the Partial Pressure Oxygen in Shell-Less Chick Cultures Increases Early Survivability

29. **Edward Mwangi (KSU)** Testing of Memory Leak in Android Applications

30. **Chelsea Newton (FVSU)** The Detection of Ricin in Milk & in Orange Juice Using Surface Enhanced Raman Spectroscopy

31. **Gedeon Nyengele (GPC)** A Mobile System to Monitor Neonatal Nursing Characteristics

32. **Olowojesiku Ronke (UGA)** Exploration of Molecular Techniques Of Arthropod Bloodmeal Analysis

33. **Eric Parks, Matthew Ramirez (SSU)** Analysis of Sea Turtle Humeri for Trace Element Composition

34. **Chelsea Patterson (SPSU)** CZTS: Thin Film Solar Cells

35. **Marquese Pollard (SSU)** Extra-Lightweight UAV Composites Structures via Additive Manufacturing

36. **Gabrielle Powell (SSU)** The Synthesis of Sigma Receptor Ligands

37. **Jessica Rich (FVSU)** Beneficial Trait Deterioration in Nematodes

38. **LaDeidra Roberts (GT)** Antiretroviral Drugs efavirenz and tenofovir and Their Effects on Arterial Remodeling and Protease Activity

39. **Diamond Rogers (SSU)** Expression and Purification of Sigma-1 Receptor

40. **Precious Simpson (FVSU)** An Evaluation of the Effectiveness of the Hazard Plan at Fort Valley State University's Meat Technology Facility and the Potential Detection of Drug Resistant Bacteria

41. **Renee Smith (SSU)** Spring-Neap Variation in Egg-length Correlations and Embryonic Development for the Daggerblade Grass Shrimp Palaemonetes pugio

42. **William Snyper (SSU)** Underwater Communication using Sinusoidal Waves

43. **Joseph Tanner (SPSU)** Study of Optimized Drag Reduction System for Semi-Trailers

44. **Cynthia Tchio (KSU)** A Rapid UV/VIS Spectrophotometric Method for Analyzing Lycopene Content in Tomato Fruit Using a Standard Addition Method

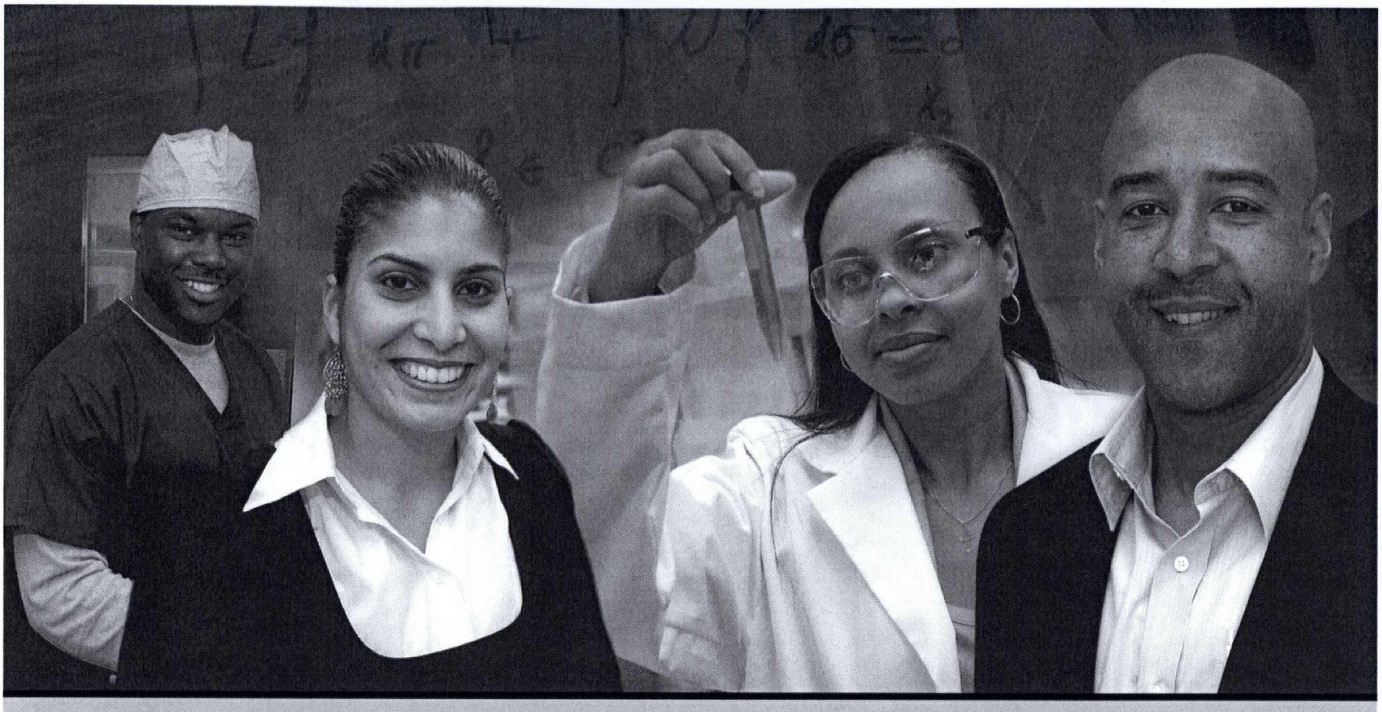
45. **Damian Todd (FVSU)** Exploring Molecular Interactions between Fluorescent Molecules and Solvents in Solid State for Sensor Applications

46. **Rob Townsend (GPC)** Smart wheelchairs: Improving Assistive Navigation

47. **Byron Williams (SSU)** Bilinearization of Soliton Equations

48. **Reggie Wootson (FVSU)** An Application of Parameters Identification on Studying the Effects of Antibacterial Agent on the Growth of a Bacterial Population

49. **Lina Tibavinsky (UGA)** Contribution of NKp46 Recognition of Hemagluttin to Anti-Influenza Immune Response



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Poster Presentations
4:00pm – 6:00pm

****** Presenters MUST remain at the Poster Station between 4:00 pm and 6:00 pm******

Category/Area: **Chemistry**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-001	Adedeji	Deborah	KSU
PSP-002	Adeoti	Jimmy	KSU
PSP-007	Bowman	Shakema	SSU
PSP-032	Hansberry	Tony	FAMU
PSP-040	Johnson	Marion	SSU
PSP-045	Lindsey	David	TCC
PSP-046	Lyle	Christian	SSU

Category/Area: **Chemistry**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-059	Ochiobi	Amarachi	GPC
PSP-062	Partee	ValaRae	UGA
PSP-073	Taqqee	Mandisa	SSU
PSP-074	Taylor	Chantia	SSU
PSP-076	Todd	Fabian	FVSU

Category/Area: **Life Sciences – Cellular and Molecular Biology**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-003	Amponsah	Akosua	SSU
PSP-004	Antchouey	Coretha	KSU
PSP-005	Beasley	Lauren	KSU
PSP-006	Benson II	Christopher	UGA
PSP-010	Brown	LaToya	SSU
PSP-015	Daniels	Rachael	SSU
PSP-020	Ekeledo	Chidi	UGA
PSP-021	Ekeledo	Obioma	UGA

Poster Presentations
4:00pm – 6:00pm

****** Presenters MUST remain at the Poster Station between 4:00 pm and 6:00 pm******

Category/Area: **Life Sciences – Environmental Biology**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-026	Ghobrial	Mina	UGA
PSP-029	Gitau, Umejiaego	Stephen, Ezigbobiara	KSU
PSP-031	Hall	Jasmine	FAMU
PSP-034	Hayes	Evan	FVSU
PSP-035	Hicks	Clarence	FVSU
PSP-038	Israel-McBee	Rueben	SSU
PSP-041	Johnson	Paris	FVSU
PSP-043	Joseph	Matthew	UGA

Category/Area: **Life Sciences – Cellular and Molecular Biology**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-048	McGhee	Ulysius	FVSU
PSP-049	Mickanen, Ngwa	Megan, Verra	KSU
PSP-050	Miller	Kiara	SSU
PSP-051	Mohan	Roshini	SSU
PSP-054	Moricette	Vladimir	KSU
PSP-056	Morris-Hunter	PoTeea C.	SSU/Morehouse College
PSP-061	Pantoja	Cecilia	GA Tech
PSP-063	Pickard	Benjamin	FVSU

Category/Area: **Life Sciences – Cellular and Molecular Biology**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-064	Pollard	Mariah	SSU
PSP-065	Reddick	Ramon	UGA
PSP-067	Rhoades	Katherine	KSU
PSP-069	Rozier	Ke'Erra	FVSU
PSP-072	Stinson	Asia	SSU
PSP-078	Vasquez	Sheena	GPC
PSP-081	Williams	Shericka	FVSU

Poster Presentations
4:00pm – 6:00pm

****** Presenters MUST remain at the Poster Station between 4:00 pm and 6:00 pm******

Category/Area: **Life Sciences – Environmental Biology**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-018	Duc	Alethea	KSU
PSP-019	Dumas II	Robert	SSU
PSP-047	Mancilla	Mauro	TCC
PSP-052	Moline	Olivia	FAMU
PSP-057	Nesbit	Joseph	FVSU
PSP-060	Onyeokoro	Loughlin	FVSU
PSP-070	Saintibert	Jessica	TCC
PSP-083	Young	Travis	SSU

Category/Area: **Life Sciences – Microbiology**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-027	Gilbert	Reesheda	KSU
PSP-037	Imonugo	Obumneme	KSU
PSP-080	Williams	Andrea	FVSU

Category/Area: **Mathematics and Physical Sciences**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-008	Brewer	Jarvis	SSU
PSP-012	Caldwell	Shanice	SSU
PSP-013	Clark	Brandon	FVSU
PSP-022	Enya	Blessing	SSU
PSP-025	Gainor	Mercedes	FVSU
PSP-044	Jovon	James	FVSU
PSP-055	Morris	Ashley	SSU

Poster Presentations
4:00pm – 6:00pm

****** Presenters MUST remain at the Poster Station between 4:00 pm and 6:00 pm******

Category/Area: **Technology and Engineering**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-009	Brooks	Sterling	SSU
PSP-011	Butler	Jasmine	SSU
PSP-014	Cleary	Davon	SSU
PSP-016	Dean Jr.	Patrick	SSU
PSP-017	Demeritte, Jr.	Trent	SSU
PSP-023	Etinge, Love	Felix,Jazmynn	SSU
PSP-024	Ferguson, Fluker	Shanee', Fredrick	SSU
PSP-028	Gilbert	Michael	SSU

Category/Area: **Technology and Engineering**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-030	Golson	Brian	SPSU
PSP-033	Hardy, III	Nathaniel	SSU
PSP-036	Hutchinson	Lauren	KSU
PSP-039	Johnson, Masood	Catherine, Muaaz	UGA
PSP-042	Jordan	Nakiara	SSU
PSP-053	Montgomery	Maleek	SSU
PSP-058	Nosegbe	Dickson	GPC
PSP-066	Reid	Cecil	GA Tech

Category/Area: **Technology and Engineering**
Location: **Joe Mack Wilson Ballroom**

Presentation #	Student Last Name	Student First Name	Institution
PSP-068	Roberts, Villanueva	Jasmine, Tiffany	SSU
PSP-071	Seabrooks	Shavonda	SSU
PSP-075	Thompson	Erica	GA Tech
PSP-077	Umejiaego	Ezigbobiara	KSU
PSP-079	Wesley	Arthur	SSU
PSP-082	Wright	Timothy	SSU

Oral Presentations – Part I
10:00 am – 11:45 am

Category/Area: **Chemistry**
Location: **Breakout C**

Presentation #	Student Last Name	Student First Name	Institution	Time
PSO-010	Brewster	Shanice	FVSU	10:00 – 10:15
PSO-023	Hayes	Dolphurs	SSU	10:15 – 10:30
PSO-030	Newton	Chelsea	FVSU	10:30 – 10:45
PSO-036	Powell	Gabrielle	SSU	10:45 – 11:00
PSO-039	Rogers	Diamond	SSU	11:00 – 11:15
PSO-044	Tchio	Cynthia	KSU	11:15 –11:30
PSO-045	Todd	Damian	FVSU	11:30 –11:45

Category/Area: **Life Sciences – Cellular and Molecular Biology**
Location: **Breakout D**

Presentation #	Student Last Name	Student First Name	Institution	Time
PSO-001	Abdullahi	Nader	GA Tech	10:00 – 10:15
PSO-022	Gutierrez	Vanessa	UGA	10:15 – 10:30
PSO-028	Mekbib	Solome	KSU	10:30 – 10:45
PSO-032	Olowojesiku	Ronke	UGA	10:45 – 11:00
PSO-038	Roberts	LaDeidra	GA Tech	11:00 – 11:15
PSO-049	Tibavinsky	Lina	UGA	11:15 –11:30

Category/Area: **Life Sciences – Environmental Biology**
Location: **Breakout E**

Presentation #	Student Last Name	Student First Name	Institution	Time
PSO-002	Adan, Gerbemedhine, Jones, Vasquez	Jatmal, Beza, Sterling, Sheena	FVSU	10:00 – 10:15
PSO-009	Brewer	Shelby	UConn	10:15 – 10:30
PSO-013	Davis	Dwayne	FVSU	10:30 – 10:45
PSO-018	Ferrier-Williams	Christopher	SPSU	10:45 – 11:00
PSO-033	Parks, Ramirez	Eric, Matthew	SSU	11:00 – 11:15
PSO-041	Smith	Renee	SSU	11:15 –11:30

Category/Area: **Life Sciences - Microbiology**
Location: **Breakout F**

Presentation #	Student Last Name	Student First Name	Institution	Time
PSO-005	Babajide	Oluwadare	UGA	10:00 – 10:15
PSO-011	Butler	Qiana	FVSU	10:15 – 10:30
PSO-016	Dyer	Aleema	KSU	10:30 – 10:45
PSO-021	Gillom	Crystal	FVSU	10:45 – 11:00
PSO-026	Inyang	Edidiong	FVSU	11:00 – 11:15
PSO-037	Rich	Jessica	FVSU	11:15 –11:30
PSO-040	Simpson	Precious	FVSU	11:30 –11:45

Category/Area: **Mathematics and Physical Sciences**
Location: **Breakout G**

Presentation #	Student Last Name	Student First Name	Institution	Time
PSO-006	Baptiste, Nosegbe, Pricket	Bruce, Dickson, Cherish	GPC	10:00 – 10:15
PSO-008	Brahmbhatt, Johnson	Juhi, Vanda	SSU	10:15 – 10:30
PSO-019	Francis	Teshaun	SPSU	10:30 – 10:45
PSO-042	Snyper	William	SSU	10:45 – 11:00
PSO-047	Williams	Byron	SSU	11:00 – 11:15
PSO-048	Wootson	Reggie	FVSU	11:15 –11:30

Category/Area: **Technology and Engineering**
Location: **Breakout H**

Presentation #	Student Last Name	Student First Name	Institution	Time
PSO-003	Alemayehu	Michael	GA Tech	10:00 – 10:15
PSO-004	Anderson	Jillian	Albany State	10:15 – 10:30
PSO-007	Birch	Shantonio	GA Tech	10:30 – 10:45
PSO-012	Chukwurah	Kengelle	UGA	10:45 – 11:00
PSO-014	Diaz-Ruiz	Carlos	GA Tech	11:00 – 11:15
PSO-015	Durand	Fabien	GA Tech	11:15 –11:30
PSO-017	Ebin	Joshua	GPC	11:30 –11:45

Oral Presentations – Part II
1:30 pm – 3:30 pm

Category/Area: **Technology and Engineering**
Location: **Breakout J**

Presentation #	Student Last Name	Student First Name	Institution	Time
PSO-020	Gebrehiwot	Eled	UGA	01:30 – 01:45
PSO-024	Henry, Louis, Pearson, Prieto	Shelby, Nathan, Brandon, Bernie	GT, SPSU	01:45 – 02:00
PSO-013	Colley	Jennifer	SSU	10:30 – 10:45
PSO-025	Herndon, Turner	Marcus, Tahri	SPSU	02:00 – 02:15
PSO-027	Jean	Herby	USF	02:15 – 02:30
PSO-029	Mwangi	Edward	KSU	02:30 - 02:45

Category/Area: **Technology and Engineering**
Location: **Breakout I**

Presentation #	Student Last Name	Student First Name	Institution	Time
PSO-031	Nyengele	Gedeon	GPC	01:15 – 01:30
PSO-034	Patterson	Chelsea	SPSU	01:30 – 01:45
PSO-035	Pollard	Marquese	SSU	01:45 – 02:00
PSO-043	Tanner	Joseph	SPSU	02:00 – 02:15
PSO-046	Townsend	Rob	GPC	02:15 – 02:30

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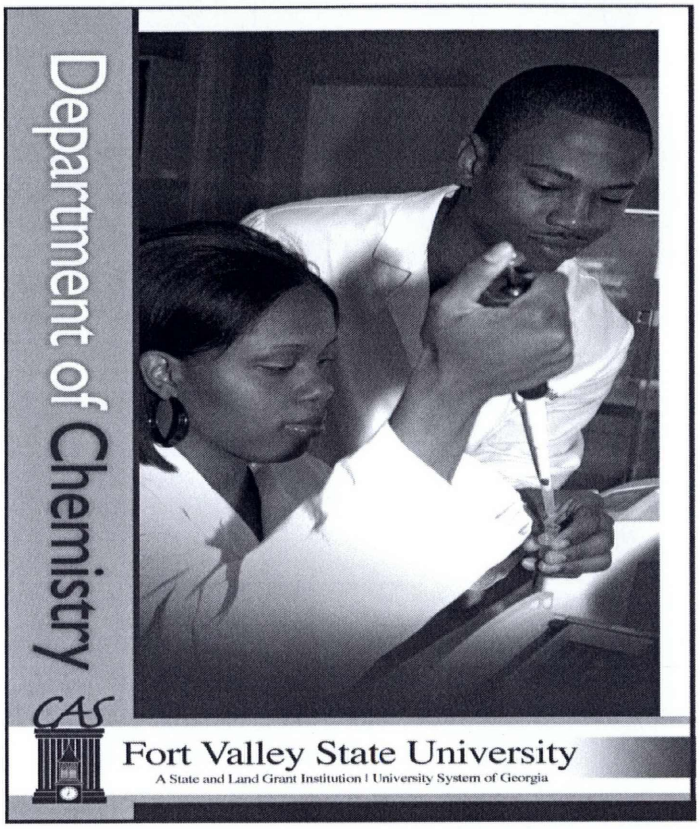

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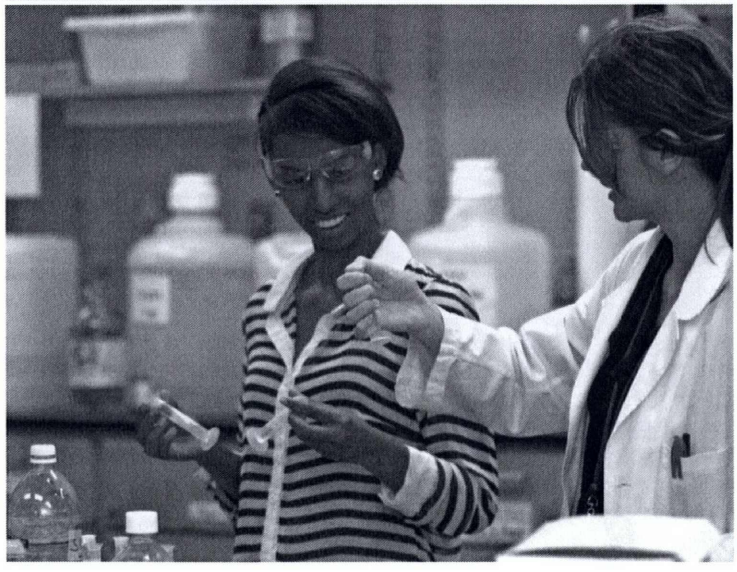
- **STEM II Initiative** - sponsored by the University System of Georgia
- **Project MESA** - Mathematics, Engineering, Science Achievement (a part of the STEM II Initiative)
- **Peach State LSAMP** - funded by the National Science Foundation
- **ENLISTEM Scholars Program** - funded by the National Science Foundation
- **STEP: Building Success: One Step at a Time** - funded by the National Science Foundation

"To be successful in STEM-related areas, students need to be academically prepared. Through grants obtained from the University System of Georgia and the National Science Foundation, GPC is able to provide students with financial resources and co-curricular activities that support them in attaining their goals of earning a college degree and becoming a STEM professional." Dr. Cynthia Lester, STEM Executive Director.



Georgia Perimeter College

HIV-1 TAT PROTEIN INCREASES CATHEPSIN S PRODUCTION IN THP-1 MONOCYTES

Nader Abdullahi (GT) Oral Presentation

Manu Platt, Georgia Institute of Technology

Individuals living with Human Immunodeficiency Virus (HIV-1) have been developing atherosclerosis at a higher rate than healthy individuals. The HIV-1 protein trans-activator of transcription (Tat) is a regulatory protein that is actively secreted by infected cells and been shown to activate monocytes, promoting adhesion and atherogenesis. Cathepsins are powerful proteases that degrade elastin and collagen in the extracellular matrix, which implicates them in the development of cardiovascular diseases. We hypothesized that stimulating THP-1 monocytes with Tat increases cathepsin S activity. To test this, THP-1 monocytes were cultured at 0, 6, and 12 hours and cathepsin activity was quantified with cathepsin zymography and computational analysis. The evidence suggests that stimulating THP-1 monocytes with Tat has an 18% increase in cathepsin activity S after 12 hours. We conclude that Tat increases THP-1 monocyte cathepsin activity and this can contribute to arterial remodeling in HIV-1 positive patients.

ANALYSIS OF ENVIRONMENTAL WATER SOURCES FOR MICROBIAL PRESENCE

Jamal Adan, Beza Gebremedhine, Lawrence Jones, Sheena Vasquez (GPC) Oral Presentation

Mark Graves, Mark Hollier, Seyed Hosseini, Carl McAllister, Georgia Perimeter College

The presence of pathogenic microorganisms decreases water quality via their negative impact on human health. Water samples were collected from eight different locations in Georgia and analyzed for the presence of pathogenic bacteria. Sufficient quantities of water samples were filtered to isolate potential pathogens. The presumptive identity of some of these bacteria were determined by culturing the organisms on selective and differential media, performing Gram's staining tests, and finally utilizing API20E kits and API 20 Strep test kits. The API 20E kit results showed the statistical likelihood that Aeromonas, Pseudomonas, and Enterobacter bacteria were present in some water samples, while the API 20 Strep kit showed the statistical likelihood that Leuconostoc, Streptococcus, and Gemella bacteria were present in some water samples. A total of ten antibiotics were used to test the antibiotic sensitivity of selected bacteria isolates. Both the gram negative and the gram positive isolates were susceptible to Tetracycline and resistant to Oxacillin. As expected, Colistin selectively inhibited the growth of gram negative isolates.

THE EFFECT OF AR TAGGING ON THE H5O2+ PROTONATED WATER CLUSTER

Deborah Adedeji (KSU) Poster Presentation

Martina Kaledin, Kennesaw State University

Experimentalists use Argon as a "messenger" where the weakly-bound rare-gas atom is attached to the H5O2+ water cluster, then the vibrational excitation of the cluster detaches the messenger and vibrational predissociation spectra are obtained. However, H5O2+ is perturbed by Ar and infrared spectra change. This computational work evaluates interactions of Argon atom with the H5O2+ water cluster. Structural parameters and energetics of H5O2+ and H5O2+.Ar were predicted using various methods such as Hartree Fock (HF), density functional theory (DFT) with B3LYP, PW91, BLYP functionals, and many body perturbation theory (MP2) with aug-cc-pVDZ, aug-cc-PVTZ, and 6-31+G** basis sets. Vibrational frequencies were obtained using the normal mode analysis. The O–H+…O stretch vibration increased significantly in the presence of Argon. The bond dissociation energy Do (ZPE corrected value) for H5O2+⊠ H2O+ H3O+ was calculated as 33.7 kcal/mol (MP2 aVTZ) which is relatively in a good agreement with the experimental values of 31.6 and 32.4 kcal/mol. These structural parameters and frequencies will later be used to develop and test on the quality of the force fields.

COMPARATIVE STUDY OF THE MAIN INGREDIENTS IN ENERGY DRINKS USING VARIOUS ANALYTICAL METHODS

Jimmy Adeoti (KSU) Poster Presentation

Huggins Z. Msimanga, Kennesaw State University

The comparative study of the main ingredients in energy drinks is conducted in order to discover the hazardous ingredients in the selected energy drinks. The purpose of exploring energy drinks is based on incidents that occurred due to its over consumption. The energy drinks selected were 5-Hour Energy, Nos Energy Drink, Monster Energy Drink, AMP Energy Drink, Rockstar Energy Drink, Redbull Energy, Xs Energy Drink, and Hi-ball Energy Drink. The methods used were the Ultraviolet–Visible Spectroscopy (Uv/Vis), Fourier Transforms Infrared Spectroscopy (FTIR), Principal Component Analysis (PCA), and High-Performance Liquid Chromatography (HPLC) to compare these drinks. Various analytical methods were used to check for similarities and differences in these energy drinks. From the various tests conducted, the energy drinks had a common main ingredient of caffeine. Using HPLC, a quantification of caffeine was conducted which concluded that there is a lot more caffeine in the drinks than the literature value stated on the cans. Due to physiological differences like age and gender, and biological differences like how long it takes to break down compounds, the regulation of caffeine is hard to accomplish effectively.

EQUIVALENT CIRCUIT METHOD FOR ELECTRICAL CONDUCTIVITY OF COMPOSITES WITH NANOFILLERS

Michael Alemayehu (GT) Oral Presentation

Raghuram Pucha, Georgia Institute of Technology

Methods for electrical analysis of nanocomposite material are needed for multi-functional composite materials with nanofillers. In this research, electrical conductivity of nanocomposite material was quantified using numerical methods and approaches: Resistor-Capacitor (RC) method and R (resistor) method. Using the computationally generated numerical models, we could predict the electrical properties of nanocomposites that were made from an insulating polymer with filled carbon nanotubes. The Resistor-Capacitor (RC) approach models the electrical properties of the composite given the arrangement of nanofillers within the polymer; fillers in contact are considered resistors and those that aren't in contact, but close, are considered capacitors. 3D resistor network models were constructed and analyzed for conductivity utilizing the Resistor-approach, an equivalent circuit method. Kirchhoff's current law and Ohm's law was used to set up a system of equations for the different CNT nodes and to predict conductivity of the nanocomposite, respectively. Additional numerical analysis is needed to incorporate an efficient R-method.

INVESTIGATING THE ROLE OF ESTROGEN & HOW IT IMPACTS OBESITY

Akosua Amponsah (SSU) Poster Presentation

Johnny Johnson, Savannah State University

Like other hormones estrogen works as a chemical messenger in the body. It is critical for normal development of the female reproductive organs, including the ovaries, and uterus. Estrogen also helps regulate a woman's menstrual cycles and it is necessary for normal breast development. Recent studies have suggested that adult weight gain, especially just before and after menopause, increases breast cancer risk (Macciò 2010). After menopause a woman's ovaries stop producing estrogen and the primary source for estrogen is a woman's body fat (Macciò 2010). Therefore, a woman with a higher level of body fat during the post-menopausal years would be expected to have a higher level of body estrogen than

a comparatively lean woman. The relationship between obesity and estrogen has been studied extensively in the past, but previous reports in African American women have not been conducted under carefully controlled dietary conditions of weight maintenance and physical exercise using measures of estrogen. The aim of the present study was to examine the effects of different concentrations of estrogen and their effect on pre-adipocytes in vitro.

PRIMARY MOBILE PHONE USER IDENTIFICATION

Jillian Anderson (ASU) Oral Presentation

Bing Wang, University of Connecticut

Many of the existing approaches for identifying the primary user of a mobile phone can be easily exploited. In this research, we determine whether a mobile phone is used by its primary user through background sound. The hunch is that the schedule of a person is fairly stable: at one point in time, a person is more likely to be in one place at certain time than other places. The background sound recorded at a time of day can be used to identify where a person is at that time; if the identified location strays from the typical schedule of the person, then the phone is likely not used by the primary user. In this paper, we describe our first step in achieving the final goal, specifically how to determine whether two sound clips, one recorded at a time and location following the typical schedule and another recorded at a random time and location, are similar or not. Specifically, we develop a scheme that obtains the distribution of the amplitude from a sound clip, and then determines whether the distributions of two sound clips are similar or not using the Two–Sample Kolmogorov–Smirnov Test

MUTAGENESIS REVEALS ROLES FOR R208 AND V109 IN THE PROTON SELECTIVITY MECHANISM OF THE HUMAN VOLTAGE GATED PROTON CHANNEL, HHV1

Coretha Antchouey (KSU) Poster Presentation

Susan M.E. Smith, Kennesaw State University

The voltage-gated proton channel, Hv1, is the most selective ion channel known; as far as can be measured, it conducts only protons across membranes, in response to membrane voltage changes. Previous work showed that Hv1's selectivity mechanism depends on an acidic residue at position 112 or 116, and also that position 112 interacts closely with a conserved arginine at position 208. We used an experimentally supported molecular model of human Hv1 to choose mutants to provide additional information regarding Hv1's proton selectivity mechanism. We used the Stratagene methodology to create mutations and verified them via commercial sequencing. D112A/R208A double mutants expressed in mammalian cells did not conduct protons, pointing to an important role for R208 in proton conduction; while V109D/D112V/V116D triple mutants had an unusual behavior that may represent proton conduction in the closed state.

ANALYSIS OF P1 FUNCTION IN MYCOPLASMA PNEUMONIAE ADHERENCE AND GLIDING

Oluwadare Babajide (UGA) Oral Presentation

Duncan Krause, University of Georgia

This study focuses on Mycoplasma pneumoniae, a human pathogen causing bronchitis and primary atypical "walking" pneumonia. Located on the terminal end of the cells surface is the P1 protein, which functions directly in both cell adherence and motility. There is evidence from recent studies to indicate that P1 repeatedly catches and releases sialic acids, present on animal cell surfaces, to thrust the mycoplasma cell forward. Furthermore, P1 is believed to exist in conformational distinct subpopulations that shift when mycoplasma cells glide. Little is known about the specific mechanism by which the bacterium exhibits motility through the P1 protein. Learning about this unique form of movement can lead to new strategies for treatment of infections and a greater understanding of bacterial motility. By means of immunofluorescence microscopy with monoclonal antibodies specific for P1, mAB1 and mAB2, we sought to define quantitatively the location and relative amounts of P1 subpopulations. The antibodies mAB1 and mAB2 consistently yielded distinct labeling patterns, which were not the result of background or "noise". Furthermore, mAB1 appeared to bind only to a subset of P1 proteins and only at specific times, as opposed to mAB2, which appeared to bind to all P1 at all times.

PIEZOELECTRIC CRYSTAL DEVELOPMENT AND APPLICATIONS

Bruce Batiste, Dickson Nosegbe, Cherish Prickett (GPC) Oral Presentation

Fred Buls, Susannah Lomant, Georgia Perimeter College

Piezoelectric materials produce an electrical current in response to an applied force. This phenomenon was discovered by Jacques and Pierre Curie in 1880 after the pyroelectric effect, materials that create an electric charge due to temperature changes, was observed by earlier physicists. Applications of piezoelectric materials have now expanded into many fields and can be found in many modern items, such as: lighters, beepers, tennis rackets, medical devices, and weapons as well as in energy harvesting applications such as highways in Israel and nightclubs in London. Several piezoelectric materials are researched in this experiment, with the initial focus on potassium sodium tartrate, also known as Rochelle salt crystals. Rochelle salt crystals are produced and tested for piezoelectric properties. A variety of testing methods are applied in attempts to measure the voltage and current generated by the crystals which are shown in our results.

SENSOR KINASE FLGS INTERACTS WITH FLAGELLAR PROTEINS: IMPLICATIONS FOR REGULATION OF FLAGELLAR BIOGENESIS IN H. PYLORI

Lauren Beasley (KSU) Poster Presentation

Jonathan McMurry, Kennesaw State University

Helicobacter pylori utilizes flagellar motility to colonize the human gastric mucosa, resulting in problems such as acute gastritis, ulcers, MALT lymphoma, and gastric adenocarcinoma. Biogenesis is tightly regulated, but little is known of the process differs in ε-proteobacteria. In the present study, flagellar ring proteins FliG, FliM, FliN, FliY and sensor kinase FlgS, a two component signaling protein, were heterologously expressed in E. coli, purified and subjected to survey of kinetic binding analysis to address the hypothesis that FlgS interactions with the basal body are a key checkpoint in regulation of biogenesis. We also identified and characterized binding to export apparatus protein FlhA. Biolayer interferometry and surface plasmon resonance were used to determine kinetic and affinity constants. Results will be put in context of regulation of biogenesis in H. pylori and differences with the more well-characterized γ-proteobacteria.

ACTIVIN A-NODAL SIGNALING IN MOUSE EMBRYONIC STEM CELLS

Christopher Benson II (UGA) Poster Presentation

Jonathan Eggenschwiler, University of Georgia

When the vertebrate forms, the cells that make up our various organs and tissues are very important during all phases of fetal development to ensure our survival. Referred to as pluripotent, Mammalian Embryonic Stem Cells (ESC) are important because they can proliferate into the three primary germ levels, endoderm, mesoderm, and ectoderm. Within these three germ levels, these cells in each level preform a certain function in the vertebrate. We want to understand the pathway that signals the unified

cells to split into the three germ levels and if it occurs in multiple phases or only one phase of the cell cycle. Nodal is the protein that is responsible for the patterning of the nervous system and separating them into their dorsal and ventral regions. In order to activate this pathway, Nodal proteins must bind to the Activin/Activin Receptors. This interaction leads to the induction of the target cells needed to complete the pattering process. We are using Mouse Embryonic Stem Cells to see if they respond to Chemically Defined Medium (CDM) plus Activin A in concentrations of 20ng/ml, 2ng/ml, and no Activin A.

MECHANICAL INTEGRITY OF POLY (METHYL METHACRYLATE) (PMMA-BASED) FLEXIBLE CAPACITORS

Shantonio Birch (GT) Oral Presentation

Ana Claudia Arias, Abhinav, Gaikwad and Aminy Ostfeld, Georgia Institute of Technology

With the advent of flexible technologies, the need to create mechanically and electrically stable devices has increased. In power electronic applications such as Maximum Power Point Tracking Systems (MPPTS), device failure is often associated with failure in small components such as capacitors. Commercially, MPPTS uses electrolytic capacitors which are susceptible to electrolytic degradation. Film capacitors on the contrary are more ideal capacitors and do not fail due to electrolytic breakdown. Furthermore, being planar, film capacitors can be easily printed and integrated on flexible substrates. Nevertheless, under increasing mechanical loads, thin films typically exhibit failure modes such as cracking and delamination. This study seeks to create a standard process for fabricating and determining the failure modes of flexible PMMA capacitors. Fabricated capacitors were subjected to bending stress; Nanoindentation and Quasi-static analyses were performed to determine the effect of strain on the electrical performance of capacitors. Preliminary results indicate that under strains ranging from 0.0025%-0.0040%, the conductance of PMMA capacitors increases exponentially, which corresponds to an irreversible deterioration in electrical performance. These values bear close correlation to the yield point of the device which occurs when capacitor arrays were bent to a strain of ~0.0027%.

SYNTHESIS OF BENZOFURAN CARBOXYLIC ACIDS

Shakema Bowman (SSU) Poster Presentation

Karla-Sue Marriott, Savannah State University

3-Halocourmarins are readily converted into benzofuran-2-carboxylic acids via a Perkin (coumarin-benzofuran ring contraction) rearrangement reaction. Benzofuran-2-carboxylic acid derivatives are known for exhibiting pharmacological activity. Derivatives of benzofuran-2-carboxylic acid possess anti-inflammatory properties, and act as anesthetics. They have also shown selective cytotoxicity again human cancer cell line. Additionally, benzofuran-2-carboxylic acids bearing (chlorometyl) indoline or benzoyl nitrogen mustard as DNA-binding group are structural subunits of synthetic analogues of some natural antitumor agents such as CC-1065, duocarmycin, dystamycin, and netropsin. Benzofuran-2-carboxylic acid derivatives can serve as useful molecular targets for the development of anti-cancer agents as well as agents for the treatment of neurological disorders.

A DIGITAL ELEVATION MODEL AND THE HUMAN BODY ENERGY EXPENDITURE FOR CLIMBING UP A MOUNTAIN

Juhi Brahmbhatt, Vanda Johnson (SSU) Oral Presentation

Hyounkyun Oh, Savannah State University

Minetti states in an article, that when the slope of the route is about fifteen degrees the energy required to gain a certain altitude is minimized. Despite this, it is impossible to find the optimal trail up a mountain with the lowest energy expenditure due to various factors. Nevertheless, we are still interested in finding the best trail up a mountain. This research explores two building blocks: digital elevation model (DEM) for Stone Mountain in Georgia, and the examination of energy expenditure along the existing/newly developed trails. The DEM from a topographical map provides the surface information of a mountain, achieved based on the 3D numerical interpolation using an approximation of boundary points. The evaluation of existing/new park trails from fixed points to the summit of an achieved 3D mountain is completed through the formula for biomechanical energy expenditure of the human body. We examine Minetti's theory and compare the results of each park trail. This work contributes to various research fields, including creation of 3D visualized map, virtual analysis of mountain surfaces, and evaluation of existing trails.

DEVELOPING A NON-INTRUSIVE METHOD TO INCREASE THE PRIVACY OF ANDROID CAMERA ENABLED APPLICATIONS

Jarvis Brewer (SSU) Poster Presentation

Apu Kapadia, Indiana University

As mobile technologies continuously emerges so does the staggering issues revolving around security. Android being an open source platform increases the risk that an application available to users may attempt to access personal and private information through the act of "virtual theft". This particular type of crime involves malicious applications being installed on the device which then can gain access and or control the mobile phones' multiple sensors, also known as "sensory malware". Current Android devices put the burden on users to install apps that will not steal visual information. Our goal focuses on exploring systems that can lessen the risk of camera-enabled applications and reduce the burden on the user. By incorporating the location services (GPS, network, Wi-Fi) already installed on these devices, we designed a prototype which allows the user to control when their camera can take photos based on the location of the device. This system allows users the option to set certain regions on a map interface that when entered affects the camera in some form, in this case preventing the camera from capturing images. The concepts outlined in this project could then be integrated into current and future Android devices to reinforce their security.

HABITATS AND FISH COMPOSITION IN NORTH FISHTAIL BAY OF DOUGLAS LAKE

Shelby Brewer (UCONN) Oral Presentation

Paul Webb, University of Michigan

The purpose of our experiment was to determine if there was a difference in the fish habitats that were surveyed by Jacob Reighard of Douglas Lake in 1912. In our survey we analyzed the physical habitats and fish communities of North Fishtail Bay of Douglas Lake. Through sampling and analysis of fish species caught, physical and biotic factors we were able to determine that there were different habitats in North Fishtail Bay. As a result there were different fish communities within each habitat compared to what Reighard found when he conducted his survey. We were able to conclude from our survey that there has been a change in species composition and defined habitats in North Fishtail Bay.

QUANTITATIVE STRUCTURE ACTIVITY RELATIONSHIP (QSAR) STUDY OF A SELECT GROUP OF FLAVONOIDS

Shanice Brewster (FVSU) Oral Presentation

Tiffani Holmes, Fort Valley State University

Flavonoids can be divided into six major classes and play a role in cancer prevention through molecular mechanisms that block the activation of procarcinogens, suppress the promotion and progression of mutant cells into malignant tumors, and transform damaging free radicals into less harmful species. The present study utilizes quantum chemical methods to identify a relationship between the anticancer activities and structural

properties of a select group of methylated and non-methylated flavonoids. Structures of the compounds were visualized and then optimized using Density Functional Theory's B3LYP method and a series of basis sets including 6-31G(d). A number of molecular descriptors (εHOMO, electrophilicity, etc.) were then calculated and graphed versus log IC50. From the descriptor vs log IC50 graphs, R2 values were assessed to determine the level of correlation between experimental and theoretical data.

MEASUREMENT SCIENCE OF THE WENNER 4-PROBE SURFACE CONDUCTIVITY TEST APPLIED TO CONCRETE CYLINDERS

Sterling Brooks (SSU) Poster Presentation

Kenneth Snyder, Savannah State University

NIST is working through ASTM International to standardize a new test method for the electrical resistivity of concrete cylinders using the Wenner 4-electrode surface measurement technique. A standardized test procedure will help to insure that anyone performing the measurement can achieve a consistent level of repeatability. Furthermore, the process needs to be applicable to varying cylinder sizes, and to both cast and cored concrete cylinders. Because a number of concrete performance properties (diffusivity, sorptivity, corrosion rate) are related to resistivity, this standard test method could be utilized for performance assessment. In addition, the electrical conductivity can vary with changes in the concrete mixture design and in changes in the construction processes, so it may also be a useful means of monitoring consistency throughout construction.

THE GREATER YOU SLEEP, THE LESS YOU WEEP!

LaToya Brown (SSU) Poster Presentation

Patricia Griffiths, Center of Excellence for Visual and Neurocognitive Rehabilitation

The objective is to find a relationship between the levels of depressive symptoms and sleep quality in older adults who are members of caregiving dyads. Data was collected by using the Center for Epidemiological Study of Depression scale (CESD-10), Pittsburgh Sleep Quality Index (PSQI), and Actigraphy. The CESD-10 assessed the frequency of depressive symptoms. PSQI measured subjective sleep quality and actigraphy measured objective sleep quality. Actigraphy was measured using an actiwatch over seven consecutive 24 hour periods. 62 dyads, or 124 participants, were recruited for this study. 89.5 % (111) completed evaluations for CESD-10 and PSQI. 97.6% of participants completed evaluations for CESD-10 and Actigraphy. In this study people who are members of caregiving dyads with high quality of sleep have lower depressive symptoms and people with low quality of sleep have higher depressive symptoms 30% of individuals who reported high depressive symptoms reported high quality sleep. 70 % of individuals who reported high depressive symptoms reported low quality of sleep. People with low quality of subjective sleep have five times the odds of reporting depressive symptoms than those who have high quality of sleep. In this study there was no relationship between subjective sleep and objective sleep.

A PUTATIVE CHEMICAL BASIS FOR DIFFERENTIAL INFECTION OF PARASITIZED VS. NON-PARASITIZED PLODIA INTERPUNCTELLA BY ENTOMOPATHOGENIC NEMATODES

Qiana Butler (FVSU) Oral Presentation

David I. Shapiro-Ilan, USDA, Byron, GA

This researched focused on the preference of entomopathogenic nematodes infecting P. interpunctella larvae that have been previously parasitized by wasp (compared with larvae that were not parasitized). The assumption is that it's easier for the nematode to attack the parasitized host. The question being addressed is what cues might be provided to the nematodes that tell them which host to infect? During the research process testing of a chemical compound (3-methyl-3-buten-1-ol) that is emitted by the parasitized host and might be used by the nematode as a cue. Along with that a test will be conducted to see if the cues are on the cuticular surface of the parasitized host surface and if it can be transferred. This research is needed to help determine if there is a chemical basis for differential infection in entomopathogenic nematodes.

UTILIZING DIJKSTRA'S ALGORITHM TO DETERMINE THE SHORTEST ROUTE TO BUILDING ON SAVANNA STATE UNIVERSITY'S CAMPUS (SSU)

Jasmine Butler (SSU) Poster Presentation

Alfredo Villanueva, Savannah State University

Savannah State University (SSU) students and employees utilize various routes to get to a location on campus. It is important to travel on or off campus as with any location in a feasible, safe, and timely manner. When using Google Maps, it only gives the street way to get to a destination. The principal objective of this research is to find the shortest path between several buildings on campus using Dijkstra's Algorithm. Dijkstra's Algorithm is a scientific graph search algorithm that solves the single-source shortest path problem for a graph with non-negative edge paths. In order to determine the shortest path, I used a programming language that allows for the destination of the distances to be calculated. The programming language I used to demonstrate the shortest path was C++ and it found the distances between the buildings shown and the overall shortest path. The final product of this project is the actual map and C++ coding which declares how the shortest distance is determined/calculated.

DRUG REPURPOSING

Shanice Caldwell (SSU) Poster Presentation

Deborah McGuinness, Rensselaer Polytechnic Institute

The purpose of this research is to find new effective treatments for disease using existing drugs. Our approach is to gather and integrate existing data using semantic technologies to help discover promising drug repurposing. Many diseases are based on genetic or epigenetic changes that can be targeted indirectly via upstream regulatory pathways. Targets need to have a high likelihood of affecting all possible changes, and so need to have upstream interactions that cover multiple genotypes/epigenotypes that might drive the same phenotype. This interaction information is available from a number of sources, many of which are already available as linked data. The genes and proteins in these pathways also represented in linked data. We can potentially aggregate information that represents transcription, epigenetic, and genetic state in many different diseases using a common means of expression. These facts and probabilities can be used to determine if, for instance, a drug target is likely to affect a particular phenotype. We can essentially simulate reactions of already-approved drugs by finding out what downstream effects they may have on disease. The simulation is enabled by background semantic models of effects and pathways.

ON THE MODELING OF PROTEIN

Kengelle Chukwurah (UGA) Oral Presentation

Xianqiao Wang, University of Georgia

Protein encompasses the mass of life. The function of proteins depends primarily on structure. In this project, proteins are stretched with an amount of force. The effect of the force is monitored using molecular dynamics. The program models the structural changes of protein as the force is applied. The technique is to apply a force large enough on one atom at the end of the protein strand. Then, the protein is stretched until

it changes shape. The differing structures can be used to study the effects of forces on all proteins even those in DNA. An alteration in structure can greatly affect the way protein functions. In all, a force would affect the shape of protein, stretching from a stable quaternary structure to a straight primary structure. The results alter the way protein function is characterized. Next, is to study the effect of structural changes on multiple strands of protein.

ROMI: REFRACTION MICROTREMOR USING ROTATIONAL SEISMOMETERS

Brandon Clark (FVSU) Poster Presentation

Robert Abbott & Hunter Knox, Sandia National Laboratories, Albuquerque, NM

We present the results of a shallow shear-wave velocity study that utilized both traditional geophones and a newly developed rotational seismometer (Applied Technology Associates ARS-16). We used Refraction Microtremor (ReMi), a method developed by John N. Louie, during processing to determine both Rayleigh and Love wave dispersion curves using both vertical and horizontal sources. ReMi uses a distance-time (x-t) wavefield transformation technique to image the dispersion curve in slowness-frequency (p-f) space. In the course of the ReMi processing, unwanted P waves are transformed into p-f space. As rotational seismometers are insensitive to P waves, they should prove to be superior sensors for Love wave studies, as those P waves would not interfere with interpretation of the p-f wavefield. Our results show that despite having one-fifth the geophone signal-to-noise ratio in the distance-time wavefield, the ARS-16 produced superior results in the p-f wavefield. Specifically, we found increases of up to 50% in ReMi spectral ratio along the dispersion curve. This implies that as more quiet and sensitive rotational sensors are developed.

APPLICATIONS OF DIFFERENTIAL EQUATIONS

Davon Cleary (SSU) Poster Presentation

Alrazi Abdeljabbar, Savannah State University

The analysis of electric circuits, each containing different variations of two or three of the passive elements used in electronics, none being purely resistive as these would produce algebraic equations, but resistors used in either a series or parallel configuration with inductors and capacitors, produces differential equations of the first-order and higher. There are multiple techniques used for solving differential equations, each being uniquely applicable to different circuits and/or systems.

INVESTIGATING THE ROLE OF PIPKI REGULATING IN REGULATING KCNQ5 PROTEIN LEVELS

Rachael Daniels (SSU) Poster Presentation

Anastassios V. Tzingounis, University of Connecticut

It is known that the membrane phospholipid, PIP_2, is necessary for the function of KCNQ channels. In the brain PIP_2 is primarily synthesized by the enzyme Pipkiy PIP5K. By using conventional whole cell patch clamp we found that when KCNQ5 is expressed along with PIP5K there is significant up regulation of KCNQ5 channel activity. This data raised the possibility that KCNQ5 levels might also depend on PIP_2. Hence, we examined whether the membrane and cytosolic fractions of KCNQ5 channels depend on the levels of PIP5K, by using wild-type and Pipkiy heterozygous (+/-) mice. Previous work has shown that Pipki⊠+/- mice have lower PIP_2 levels. To probeKCNQ5 protein levels in cortical tissue we used western blotting. We found that KCNQ5 protein levels did not change in mice deficient of Pipkiy. Additionally, we report that the majority of Pipkiyis cytosolic and Pipkiy⊠+/- mice seem to have lower Pipkiy in the membrane fraction.

THE CORRELATION BETWEEN PUPILLARY UNREST WITH RESPIRATORY AND HEART RATE VARIABLILITY

Dwayne Davis (FVSU) Oral Presentation

Ben Davis & Gang Yao, University of Missouri, Colombia, MO

Pupillary unrest, scientifically known as hippus, the continuous fluctuation, constriction and dilation of the pupil even in steady illumination. The pupil is innervated by the autonomic nervous system and its oscillation is controlled by the parasympathetic and sympathetic modulation of the iris muscles. Links has been shown between respiratory patterns and pupillary oscillation, as well as heart rate variability. This study examined the connection between the frequencies of breathing rate, heart rate, and pupillary oscillation. During normal, slow and deep breathing we measured pupil size, breathing rate, and heart rate. Using Fast Fourier Transform (FFT) the frequency spectra of each parameter (pupil size, breathing rate, and heart rate) were analyzed. Pupil size was measured using two high-speed infrared cameras in a binocular pupillogram recording system, and a pressure sensor was used to measure breathing rate. Correlations were observed between breathing rate, heart rate, and pupil oscillation frequency. This effect was more pronounced during the slow deep breathing trial. Further study will focus on the dynamic properties of the pupil measuring Pupillary Light Reflex (PLR) during controlled breathing.

FETCHING OBJECTS WITH ROBOTS

Patrick Dean Jr. (SSU) Poster Presentation

Asad Yousuf, Savannah State University

Robotics technology is used in all sectors of engineering and other areas such as manufacturing. With Robot we can achieve precision and control through hardware and software interfacing. The purpose of this project is to learn the design and implementation of major components of Robotic System using Hardware and Software interfacing concepts. Objective of this project is to: 1) Learn the of major components of Robotics Systems, 2) Learn fundamental concepts of Robotics Navigation and transportation of objects, 3) Learn how to use PBASIC for modeling basic building blocks of Robotics system, and 4) Learn microcontroller technology and impact of using microcontrollers in robotics system design. The design will be carried out using the Parallax Integrated Development Environment. The project will be implemented in the following three stages: Analysis and Design, Design Implementation, and Testing and verification. The combination of software and hardware design makes this platform an excellent choice for summer undergraduate student project in both design and research aspects. Understanding the basics of PBASIC programming language

STRENGTH OF METALS

Trent Demeritte, Jr. (SSU) Poster Presentation

Bryan Knakiewicz, Savannah State University

The MTS Servo hydraulic Wedge machine may be used to test the compression and tensile strength of any particular metal in a round bar shape according to the requirements stated in ASTM A370 - 12a Standard Test Methods and Definitions for Mechanical Testing of Steel Products. Experimental laboratory testing of one of these strength properties, compression strength, has been performed upon five different .5 inch diameter metals bars: stainless steel, copper alloy, aluminum, carbon steel, and brass using the MTS Servo hydraulic Wedge machine. Test data for each sample was produced by TestWorks® 4, the software used in conjunction with an MTS frame system (MTS Systems Corporation, 2011, p. 17). The data has been analyzed and compared to the strength properties determined from previous academic research. These comparisons will validate the strength properties produced by the MTS Servo hydraulic Wedge machine. In addition, the MTS Servo hydraulic Wedge housed by Savannah State University has yet to be operated upon and a detailed

operation manual has not been provided by the manufacturer. Therefore, an operation manual that describe the step-by-step procedures of operating the machine and analyzing the data using TestWorks® 4 has been constructed.

SELF-ASSEMBLING NANOPARTICLES FOR INTRA-ARTICULAR DELIVERY OF ANTI-INFLAMMATORY PROTEINS

Carlos Diaz-Ruiz (GT) Oral Presentation

Andrew Garcia, Georgia Institute of Technology

Engineering biomaterial-based nanoparticles presenting IL-1Ra to enhance intra-articular therapeutic delivery and retention has emerged as an alternative therapy for reducing OA progression. Previously, our group has engineered self-assembled block copolymer nanoparticles (~300 nm) presenting controlled IL-1Ra densities. We demonstrated increased retention time in the rat stifle joint over 14 days compared to that of soluble IL-1Ra. We hypothesized that increasing the nanoparticle size can further enhance retention. We have now engineered a polymer which contains a poly-hydroxyethylmethacrylate backbone with a functionalized pyridine side chain that self assembles into nanoparticles of varying sizes. Using different polymer:protein ratios and stirring speed during the nanoparticle formation process, we demonstrated the ability to control the size in 500-1000 nm diameter range. Using fluorescence molecular tomography, we demonstrated prolonged retention with serum albumin-loaded larger nanoparticles (900 nm, half-life 2.5 days) compared to 500 nm nanoparticles (1.9 days) and bolus protein (0.63 days) over a period of 14 days.

MAPKAP KINASE 2 REGULATION BY OXIDATION

Alethea Duc (KSU) Poster Presentation

Carol Chrestensen, Kennesaw State University

When cells are damaged by stressful stimuli, including oxidation, p38 activates MAPKAP kinase 2 (MK2) to assist cells in recovery. This study examines the regulation of MK2 through oxidation. MK2 has seven cysteine residues. Using computer estimated pKa values generated from structural data it is likely that C224 and C98 are solvent accessible suggesting these are candidates for cysteine modification. Mutating these cysteine residues to alanine enables a direct analysis of whether these residues play a role in the inhibition of kinase activity by oxidation. Data will be presented on the role of C224 and we are currently producing the C98A protein variant. Purified wild type and variant MK2s have different sensitivities to inhibition by oxidation. This implicates C224 as the major player in oxidative regulation of MK2. In cells, oxidative inhibition of MK2 is reversible after short exposures to oxidants but longer exposures result in irreversible inactivation.

COMPARATIVE MEASUREMENTS OF EFFECTIVE EPS EXTRACTIONS WITH ION CHROMATOGRAPHY AND SPECTROPHOTOMETRY

Robert J. Dumas, II (SSU) Poster Presentation

Dionne Hoskins, Savannah State University

Samples of Extracellular Polymeric Secretions (EPS) were taken from marine sediments in southeast Georgia and analyzed using an Ion Chromatograph (IC). The collection of the samples was taken during the low-tide moments of the day when the sediment would be most accessible. The samples were prepared in advance of testing for a thorough cleanliness. The IC was an older instrument; therefore the accuracy and precision of the results are compared with readings from a newer model of a spectrophotometer. Using two different methods of testing, gave exponentially different results. The samples were compared to standards of Beta-Glucose at varying concentrations of ppm to ppt. The mobile phase for the IC was kept at a standard concentration using set conditions of preparation. The eluding was comprised of sodium hydroxide, acetone, and deionized water. The product had to then be degassed and stored in amber bottles. The process had to complete on average every two to three days for the results to be untainted.

CLEANING MECHANISMS

Fabien Durand (GT) Oral Presentation

David Hu, Georgia Institute of Technology

Animals have developed ways to protect themselves from foreign particles that accumulate on their sensory organs. Many animals blink, so we hypothesized that the blinking speed may be adjusted depending on their environments. Using high speed videography, we collected and correlated blinking durations from mammals at the Atlanta Zoo, with their corresponding eye axial diameter. We observed a linear relationship between eye size and blink speed, leading us to conclude that no matter the environment, mammals blink with the same velocity, thus disproving our initial hypotheses. We also observed an array of short bristles (setae) between each photoreceptor unit on the fruit fly's compound eyes. We hypothesized that they divert airflow to minimize particle deposition. Wind tunnel experiments using a fruit fly eye mimic showed that setae help to reduce airflow and shear stress rate over the eye surface, with longer setae yielding lower rates. However, numerical simulations result in an optimum setae length where shear stress rate is at a minimum. In addition, high speed videography and time-lapsed images of fruit flies cleaning their eyes were employed to observe the expeditious cleaning due to the interaction between their limb setae and eyes to brush micron scale particles off.

ROTATING THE CHICKEN EGG AS A PLAUSIBLE MECHANISM FOR INCREASING SHELF LIFE

Aleema Dyer, Obumneme Imonugo, Geoffrey Lester (KSU) Oral Presentation

Army Lester, Kennesaw State University

The United States produces about 10% of the world's chicken egg production. Many of these eggs find their way to consumers sold in cartons by the dozen. However, one of the greatest concerns is the purchase of outdated and contaminated eggs. Preliminary results have shown that rotating fertile eggs helps to prevent antimicrobial contamination. This study suggests that unfertilized eggs benefit from rotation as well and increases the shelf life. Unfertilized eggs were purchased from a local grocery store. The albumen was removed and mixed with varying concentrations of bacteria. Results indicate that the albumen of unfertilized eggs is just as effective in preventing bacteria growth as fertile eggs. These results also suggest that if commercial eggs were rotated and refrigerated that the shelf life might be expanded beyond the period of refrigeration alone.

FLUID PENETRATION INTO POROUS MEDIA DURING SLOT DIE COATING

Joshua Ebin (GPC) Oral Presentation

Tequila Harris, Georgia Institute of Technology

Slot-die coating is a commonly used pre-metered manufacturing process for high precision manufacturing of composites. During this process a coating fluid flows through a slot die assembly and is deposited on a porous media. When coating a porous media, fluid penetration occurs through it. The ability to control fluid penetration through a porous media is helpful in manufacturing composites used in energy, textile, and other industries. This research investigates the effects of processing conditions which play a vital role in the final fluid penetration outcome using analytical modeling, simulation, and experimental validation. The penetration depth of a coating fluid on a porous media can be predicted using analytical and CFD modeling approaches based on experimental results under certain constraints. When the capillary effect is ignored, fluid viscosity (μ) does

not affect the penetration depth; whereas substrate velocity (V), flow rate (Q), permeability (K) and porosity (ε) are critical. The models show that the final penetration depth is inversely proportional to the substrate velocity especially at higher substrate velocities.

INTERACTION OF B-DNA AND SSDNA WITH CARBON ALLOTROPES VIA MOLECULAR SIMULATION

Chidi Ekeledo (UGA) Poster Presentation

Xianqiao Wang and Liuyang Zhang, University of Georgia

DNA is the genetic material, which all living organisms are comprised, and the study of its interactions with varying carbon allotropes via molecular simulations serves as an indispensable tool to learn about the subject's molecular properties. It was hypothesized that DNA would display a strong interaction with the carbon allotropes introduced. Carbon allotropes, B-DNA, and ssDNA models were generated in the Visual Molecular Dynamic program and the simulation of these structures were performed using a program Avogadro. Avogadro viewed parameters such as energy minimization between the subjects. Each B-DNA simulation run was compared to the ssDNA's to gather properties displayed by each type of DNA. The simulations displayed a stronger interaction present with ssDNA than B-DNA, which is noted due to warping and alignment of the ssDNA on the plane of these carbon allotropes. There is a strong interaction present between DNA and carbon allotropes, and as a result, more information gathered about this model and its interactions can be incorporated into a further understanding of DNA and the creation of future medical devices.

INTEROCEPTION AS MOTIVATIONAL SIGNALS FOR MEMORY

Obioma Ekeledo (UGA) Poster Presentation

Alison Adcock, Duke University

The present study examines the influence of a liquid deprivation manipulation on memory processes (encoding) in humans and explores how individual differences in interoceptive awareness may moderate encoding success. Using a within-subjects study design, we hypothesized that liquid deprivation would increase memory performance for stimuli contingently linked to a liquid reward when compared to memory for stimuli not linked to liquid rewards. It was also expected that participants would have greater overall memory performance in the liquid-deprivation condition than in the liquid-sated condition. Lastly, it was expected that performance on an orthogonal interoceptive awareness task would predict changes in memory performance between the liquid-deprived and liquid-sated conditions. Presently, we observe non-significant trend at the subject-level for increased memory in the liquid-deprived compared to the liquid-sated condition. There is also a subject-level pattern of increased memory for liquid-rewarded stimuli than non-rewarded stimuli. Additional data collection is required to accept or reject the null hypothesis.

HISTORICAL TRENDS AND PREDICTION IN SAVANNAH'S TEMPERATURE

Blessing Enya (SSU) Poster Presentation

Hyounkyun Oh, Savannah State University

Climate change has been a serious issue which is world widely affecting people and the environment over decades. NOAA's National Climate Data Center also indicates that temperature rose throughout most of the United States at an average rate of 0.11 per decade and the warmth record was built in the most recent 10-year period. On the other hand, based on the NOAA's data some South and Southeast areas of the U.S, including state of Georgia, still experienced a very slight temperature change over the past century. Present study aims firstly to build a mathematical modeling of temperature changes at Savannah, Georgia. Based on the data of the past 60-year monthly mean highest and lowest temperature then are investigated. Using the Fourier Approximation, this non-linear discrete approximation is converted to a continuous function so that we predict the future change of temperature at Savannah area. Resultant information may be applied to develop more accurate predictive system by combining other climate control system.

VISUALIZATION OF FLOW AROUND CYLINDERS USING SOLID WORKS FLOW SIMULATION

Felix Etinge, Jazmynn Love (SSU) Poster Presentation

Mir Hayder, Savannah State University

As one of the classical problems of fluid mechanics, flow around circular cylinders is one of the most extensively studied subjects in fluid mechanics research. In the present study, flow visualization of cross-flow past a single circular cylinder has been performed using SolidWorks Flow Simulation within Reynolds number, Re = 40-150 and compared with previous experimental results. Simulation was carried out for various total times and results were saved at different time steps. The best visualization was obtained with results saved at every 0.5 sec but it took the highest time to complete the simulation. Results show that for Re = 40, steady flow passes the cylinder without separation. With an increased Reynolds number of Re = 140, the separation of steady flow begins; as the Re increases, a pair of vortices develops within the wake region and creates a street known as Karman vortex street. These results are similar to those from previously performed experiments.

SMART ROAD SIGNS

Shanee' Ferguson, Fredrick Fluker (SSU) Poster Presentation

Mohamad Mustafa, Savannah State University

The objective of this research is to design a system that would communicate with the maintenance department to alert them of the need for maintenance on a particular sign. To achieve this goal we will develop a prototype system that will give cell phone users the ability to report obstructed signs and also . The proposed system will be achieved through attaching a sensor to a prototype sign that measures the distance and the angle to identify the visibility distance from the driver. The prototype sign and the prototype roadway will be designed using 3D modeling software packages. In addition a smart phone app will be designed to allow drivers to report deficient signs to the maintenance department.

GREEN ROOF RESEARCH

Christopher Ferrier-Williams (SPSU) Oral Presentation

Thomas Nelson, Southern Polytechnic State University

The purpose of this green roof research is to investigate the suitability and characteristics of six species of green roof plants in Atlanta's climate. Green roofs provide many benefits, such as reducing storm water runoff, reducing heating and cooling costs, and increasing urban biodiversity. The objectives of this research are to: 1) investigate the survival and growth of the six green roof plant species, 2) measure the insulation provided by each of the six plant species, 3) quantify the water retention capacity of each plant species, and 4) investigate the biodiversity supported by each species. We hypothesize that one or more of these plant species will yield greater benefits than the others in each of these areas. In other words, we believe that some plants will be better at retaining storm water, while others will be better at absorbing heat from the sun. To date, we have established experimental plots on the roof of the ETC building on campus, monitored survival and growth using digital photography, found that green roof plots reduce storm water run-off by 60 to 83%, and collected invertebrates inhabiting each plot.

PERSONAL HEALTH MEDICAL DEVICES

Teshaun Francis (SPSU) Oral Presentation

Kuosheng Ma, Southern Polytechnic State University

Medical doctors are becoming outdated. With a majority of doctor visits being simple "check-ups", the set-up (making the appointment, driving to the office, waiting in the lobby, etc.) often takes longer than the procedure itself; which for most people consists of checking vitals and asking about strange pains. The modern-day adult doesn't have the time for such a tedious process and in current economic strife may not be able to afford it. According to the census bureau, fewer Americans are heading to the doctor for regular check-ups and in lieu of 21st century technology, we can guess why. People are diagnosing themselves using the internet and going for cheap or commercially available home remedies to cure their ailments. In cases of chronic heartburn or a sore throat these quick-fixes are "okay", but may miss a more serious problem such as a potential heart attack or a streptococcus infection. With the help of a microcontroller unit (MCU) and a smartphone, a variety of data about the patient can be collected and analyzed and a full check-up can be performed at home and the results delivered to the smartphone over a UART link.

HYDROCARBON ICES UNDER SIMULATED TITAN CONDITIONS

Mercedes Gainor (FVSU) Poster Presentation

V. F. Chevrier, S. Singh, and A. Wagner (Arkansas Center for Space and Planetary Sciences)

This study presents the first experimental investigations of the infrared properties of hydrocarbon ices under simulated Titan conditions. Titan is Saturn's largest moon with an atmosphere composed of 95-98% nitrogen and 2-5% methane. The surface pressure is 1.5 bars and the temperature is 90-94 K. Titan is the only body other than Earth where stable liquid has been identified on surface. Cassini Visual and Imaging Mapping Spectrometer identified ethane as a major component of the lakes on Titan along with minor components of methane and other heavier hydrocarbons or nitriles. Titan has a hydrological cycle driven by methane which can exist as gas, liquid, and solid ice on Titan. The identification of liquid versus solid phase states of methane and ethane require laboratory results at relevant Titan temperatures. The Titan simulation chamber is used to simulate Titan's atmosphere and surface conditions. Methane and ethane gas are poured into the chamber and condensed to liquid.

GELATIN-CHITOSAN SCAFFOLDS FOR CARTILAGE TISSUE ENGINEERING

Eled Gebrehiwot (UGA) Oral Presentation

Michelle Dawson, Georgia Tech

Damaged cartilage has limited self-repair ability due to its non-vascular nature. Cartilage tissue engineering involves growing chondrocytes in a scaffold and transplanting it to the joint. Scaffolds' biomechanical property controls cells interactions with the scaffold. Previously, the Dawson lab has developed gelatin scaffolds cross-linked with glutaraldehyde. Glutaraldehyde denatures cell proteins even at low concentrations and it reduced the usefulness of the gelatin scaffolds. In this study, the scaffold design was modified by adding chitosan to drastically reduce the required glutaraldehyde concentration. Synthesized scaffolds were tested for mechanical strength, pore-sizes, degradability, and swelling. Results show increase in compression modulus and decrease in swelling property with increasing the concentrations of chitosan. In some samples, pore sizes became smaller with higher percentage of chitosan. Degradability was not affected significantly. Future plan includes, repeating the SEM imaging, testing prepared scaffolds for cell viability and proliferation, and differentiation assay with all scaffold concentrations.

TESTING ALGORITHMS TO PREDICT ONSET OF CEREBRAL MALARIA IN MURINE MODEL

Mina Ghobrial (UGA) Poster Presentation

Julie Moore, University of Georgia

Plasmodium berghei ANKA induces cerebral malaria (CM) in mice. Behavioral and neurological symptoms of mice experiencing CM are similar to those seen in humans. Incidences of experimental CM are variable. In some experiments, nearly 100% of mice develop CM, yet in others, only 50% develop CM. Lack of understanding which and when infected mice will develop CM contributes to a weak understanding of the relationship between early pathological changes of CM and the resulting outcome. In our experiments days 4-7 post-infection, the mice were subjected to a battery of behavioral and neurological tests. Each test produced a numerical score that was inserted into a published algorithm designed to predict the chance that a mouse will develop CM. It appears that the published algorithm does not universally apply to all experimental conditions and mouse strains. Assessment of an alternate predictive algorithm is being investigated. Creating an effective and reliable algorithm can predict CM development in its early stages and the corresponding approximate time of death. This could be helpful to future research concerning CM in murine models.

ANTIFUNGAL AGENT AGAINST ASPERGILLUS SPECIES IN GEORGIA PEANUTS

Reesheda Gilbert (KSU) Poster Presentation

Premila Achar, Kennesaw State University

Aspergillus mold is a cumbersome invader of edible nuts, grains and feed for domestic animals. A. flavus and A. parasiticus commonly infect peanuts and produce carcinogenic aflatoxins. A. flavus is the most common strain of Aspergillus that causes crop contamination and is as common threat to peanut industries worldwide In the United States, 20ppb is the maximum permitted level for human consumption. Research has shown that aflatoxins exposure of (>6000mg) leads to acute toxicity while prolonged exposure to minute doses were carcinogenic. Safe and ecological friendly methods for controlling A. flavus with antimicrobial compounds such as essential oils are being explored to substitute chemically based fungicides. Although genetically modified organisms are being persuaded , its method of control is costly. Essential oils derived from aromatic plants such as cinnamon and clove have clinically displayed antifungal characteristics. This study tested the antifungal effects of cinnamon and clove oil vapors. A. flavus spores were exposed to different concentrations of VO's at 24, 72, and 96 h, respectively, and incubated for seven days. Exposure time correlated with growth of A. flavus and zone of inhibition. Further studies may focus on the active ingredients of these vapors for their potential as biological control agents.

EVALUATION AND DESIGN OF AN ISOLATED POWER CONVERTER TO FUNCTION IN A WIRELESS PHONE CHARGER

Michael Gilbert, Jiyao Wang (SSU) Poster Presentation

Yehui Han, University of Wisconsin-Madison

To explore how an isolated power converter can be used to function in a wireless charger, I designed a topology of a fly-back converter using the simulation program LT-spice and set the parameters accordingly to make the converter run functionally. Afterwards, I designed a transformer in Finite Element Analysis and its coupling factor was calculated to be 85.7%. The leakage inductance, magnetic inductance, and total inductance of the transformer was also calculated based off of the results acquired through the magnetic flux on the transformer's primary and secondary windings. The newly found leakage inductance value and magnetic inductance value replaced the previous values used in my LT-spice simulation and the rest of the parameters were adjusted as needed. The total efficiency of the fly-back converter accomplished was 82%. The voltage in most wireless phone

chargers is 5 volts. The input voltage and output voltage of my designed fly-back converter was within the range of 5 volts and the circuit function was accomplished to meet the standards with good efficiency.

A COMPARISON OF INSECT HOSTS FOR EFFICIENT IN VIVO PRODUCTION OF ENTOMOPATHOGENIC NEMATODES

Crystal Gillom (FVSU) Oral Presentation

David I. Shapiro-Ilan, USDA-ARS SE Fruit and Nut Research Lab

This research focused on comparing current and potential insect hosts for relative efficiency of in vivo production of entomopathogenic nematodes. The nematodes must be produced in a suitable insect host to maximize cost efficiency and fitness of nematode progeny. Our goal is to compare how virulent nematodes are to the insect hosts and the relative virulence. We predict that all insects will be susceptible at some rate; however, there will be significant differences among them. The methods used for this study were LC50s and LC99s. Our results showed that greater wax moth larvae were the most susceptible hosts and therefore will be the easiest to infect on a mass production scale. However, all hosts were susceptible. Therefore, the selection of the optimum host will depend on other factors such as reproductive capacity and fitness of progeny. Knowledge from this research will be useful in deciding how feasible it is to use each host in mass production and what range of nematode doses may be appropriate.

ENDOTHELIAL NITRIC OXIDE SYNTHASE CONTROL BY PHOSPHORYLATION OF CONTROL ELEMENTS

Stephen Gitau, Ezigbobiara N. Umejiaego (KSU) Poster Presentation

John C. Salerno, Kennesaw State University

Endothelial nitric oxide synthase (eNOS) regulate vascular tone and insulin secretion, and is a major regulator of cardiac function and angiogenesis. eNOS is regulated by calcium/calmodulin in a regulatory network including cell trafficking and covalent modification, especially phosphorylation by kinases responding to different signals. The kinases PKA, Akt and PKC are known to activate (PKA and Akt) or inhibit (PKC) eNOS. PKA and Akt phosphorylate S1179 in the C terminal regulatory element; this element inhibits NOS, and phosphorylation reduces inhibition. Phosphorylation of 1179 by Akt or PKA has identical effects on the conformational distribution of the NOS reductase domain (measured by TCSPC fluorescence), favoring the input state but not locking the FMN binding domain, which is released by calmodulin. PKC phosphorylation of T497 does not affect conformation, but prevents CaM binding . MAP kinases are the central nodes in stress activated network regulating gene expression to extracellular signals. Phosphorylation of a specific residue within the autoinhibitory element by ERK2 inhibits eNOS by locking the input state. SS635 i

BOX WING DESIGN LIFT VS. DRAG

Brian Golson (SPSU) Poster Presentation

Phillip Patterson, Southern Polytechnic State University

The purpose of this experiment was to analyze the lift and drag coefficients of a box wing aircraft. The aircraft design was completely designed in SolidWorks 2012 software. Within SolidWorks 2012, is a feature entitled Flow Simulation in which I used to analyze the lift and drag coefficients. Flow Simulation, simulates wind flow in a variable computational domain, similar to that of an actual wind tunnel. The aerodynamic features of the aircraft that affected the results were as followed: winglet height to wingspan ratio, taper chord ratio, degree of angle of attack, and velocity. When the results were gathered, I found the percentage of change for lift and drag of the baseline aircraft. After all simulations were conducted, all the results were plotted on different graphs to illustrate changes in each individual variable. From the data I was able to see if my hypothesis was proven to be correct.

INDUCIBLE RNAI CONSTRUCTS FOR KNOCKDOWN OF HAN GENE IN ARABIDOPSIS

Vanessa Iris Gutierrez (UGA) Oral Presentation

Wolfgang Lukowitz, University of Georgia

This study examines mutations involved in the GATA factor HANABA TARANU, specifically HAN,HANL1, and HANL2. The triple mutant background of this family of genes leads to an arrest in development. I assembled a dexamethasone-inducible RNAi vector containing hairpins to knockdown the expression of Han in Arabidopsis Thaliana. Arabidopsis has been transformed and basta selection is currently being used isolate successful transgenic plants over several generations. Once induced by the hormone dexamethasone, I expect developmental malfunction to occur immediately. By closely examining the embryos on a microscopic level , I will be able to detect which areas and responses first malfunction, This will give a better idea of the role of HAN in embryonic development which otherwise is left as an unknown in the scientific community.

CDNA CLONING AND CHARACTERIZATION OF FLAVANONE 3' HYDROXYLASE (F3H) GENE FROM MUSCADINE GRAPES

Jasmine Hall (FAMU) Poster Presentation

Edna Cofield, Florida Agricultural & Mechanical University

Flavanoids are key antioxidants that produce natural byproducts such as anthocyanin, proanthocyandin, and flavanoid pigments. Flavanone 3' Hydroxylase (F3'H) is a key enzyme in the biosynthesis of flavonols, anthocyanindins, and proanthocyanindins. In this study we report the cloning, and characterization of F3'H gene. The full length cDNA of F3'H from Vitis rondutifolia (designated as VrF3'H) was isolated and characterized. The full length cDNA of VrF3'H had an open reading frame (ORF) of 1092 bp encoding 364 amino acids with a calculated molecular mass of 40.8kDa and an isoelectric point of 5.60. Comparative and in silico analyses revealed that VrF3'H has extensive homology with F3'H from other plant species. Phylogenetic analysis indicated that VrF3'H belongs to the Vitis F3'H cluster and it is much closer to Vitis vinifera. Realtime-PCR (RT-PCR) analyses of VrF3'H transcripts showed that the VrF3'H was abundantly expressed in the red cells of physiologically mature red berries and not expressed in the skins of the green berries. We cloned the F3'H gene from the Muscadine grape for the first time and the sequence was deposited at the NCBI database (Gene Bank Accession no. KF040970). This study will provide further resources for the use of functional genomics to improve the production of various nutraceuticals (healthy compounds) from Muscadine grapes.

RATE-BASED BLOOD TRANSFUSION TRIGGER IMPROVES PREDICTION FOR MASSIVE TRANSFUSION PROTOCOLS

Tony Hansberry (FAMU) Poster Presentation

Brian Diggs, David Hampton, Alexis Moren, Martin Schreiber, Oregon Health & Science University

Despite substantial improvements to shock management, hemorrhage still remains one of the most common causes of early death from traumatic injuries. A rapid delivery of blood products, through a massive transfusion, is needed to manage hemorrhaging, facilitate resuscitation, and increase mortality. The traditional definition of massive transfusion (>10units per 24 hours) fails to capture the true populace; excluding exsanguinating patients who expire prior to 10 units of PRBC's or those patients who are not exsanguinating but require transfusions throughout the 24 hour period. The purpose of this study is to demonstrate a paradigm shift from the traditional definition of massive transfusion to one that incorporates an hourly interrogation of the patients' status and the interventions administered. By calculating a rate-based definition for massive transfusion for a large populace of patients, we will more

accurately target and capture critically injured patients requiring aggressive resuscitation efforts as compared with the current traditional massive transfusion protocols.

ELECTRIC CIRCUIT ANALYSIS IN MATLAB AND SIMULINK

Nathaniel Hardy, III (SSU) Poster Presentation

Asad Yousuf, Savannah State University

Computer Simulation of Electrical Circuit is a trend in both academics and practice of Electrical Engineering. Simulation software packages such as MULTSIM and PSPICE provides the simulation of an Electrical Circuits to verify the design. However, the predesigned software packages are not helpful in understanding the calculation and analysis of electrical circuit components. The name MATLAB stands for MATrix LABoratory. MATLAB was written originally to provide easy access to matrix software developed by the LINPACK (linear system package) and EISPACK (Eigen system package) projects. MATLAB is computational software which provides conceptual approach for designing and solving problems in Electrical Circuits. MATLAB has embedded software called SIMULINK which provides an essential way to model, simulate and analyze Electrical Systems which are characterized by some inputs and outputs.

INTERACTION OF CYTOCHOME C WITH A PHOTOSENSITIZER FOR PHOTODYNAMIC THERAPY

Dolphurs Hayes (SSU) Oral Presentation

Cecil Jones, Savannah State University

Photodynamic therapy (PDT) is an emerging noninvasive technique which employs dye-like substances, called photosensitizers, light, and molecular oxygen to kill solid tumors. The photosensitizer absorbs light and transfers some of this energy to molecular oxygen. Molecular oxygen is converted into highly reactive singlet oxygen which reacts with key cell components and results in cell death. The primary problem with PDT is the lack of long term control of tissue destruction. The therapeutic effect and the dominant mechanism of cell death from PDT depend heavily on the localization of the photosensitizing drug. Photosensitizers that localize in mitochondria tend to be effective agents for killing cells. Metal-pthalocyanines are porphoryn-based photosensitizers that show high affinity binding to mitochondrial, endoplasmic reticulum, and Golgi apparatus membranes. Our research objective is to investigate the critical roles of mitochondria cytochrome c (cyt c) and cardiolipin (CL) as well as their responses under oxidative stress. Our hypothesis is that the dye, 10-nonyl acridine orange (NAO) commonly employed for monitoring drug localization and monitoring mitochondria activity may be administered in concentrations sufficient for interference. The drug may even elicit a cytotoxic response.

SPEAKING THE LANGUAGE OF HEDGEHOG: SUTHERLANDIA EXTRACT INHIBITS PROSTATE CANCER CELL PROLIFERATION BY AFFECTING THE PARACRINE HEDGEHOG SIGNALING PATHWAY

Evan Hayes (FVSU) Poster Presentation

Yuan Lu, Hui Lin, William Folk, University of Missouri

Prostate cancer (PCa) is common cancers in men in the US. The Gli/Hedgehog (Hh) signaling pathway has shown to be important for initiation and development of several types of cancers, including PCa. Inhibition of Gli/Hh signaling was shown to cure xenograft animal models of prostate cancer. A crude extract of the South African plant Sutherlandia has shown in our lab to inhibit hedgehog signaling in reporter assay. Though Sutherlandia was shown to inhibit the proliferation of PCa cells, the mechanism for this inhibitory effect is not known. We –hypothesize- that Sutherlandia extract can inhibit PCa cell proliferation by inhibiting paracrine Hh signaling. DU145, is a human cell line of PCa brain metastasis, was labeled with Green Florescent Protein (GFP) and co-cultured with a mouse NIH3T3 embryonic fibroblast stromal cell line transfected with the 8XGli binding site-driven luciferase reporter.

SMART SENSORS DESIGN AND DEVELOPMENT

Shelby Henry, Nathan Louis, Brandon Pearson (SPSU) and Bernie Prieto (GT) Oral Presentation

Phillip Patterson, John Hart, Dan Lo, Southern Polytechnic State University

Today, smartphones, and other mobile devices have become an essential part of our everyday life. Email, global positioning, and even setting residential alarms are all within the grasp of these mobile devices. With embedded systems moving towards a faster and smaller processor, and having the systems on a chip with a variety of peripheral devices, it becomes increasingly easier to design, integrate and develop an accurate and high performance real time embedded system. The objective for this project is to design and develop a smart sensor embedded system that transmits and receives data through a Bluetooth module using a dust sensor, a thermistor and a pulse sensor. The data is then sent to an Android phone, where it will be visually graphed. The collected data are used to evaluate the air quality using a dust density sensor, to simulate someone's pulse using a pulse sensor, while also measuring the ambient temperature of the MSP430, a microcontroller that processes data from the sensors. This information will be modeled by a line graph and thermometer. This research will be necessary to find additional design processes to embedded systems.

A PHOTOVOLTAIC MODULE WITH CELL STRANDS THAT TRACK THE SUN

Marcus Herndon, Tahri Turner (SPSU) Oral Presentation

Bill Diong, Southern Polytechnic State University

This project is a continuation of research to design and develop a novel photo-voltaic panel with solar cells that are rotated by bimetallic coils using the sun as the heat source to expand them. The solar cells will then track the sun, to maximize the amount of energy collected by this novel panel, which could be 20% greater than the energy collected by a non-tracking panel. The main task this summer involved developing and modifying multiple prototypes to contain either spiral or helical bimetallic coils, and assess their energy-collection performance. Data collection and power and energy calculations were done for each prototype in comparison to a standard (non-tracking) panel. From these results, it was determined that the helical coils tested would require a greater amount of heat to rotate the cells to the necessary angle than the spiral coil, therefore leading us to conclude that the tested helical coils are inferior to the tested spiral coils for this particular application. The most significant energy-collection difference was achieved by the tested prototypes (with spiral coils) at 9% increase. The research is on-going.

HIGH FREQUENCY PROPAGATION REGENERATION IN VALERIANA OFFICINALIS – RARE MEDICINIAL PLANT

Clarence Hicks (FVSU) Poster Presentation

Sarwan Dhir, Fort Valley State University

Valeriana officinalis is a perennial, flowering herbal plant native to Europe and parts of Asia. It's a medicinal plant used as a muscle relaxer for anxiety relief, as well as a sleep aid. Due to its variations, poor seed production and germination, and traditional breading effects cost and time, clonal propagation should be used in order to produce large scale homogeneous plants with high yields of Valerian. In propagating Valerian clonally we have developed a simple one step method for the regeneration of plants/ multiple shoots using nodes as explants. We supplemented the MS media with various concentrations of cytokinins- benzyl amino purine (BAP) and kinetin (KN) to study which concentration had the best effect on producing Valerian efficiently and effectively. The results from this protocol indicated

that KN or BAP at 2.5 mg/l was the best concentration for shoot induction. Comparing KN 2.5 mg/l with IAA, IBA, or NAA maximum number of shoots were observed with KN 2.5 mg/l + IAA 0.1 mg/l.

A DIBENZ[A,C]PHENAZINE-SUPPORTED NXHETEROCYCLIC CARBENE AND ITS RHODIUM AND IRIDIUM COMPLEXES

Lauren Hutchinson (KSU) Poster Presentation

Daniela Tapu, Kennesaw State University

A new polycyclic N-heterocyclic carbene featuring a fused dibenz[a,c] phenazine moiety was generated in situ from the corresponding tetrafluoroborate salt. The synthesis and NMR data of its corresponding precursors, its sulfur adduct and dimer are reported. Complexes of type [MCl(COD)(1)] and [MCl(CO)2(1)] (M=Rh and Ir, 1 = 1,3-dibutyldibenzo[a,c] phenazino[11,12-d]imidazol-2-ylidene) were prepared and characterized using spectroscopic and crystallographic methods. The electron-releasing capacity of this new carbene was investigated by evaluation of its corresponding IrCl(COD) and IrCl(CO)2 complexes by IR spectroscopy (vav) and cyclic voltammetry (E1/2). These studies revealed that the electron donicity of this ligand is comparable to that of the previously reported naphthoquinone-annulated imidazolin-2-ylidene. Some preliminary studies of the photophysical properties and catalytic activity of these metal complexes are reported.

THE ANTI-FUNGAL PROPERTIES OF EGG WHITE: A HYPOTHESIS FOR THE EVOLUTIONARY BENEFITS OF AVIAN EGG ROTATION

Obumneme Imonugo, Aleema Dyer, Laquandra Hooper (KSU) Poster Presentation

Army Lester, Kennesaw State University

The poultry science industry has acknowledged the benefits of avian egg rotation in promoting survival, growth, and hatchability of avian embryos. Most research indicates that not rotating the egg allows the chorioallantoic membrane to stick to the side of the eggshell, which causes the embryo to die when blood vessels are broken due to random embryonic movement. This study suggests that rotating the eggs places topside penetrating pathogens into the path of the egg albumen which destroys the pathogen. Egg albumen was removed from fresh fertile eggs, mixed with varying concentrations of pathogens and incubated for 24 to 48 hours. Results indicate that egg albumen greatly retards the growth of pathogens when the ratio of pathogen to albumen is low. However, as the ratio increases, the growth of pathogens increases but remains much lower than controls grown in broth. These findings suggest that rotating the egg may trap pathogens in the albumen, thus giving proteins of the albumen time to destroy the pathogen.

FACTORS THAT AFFECT PARALYSIS OF INDIANMEAL MOTH LARVAE (PLODIA INTERPUNCTELLA) BY GREGARIUS PARASITOID (HABROBRACON HEBETOR)

Edidiong Inyang (FVSU) Oral Presentation

George Mbata, Fort Valley State University

The gregarious parasitoid, Habrobracon hebetor, is a natural enemy of stored product moths including Plodia interpunctella. P. interpunctella is a common grain feeding pest that infests cereals, dried fruits, nuts, wheat, beans and process foods. The female H. hebetor is known to parasitize mature larvae of P. interpunctella by paralyzing them and subsequently depositing their eggs on the larvae. This study investigated how environmental factors such as photoperiod and temperature affected the success of the parasitoid in paralyzing P. interpunctella larvae. The hypothesis was that various environmental factors would play a critical role in the paralysis of P. interpunctella larvae by H. hebetor. It was observed that more P. interpunctella larvae were stung in 48 hours compared with 24 hours. Also more P. interpunctella larvae were stung at 28oC than 19oC and more at 19oC than 15oC. The study also shows that more larvae were paralyzed from the jars that were placed in incubator with 12 hours light and 12 hours darkness (LD) compared to 24 hours light (LL) and more in 24 hours light (LL) than 24 hours dark (LD).

ANTI-ADIPOGENIC ACTIVITY OF TERMINALIA PALLIDA FRUIT

Rueben Israel-McBee, Katlyn Ferguson, Kristopher Gitau (SSU) Poster Presentation

Kameswara Rao Badri, Savannah State University

Obesity is becoming a global pandemic leading to various diseases/ disorders including health disparities. Apart from invasive procedures, there are very limited treatments available. Hence, there is every necessity to find a good lipid lowering and anti-obesity drug with minimal side effects. Recently, due to reduced costs, minimal/no side effects and cultural significance, many are opting for complementary treatments. Terminalia pallida (TP) is one such plant with anti-lipidemic and anti-hyperglycemic activities. Hence, here we investigated the anti-adipogenic activity of TP using 3T3-L1 embryonic fibroblast cells treated with or without adipogenic cocktail. In addition, we treated the 3T3-L1 cells with various concentrations of TP fruit extract (50, 25 and 10 mg/ml) or Simvastatin, a known anti-lipidemic drug. Ten days of post-treatment, most of the cells in adipogenic cocktail treated group differentiated in to adipocytes with fat droplets. However, 10 mg/ml TP treated group showed significant inhibition of adipocyte development as shown by Oil Red O staining. Further, the adipocytes in this group showed significantly less fat with tiny fat droplets. Simvastatin, a known hypolipidemic drug, showed anti-adipogenic activity as evidenced by the reduced size and number of adipocytes. In conclusion, ethanolic extract of TP has a significant anti-adipogenic activity.

REMOVAL OF BACTERIA FROM STORMWATER USING BIOCHAR

Herby Jean (USF) Oral Presentation

Alexandria B. Boehm, Sanjay K. Mohanty, Stanford University

Urbanization of natural landscape increases impervious surface coverage, which in turn reduces natural infiltration of stormwater into soil. This change causes several environmental problems including depletion in groundwater recharge, increased flooding, and increased erosion, and contamination of surface waters. Thus, there is an urgent need to improve management of urban stormwater. This research aims to examine efficiency of biochar; a charcoal-like engineered geomedia generated during the pyrolysis of biomass, to remove fecal indicator bacteria (E. coli) from stormwater with and without natural organic matter (NOM). Three types of biochar are used: a commercial biochar, and two biochars produced in a laboratory by pyrolyzing wood chips at 350°C, and 700°C. Batch experiments were conducted in triplicates by adding sand and biochar (5% by weight) in 20 mL of synthetic stormwater containing E. coli, and analyzed for aqueous concentration of E. coli. Sand removed 41± 9% of bacteria, the commercial biochar removed 66±5 %, the biochar pyrolyzed at 350°C removed 96 ±0%, and the biochar pyrolyzed at 700°C removed 95±3% of bacteria.

AN ANALYSIS OF THE ASSOCIATED DISORDERS, SPORTS INJURIES, AND CORRECTIVE SURGICAL PROCEDURES FOR THE HUMAN VERTEBRAL COLUMN

Catherine Johnson, Muaaz Masood (UGA) Poster Presentation

Mi Geum Chorzepa, University of Georgia

We briefly examine some disorders of the human spine, including abnormalities and football-related injuries. Specifically, the corrective surgical procedures including innovative technology and materials are analyzed. The anatomy and consequences of impact forces on the spine from football tackling are also explored.

SYNTHESIS AND CHARACTERIZATION OF CATIONIC PORPHYRIN: A POTENTIAL CANDIDATE FOR PHOTODYNAMIC THERAPY OF TUMOR

Marion Johnson (SSU) Poster Presentation

Adegboye Adeyemo, Savannah State University

Novel meso-substituted cationic porphyrin has been synthesized, purified, isolated and characterized by UV-Vis, and NMR spectroscopic techniques. This new porphyrin, meso-tetrakis(2,3,5,6-tetrafluoro-4-trimethylaminophenyl) porphyrin tetraiodide, is a potential agent for thermodynamic therapy of tumor (PDT). Meso-tetra (2,3,4,5,6-pentafluorophenyl) porphyrin 1 was synthesized by reacting 2,3,4,5,6-pentafluorobenzaldehyde with pyrrole in (1:1) molar ratio in refluxing propionic acid, using a modification of the Alder-Longo procedure. The 4-dimethylaminophenyl derivative 2 was prepared by refluxing compound 1 in dimethylformamide (DMF) overnight. The third and final compound 3 was synthesized by reacting compound 2 with excess methyl iodide in refluxing chloroform overnight. We now present the UV-Vis, proton and carbon-13 NMR spectral data of compounds 1-3.

LOCALIZATION AND EXPRESSION OF FLOURESCENTLY TAGGED MARKERS OF AN ENGINEERED BINDING SITE IN ZEA MAYS

Paris S. Johnson (FVSU) Poster Presentation

David M. Higgins & R. Kelly Dawe, University of Georgia

Kinetochore proteins are DNA-binding proteins that interact with the centromere, site for kinetochore assembly and spindle fiber attachment. This study focused on binding affinity of two of these sites, LacI and LexA, by testing their ability to bind with ABS array when fused to YFP (LacI) and RFP (LexA). Our goal is to determine which of the two sites binds best to the ABS. The 35S-LacI-YFP construct, produced bright fluorescent spots within the nucleus which we consider to be an indication of binding at the correct ABS array site however CenH3-LexA-RFP and Ndc80-LexA-RFP did not show the same result. As a confirmation of the expression of the LexA-RFP construct, we used RT-PCR and compared levels of its transcript being driven by two different promoters,Ndc80 and Cenh3. Results show that the expression of the binding sites can be accurately determined by RT-PCR than by microscopy, since in plants with the LacI-YFP marker fluorescence could be observed, whereas the LexA-RFP marker could not.

TIC-TAC-TOE GUI

Nakiara Jordan (SSU) Poster Presentation

Spyros Andreou, Savannah State University

JAVA is a general-purpose object-oriented computer programming language allowing developers to "Write Once, Run Anywhere", (WORA). It is one of the most popular programming languages in use. In this research effort Java characteristics will be examined by using a Graphical User Interface. A graphical user interface (GUI) will allow users to accomplish several tasks such as running the program in a web browsers as an applet or as a normal application that will be written, compiled, run and demonstrated by simply pressing buttons or clicking a box to get feedback. As examples, the Olympic Rings were drawn using JFrame, graphics 2D and ellipse 2D and the Tic-Tac-Toe game was created by using a simple JFrame shown as a 3 x 3 grid lay-out with nine JButtons represented by x and o.

THE EFFECTS OF AUTOPHAGY AND NECROPTOSIS IN THE MURINE MODEL OF PLACENTAL MALARIA

Matthew Joseph (UGA) Poster Presentation

Julie Moore, UGA Infectious Diseases Department

A major health issue in the developing world during pregnancy is malaria; nearly half the world's population lives in a high-risk area and the infectious disease results in close to one million fatalities yearly. Plasmodium falciparum, transmitted by the Anopheles mosquito, is the deadliest protozoan parasite which causes malaria in humans. Placental malaria is characterized by the accumulation of parasitized red blood cells and migration of leukocytes into the placenta.This disease is known as placental malaria (PM) and leads to stillbirth, low birth weight, and abortion. Autophagy is a vital cellular pathway which recycles unnecessary organelles to their organic components for more energy when the cell is under stress. We hypothesize that accumulation of parasitized red blood cells and infiltration of leukocytes in the placenta during malaria infection will induce excessive autophagic activity in the placenta, thereby contributing to poor birth outcome. We use two mouse strains to study the effects of autophagy, and we hope to make connections to make further advancements in the knowledge of the pathway of PM using this model.

INVESTIGATION OF THE SHALLOW SUBSURFACE OF THE BUSHVELD COMPLEX USING THE GRAVITY METHOD

James Jovon (FVSU) Poster Presentation

Dr Andy Nyblade & David Bice, Pennsylvania State University

South Africa is known for its many valuable natural resources and minerals, making it a very popular mining location. One of the most significant mining sites located in South Africa is the Bushveld Complex. The Bushveld Complex is a large igneous intrusion that provides 80% of the world's platinum, as well as many other valuable minerals and resources. This research examines the Bushveld Complex, using the gravity geophysical technique to deduce the subsurface geological structure of the Pachaskraal mine site. The data and interpretation will be used by Anglo Platinum, a platinum mining company, as important subsurface geological information for mining purposes.

SYNTHESIS OF METAL-ORGANIC FRAMEWORK (MOFS) USING CORE SUBSTITUTED NDI MOLECULES AND THEIR USE AS CHEMO-SENSORS

David Lindsey (TCC) Poster Presentation

Sourav Saha, Florida State University

Metal-Organic Frameworks (MOFs) are crystalline compounds consisting of metal ions coordinated to variable organic molecules forming one, two, or three-dimensional structures. Due to the presence of nanoscale porosity and large surface areas, and ultra-low densities; recently MOFs have come forward as a new class of functional hybrid materials used in gas purification and separation, in heterogeneous catalysis, and as chemo-sensors. MOFs have also had good results in biological applications such as drug delivery. Most commonly they have been used for the storage of hydrogen and carbon dioxide. In comparison, the chemo-sensing ability of the MOFs reported to date is limited because of the limiting opportunity to connect some fluorescent tag which can in turn show optical response upon addition of a chemical species (hazardous ions or nucleophiles). That is why our goal is (a) to build MOFs having a optically responsive unit built in it or (b) modify the MOFs by using the functional groups installed in the building block (Post synthetic modification; PSM).

THE SYNTHESIS OF A PORPHYRIN USING 4 (4-FLUOROPHENOXY) BENZALDEHYDE: ITS CHEMICAL AND PHYSICAL PROPERTIES

Christian Lyle (SSU) Poster Presentation

Adegboye Adeyemo, Savannah State University

This research looks at the characteristics of porphyrins and their chemical properties to see as to how the use of them can become potentially effective anticancer drugs. The physical and chemical properties of porphyrins were tested to observe the wavelengths at which the porhyprin would absorb UV light. Meso-tetrakis(4-(4-Fluorophenoxyphenyl) porphyrin was synthesized in the lab using

4(4-fluorophenoxy) benzaldehyde. Due to is molecular structure, the nitrogen atoms in the pyrolles of the porphyrin allow it to absorb and insert certain organic metals into its structure. To test which organic metals could be inserted into the structure solubility test were conducted. After solubility tests were performed extraction of metals from the porphyrin complex were conducted to observe if the porphyrin still maintained its absorbance properties.

AIRFLOW IN THE BIG CITY

Mauro Mancilla (TCC) Poster Presentation

John Heiser, Brookhaven National Laboratory

The project that I worked at Brookhaven National Laboratory was called, Subway-Surface Air Flow Exchange (S-SAFE) study. The purpose of this project is to understand the pathway of gases or any other airborne contaminants above ground and below in the subways of New York City (NYC). Project S-SAFE, sponsored by New York Police Department (NYPD), will help NYC to improve emergency response in case of any accidental or intentional release of danger contaminants. During the field study, a small quantity of harmless and colorless gas know as perfluorocarbon were released on three non-consecutives days on the subways and the streets of NYC. The dispersion of the gas was traced using about 200 air samplers installed around NYC. My role in this project was to help with the preparation of instrumentation and the tracking of the gas during the release days. Preparation involved assembling, organizing, and programing the samplers called black boxes (BBS) and Brookhaven Air Tracer Sampler II (BATSII).

THE STUDY OF SGS3-LIKE GENES IN RNA-DIRECTED DNA METHYLATION PATHWAY IN ARABIDOPSIS

Ulysius McGhee (FVSU) Poster Presentation

Meng Xie, Bin Yu, University of Nebraska-Lincoln

Plant specific SGS3-LIKE proteins are composed of various combinations of an RNA-binding XS domain, a zinc-finger zf-XS domain and a domain of unknown function called XH. In addition to IDN2 and SGS3, the Arabidopsis genome encodes twelve uncharacterized SGS3-Like proteins. In our previous studies, we have found that two members of the SGS3 family, FDM1 and 2 are involved in the RNA-Directed DNA Methylation. Detailed studies have showed that FDM1 can form a tetramer complex with other SGS3-Like proteins to stabilize the DNA Methylation complex during RdDM process. The purpose of this study is to test whether the other SGS3-LIKE proteins are involved in this process or not.

INCREASING THE PARTIAL PRESSURE OXYGEN IN SHELL-LESS CHICK CULTURES INCREASES EARLY SURVIVABILITY

Solome Mekbib, Kevin McCrary, Mareena Whisby (KSU) Oral Presentation

Army Lester, Kennesaw State University

For nearly 150 years scientists have reported techniques for culturing shell-less chick embryos. Shell-less cultures offer great promise, however several problems plague the technique. One is that embryos must be maintained in the eggshell for 48-72 hours of incubation. This creates a problem since much of the embryonic development occurs during the first 72 hours of incubation. We hypothesize that the death of shell-less embryos is due to a low partial pressure of oxygen. Chick embryos with no prior incubation, were removed from the eggshell and placed in culture vessels, incubated at 37-38 oC, saturated humidity, and varying partial pressures of oxygen. Embryos were cultured in the eggshell with and without windows as controls. Results indicated that increasing the partial pressure of oxygen by increasing the atmospheric pressure or by increasing the oxygen concentration improved the survival of shell-less embryos. The increased partial pressure of oxygen appears to allow developing tissues to meet their energy demands prior to the development of a functional cardiovascular system.

NOVEL MODES OF ENOS REGULATION

Megan Mickanen, Verra Ngwa (KSU) Poster Presentation

Carol Chrestensen, Kennesaw State University

Endothelial nitric-oxide synthase (eNOS) is an important enzyme in the cardiovascular system. eNOS activity is regulated by many inputs including phosphorylation at several sites and binding of calcium bound calmodulin. Binding of calmodulin is the critical activator of eNOS, while phosphorylation depending on the site can be activating or inhibitory. Phosphorylation at S1179 has been extensively studied and is achieved by a number of protein kinases, including Akt, AMPK, PKA, CamKII and PKG. Some of these kinases phosphorylate other activating sites, including S635 and S617. Our results describe an additional kinase that has a regulatory role in the activation of eNOS at S1179 and at S635. Phosphorylation has been observed in vitro, in parallel with Akt phosphorylation and there are differences in the sites that the kinases phosphorylate. Treatment with either kinase resulted in increased eNOS activity. Intracellular analysis also suggests that this kinase is a physiological regulator of eNOS.

EXPLORING THE ROLE OF CATECHOLAMINES IN ULTRASONIC VOCALIZATION PRODUCTION IN PARKINSONIAN RATS

Kiara Miller (SSU), Laura Grant (UWM) Poster Presentation

Cynthia Kelm-Nelson; Michelle Ciucci, University of Wisconsin-Madison

Parkinson disease (PD) is a progressive neurodegenerative condition. Traditional clinical signs in patients with PD include bradykinesia, muscle rigidity, and tremor. However, voice deficits are also common and include a vocal tremor, as well as reductions in loudness and pitch variability. Dopamine (DA) replacement therapies, such as levodopa, are effective at treating deficits in the extremities, but provide little to no benefit for cranial sensorimotor deficits such as vocal dysfunction. In addition to the loss of DA neurons, noradrenergic neurons are also depleted in PD; however, the role of norepinephrine (NE) in vocalizations is unknown. Ultrasonic vocalizations (USV) from rats with either a DA only or DA + NE lesion were examined in the present study. Additionally, immunohistochemistry was used to analyze brain tissue. We hypothesized that motor and vocal deficits as well as the loss of DA in the striatum would be more severe in animals with dual lesions compared to a DA lesion. The goal of this research project was to evaluate the central role of NE and its relation to vocalization deficits in a dual lesion paradigm.

IDENTIFICATION AND EXPRESSION OF LLT1 IN PROSTATE CANCER TISSUES

Roshini Mohan (SSU) Poster Presentation

Stephen O. Matthew, University of North Texas Health Science Center

Natural Killer (NK) cells are innate immune lymphocytes that also have adaptive immune responses, and they produce molecular cytokine granules and cytotoxins that directly attack and kill virally Infected, transformed or cancerous cells. Different from B and T cells, NK cells are able to kill target cells Without prior sensitization and recognition of targets is not antigen specific. NK cell activity, instead, is regulated by a balance between activating and inhibitory signals triggered by engagement of NK cell receptors with their ligands. One such receptor of interest is lectin-like transcript-1 {LLT1). which was identified, cloned and characterized in our laboratory. Interestingly, the ligand for LLT1 is an inhibitory receptor NKRP1A (CD161) expressed on NK cells. It has been reported that glioma cells overexpress LLT1 and its interaction with CD161 enables glioma cells to escape from NK cell killing. Our laboratory recently found out that prostate cancer cells overexpress LL T1. We hypothesize that overexpression of LLT1 and its interaction with CD161 enables prostate cancer cells to escape from NK cell-mediated cytotoxicity.

PROSTATE CANCER KNOWLEDGE, MYTHS AND MISCONCEPTIONS AMONG HAITIAN MEN

Olivia Moline (FAMU) Poster Presentation

Edna Cofield, Florida A&M University

Similar to other Black men, Haitian men are at risk for prostate cancer. However, little is known about prostate cancer in Haitian American men. To address this gap in the literature, the purpose of this study was to assess the prostate cancer knowledge and misconceptions of Haitian American men. The research questions were: (1) What is the level of prostate cancer knowledge among Haitian men? (2) What are the common myths and misconceptions associated with prostate cancer among Haitian men? (3) Which demographic factors are associated with prostate cancer knowledge, myths, and misconceptions? The inclusion criteria for participants were men of Haitian ancestry, 40 – 70 years old, with ability to speak, read and write in English. Data collection took place in Orlando and Miami (Florida); and was by self-administered survey. A total of 95 men were recruited during two health forums and at a church. T-shirts or a bag was provided as incentives for participation. Descriptive analyses and simple regression was employed to analyze the data. Prostate cancer knowledge, myths and misconceptions were found to be low among the participants.

DESIGN AND STRESS ANALYSIS OF A LOAD-CARRYING

Maleek Montgomery (SSU) Poster Presentation

Mir Hayder, Savannah State University

In this study, the static analysis of a load-carrying hanger was performed using SolidWorks Simulation software. The study was carried out in two stages. In the first stage, a suitable 3D model of a load-carrying hanger was developed, and in the next step, stress analysis was conducted keeping one side of the hanger fixed to a wall. The main focus was to understand where the maximum stress is developed when the load is applied from the top of the hanger. In addition to the stress data, displacement and strain data was analyzed to develop a better understanding. Results show that for all loads applied to the hanger, the maximum stress was developed on the upper horizontal part where it is attached to the wall. None of the three parts failed/yielded due to loads tested in the study.

ROLE OF NITRIC OXIDE SYNTHASE CONTROL ELEMENTS DEFINED BY DELETION OF THE AUTOINHIBITORY ELEMENT AND C TERMINAL EXTENSION

Vladimir Moricette (KSU) Poster Presentation

John C. Salerno, Kennesaw State University

Nitric oxide functions as a molecular signal and a defensive cytotoxin. Endothelial NO synthase (eNOS) and the neuronal isoform nNOS are signal generators controlled by calcium/calmodulin (Ca+2/CaM) and phosphorylation. CaM activates electron flow from NADPH through flavin cofactors to an oxygenase active site. Using TCSPC fluorescence of flavin cofactors, we observe obligatory conformational intermediates, including open conformations in which FMN fluorescence resembles free FMN (lifetime ~ 4 ns). In the majority input state FMN and FAD form a short lifetime (80 ps) dimer. In the output state FMN is quenched by heme, producing a ~1 ns lifetime. CaM displaces NOS control elements, activating electron transfer. Deletion mutants of the major autoinhibitory element (AI) resemble CaM activated NOS; the majority input state is partially dissociated into open states, confirming that the AI NOS in the input state. C terminal deletion favors the input state by speeding up FMN capture, while double deletion produces a majority open conformation. This delineates individual roles for NOS control elements, also applicable to kinase regulation.

TWO-TONE COLORING OF GRAPH PRODUCTS

Ashley Morris, Kirsti Wash (SSU) Poster Presentation

Jim Brown, Clemson University

A variation of graph coloring known as a t-tone k-coloring assigns a list of t colors each vertex of a graph from the set {1,...,k} where any two vertices distance d apart share fewer than d colors in common. The minimum integer k such that a graph G has a t-tone k-coloring is known as the t-tone chromatic number. We study the 2-tone chromatic number of three different graph products. In particular, given graphs G and H, we bound the 2-tone chromatic number for the direct product G × H, the Cartesian product G⊠H, and the strong product G H.

EVALUATION OF FUNCTIONAL ANTIBODIES SPECIFIC TO BORDETELLA PERTUSSIS ANTIGENS

PoTeea C. Morris-Hunter (SSU) Poster Presentation

Han Li, Morehouse College; Sandra Romer-Steiner, Center for Disease Control and Preveltnion,

Pertussis remains a poorly controlled preventable disease worldwide, causing ~260,000 deaths annually. We investigated the capacity of sera from pertussis acellular vaccine recipients (n=18) to opsonize Bordetella pertussis (Tahoma I) and to neutralize pertussis toxin (PT) in vitro. A fluorescent (FAM-SE), whole cell opsonophagocytosis activity (OPA) assay using HL-60 phagocytes and rabbit complement was conducted in triplicate in the serum panel and a commercial immunoglobulin (Talecris, Phoenix City, AL). Duplicate pertussis toxin neutralization activity (pTNA) assays were conducted with active PT and CHO cells. OPA and pTNA responses were compared to immunoglobulin G (IgG) antibody concentrations (IU/ml) for 5 antigens (Pertussis Toxin, Adenylate Cyclase Toxin, Pertactin, Filamentous Hemagglutinin, and Fimbrial antigens) and levels of correlation was determined. We hypothesized OPA and pTNA from pertussis vaccinee sera would correlate with antibody levels to pertussis antigens. All 18 vaccines had functional antibody titers by OPA (>2048) and by pTNA (range = 11.5 to 498.5). Anti-PT antibody levels correlated significantly with pTNA ($r=0.915$, $P<0.001$). Specific antibody responses were not correlated with OPA. However, positive trends were found with anti-PRN and anti-FHA antibodies. This research may contribute towards the development of pertussis correlates of protection and the evaluation of vaccine immune responses.

TESTING OF MEMORY LEAK IN ANDROID APPLICATIONS

Edward Mwangi (KSU) Oral Presentation

Sarah M. North, Kennesaw State University

Android applications run on mobile devices that have limited memory resources. Although Android has its own memory manager with garbage collection support, many applications currently suffer from memory leak vulnerabilities. These applications may crash due to out of memory error while running. Testing of memory leak can detect the vulnerability early. In this paper, we perform memory leak testing of Android applications. Unfortunately, the causes of memory leak in Android applications vary based on supported objects and resources. There is no literature work that categorically identifies the reasons of memory leak to enable the development of a testing technique. To address this issue, we develop some common memory leak patterns specific to Android applications. Then, based on the patterns, we generate test cases to emulate the memory leak through return anomalous value by abnormal user interactions, accessing of altered resources and blocking of memory management relevant APIs. We evaluated the proposed testing approach (denoted as fuzz testing) for a number of Android applications. The initial results indicate that the proposed testing approach can effectively discover memory leak in applications. Further, implemented code often lacks exception handling mechanism for altered resources and failed invocation of memory management related API calls.

CAN LAND APPLYING SPENT IRON AND WATER TREATMENT RESIDUALS DECREASE NUTRIENT RUNOFF FROM POULTRY HOUSES?

Joseph Nesbit (FVSU) Poster Presentation

Ray Brennan, Andrew Sharpley, Tarra Simmons, University of Arkansas

Northwest Arkansas is home to over 1 billion broilers and is second only to GA in annual poultry production. With large numbers of poultry farmers, EPA has determined that dust particles from the poultry house exhaust fans contains high levels of phosphorus (P), which can be washed into streams in surface runoff when it rains. One way to help combat this problem is by applying byproduct residuals from steel and water treatment plants that contain both iron (Red mud-RM) and aluminum (Water Treatment Residuals-WTR) in trays directly in front of exhaust fans to trap the dust as it exits the house. The residuals have a very high capacity to bind P, and stop it from leaving the site. With this being said once the byproduct residuals are applied we will collect them and run tests to see if they release Phosphorus (P) through surface runoff (rainfall simulation) in order to determine their binding potential and to determine if they release absorbed phosphorus overtime.

THE DETECTION OF RICIN IN MILK & IN ORANGE JUICE USING SURFACE ENHANCED RAMAN SPECTROSCOPY

Chelsea Newton (FVSU) Oral Presentation

Robin Bright, Fort Valley State University, Theodore Labuza, University of Minnesota

The research project aimed for the determination of ricin in milk and orange juice using a silver dendrite aptamer complex for separation from liquid foods and enhancement of Raman spectroscopy. It was first determined that detecting ricin in 50% milk and in 50% orange juice provided the lowest levels of detection of ricin. Secondly, it was determined that 25, 50, 100, 200, and 300 ppm ricin could be discriminated against 0 ppm ricin control in the 50% orange juice and 50, 100, 200, and 300 ppm ricin could be discriminated against 0 ppm ricin control in the 50% milk. Each of these concentrations was independently discriminated against the control using the PCA on the 2nd derivative spectra on the Delta Nu portable Raman system. It was also determined that these concentrations could not be discriminated amongst themselves providing a yes/no assay but not a quantitative determination. Last was the comparison of two portable Raman instruments, Delta Nu and Snowy Range, with the Delta Nu instrument providing the best detection limits. Fluorescence prevented the determination of ricin at equivalent levels on the Snowy Range instrument.

MAGNETIC GROUND STATE OF TRIANGULAR NANOMAGNETS

Dickson Nosegbe (GPC) Poster Presentation

Alexander Kozhanov, Georgia State University

We investigated the ground states of magnetic spins in triangular Nano-magnets on the application of an external magnetic field, using computer simulations. Using OOMMF simulation, we obtained samples of 50 nm and 100 nm triangles with different concavity factors and obtained data for their ground states. From the results obtained, we discovered that by increasing the concavity of the triangles, we obtain stable Y- states as opposed to unstable buckle-states for the non-concave triangles.

A MOBILE SYSTEM TO MONITOR NEONATAL NURSING CHARACTERISTICS

Gedeon Nyengele (GPC) Oral Presentation

Jay Zemel, University of Pennsylvania

Neonatal development is considered a complex process to monitor because, due to the inability of neonates to effectively communicate, the majority of the information about neonatal physiology needs to be extracted by electronic means. A simple mobile monitoring system (Neonur) that is easily connected to standard baby nutrient bottle has been developed at the University of Pennsylvania. Before the development of the Neonur, devices used to monitor neonatal breathing and feeding were costly, bulky, and hard to use. Although the Neonur was a better device for neonatal nursing, the device still needed much improvement on its computer interfacing for safe and fast data transfers. To improve the interfacing, we implemented the USB protocol for both data transfers and power sourcing during transfers and we rewrote both the device firmware and the PC application in a way to minimize the device power consumption. This work resulted in a better user interface for the PC application, guaranteed safe and fast data transfers between the device and the PC application, low device power consumption, and unattended device configuration. We also developed a code library that can be easily used in customized PC applications that communicate with the device.

T7 RNA POLYMERASE EXPRESSION AND PURIFICATION

Amarachi Ochiobi (GPC) Poster Presentation

Markus Germann, Georgia State University

T7 RNA polymerase is an enzyme/protein which catalyzes the synthesis of RNA from a DNA template. The T7 RNAP is use to generate isotopic labeled RNA for structural studies by NMR. The research incorporates the expression and purification of the enzyme. The bacteria (E Coli. Strain BL21-DE3) serves as the host cell in the T7 RNAP expression system and is transformed by the introduction of the plasmid (pAR 1219) which contains the T7 RNAP gene into the host cell. After the transformation, the expression of T7 RNAP can be induced by isopropyl-β-thiogalactoside (IPTG). However, other proteins present in the host cell could be expressed alongside the T7 RNAP. As a result, the T7 RNAP is required to be purified in order to be suitable to serve as a catalyst in RNA Synthesis. The T7 RNAP is purified using several chromatographic methods and tested for activity using DNA templates.

EXPLORATION OF MOLECULAR TECHNIQUES OF ARTHROPOD BLOODMEAL ANALYSIS

Ronke Olowojesiku (UGA) Oral Presentation

Nicole L. Gottdenker, University of Georgia

Understanding the host-parasite interactions experienced by arthropod disease vectors is of significance to public health. These vectors transmit diseases such as malaria, Lyme disease, and Chagas disease that impact both human and animal populations. Analyses of the bloodmeals of these vectors can provide beneficial information on host-parasite interactions. Past techniques involving serological methods have not proven robust in previous studies. Therefore, there has been an increased interest in the usage of molecular techniques, particularly those involving the polymerase chain reaction. In this study, the efficacy of PCR amplification involving cytochrome b mitochondrial primers and 12s ribosomal primers were compared. Amplification using cytb primers proved to be more robust; however, amplification was limited in that the primers could only amplify mammalian DNA. The findings from this study can prove to be helpful upon further review and experimentation.

EXTRACTION EFFICIENCY OF EXTRACELLULAR POLYMERIC SECRETIONS (EPS) - USING THE ETHANOL PRECIPITATION METHOD

Loughlin Onyeokoro (FVSU) Poster Presentation

Dionne Hoskins & Crystal Smith, Savannah State University & Fort Valley State University

Extracellular polymeric secretions (EPS) are produced by microorganisms in aqueous environments and are chiefly composed of polysaccharides (carbohydrates). However, they may also contain lipids, nucleic acids and other organic substances. They perform many functions, including protecting microbial cells from environmental stress, facilitating extracellular digestion and aiding in genetic exchange. When found in

natural sediments, they represent a rapidly assimilated source of organic carbon for benthic organisms. Studies which attempt to isolate EPS from natural sediments attempt to estimate the amount of EPS that may be available for organisms to consume. However, there is no information on the extraction efficiency of the most commonly used method, ethanol precipitation. The objective of this study was to determine whether EPS was lost during the extraction process. Further, this study sought to identify the percentage lost and the process in which it was lost. And how can the loss be controlled or avoided? The samples that was collected from the Country Club Creek Georgia was spiked with a known amount of EPS. Using the ethano

IMMUNOMODULATION THROUGH THE USE OF FUNCTIONALIZED MICROPARTICLES

Cecilia Pantoja (GT) Poster Presentation

Todd Sulchek, Georgia Institute of Technology

Science has continuously revolutionized ways to defend our health. From improved sterilization techniques to antibiotics, to vaccines; however, a much underutilized defense is actually part of our own innate immune system. In every individual lies a set of proteins, that when triggered by a foreign body, initiate a cascade of enzymatic reactions resulting in cell lysis, activation of the inflammatory response, and cell susceptibility to phagocytosis. This is known as the complement system, part of the humoral response, it is only controlled by proteins such as antibodies and other macromolecules as opposed to immune cells. The following research deals with immunomodulation, or the tuning of the immune system response. Understanding complement's mechanisms, tunability, and cytotoxic potential can play a vital role in the design of vaccines, treatments for autoimmune diseases, and even cancer therapy.

ANALYSIS OF SEA TURTLE HUMERI FOR TRACE ELEMENT COMPOSITION

Eric Parks, Matthew Ramirez (SSU) Oral Presentation

Selena Heppell; Matthew Ramirez, Oregon State University

Biological markers are gaining support as a useful tool to describe the life history of many elusive and long lived organisms (Ramos and Gonzalez-Solis, 2012; Burton, 2007). Trace element analysis are now being conducted to better understand trophic interactions, migratory patterns, or growth patterns of sea turtles (Szep et al., 2009; Sakai et al., 2000). The purpose of this project was to investigate the use of laser ablation-inductively coupled plasma mass spectrometry in characterizing the trace element composition of sea turtle humerus bones. The composition of 21 elements were compared among 12 humerus bones by ablating transects perpendicular to annular growth elements. Transects were made in duplicate for each bone to capture within bone variation in elemental composition. The first trial of testing showed that Li, Be, B, Mg, V, Cr, Mn, Fe, Cu, Zn, Se, Rb, Sr, Cd, Sn, Ba, and Pb could all be detected, although some in small concentrations, in the humerus bone of the sea turtles tested. More research is being conducted to narrow down the concentration of each element and to determine if a trend can be detected between different growth years on the humerus.

PHYSICALLY & CHEMICALLY MODIFIED CHITOSAN COMPOSITES FOR ADSORPTION AND SURFACE DECONTAMINATION OF HEAVY METAL CONTAMINANTS

ValaRae Partee (UGA) Poster Presentation

Gary Halada, Micheal Cuiffo, Stony Brook University

Chitosan is a biodegradable linear polysaccharide derived from the deacetylation of chitin, a polymer found in fungi and crustaceans. In this study, chitosan is investigated for its remediation capabilities in two different methods. The first is by absorbing 100 mmol solutions of cerium chloride (CeCl3), strontium nitrate (Sr(NO3)2), and potassium dichromate (K2Cr2O7), both electrochemically and by saturation, onto stainless steel coupons that were electrochemically coated in a HCl based chitosan solution. The second method used chitosan as a dip for contaminated and corroded steel pieces. 100 mmol solutions of CeCl3, Sr(NO3)2, or K2Cr2O7 were pipetted onto corroded steel and exposed to wet/dry cycles to further corrode the surfaces. The exposed and corroded steel was then dipped into chitosan that was cross-linked with gluteraldehyde, allowed to dry, exposed to a 1000W heat lamp for 10 minutes, and the surface layer was scrapped off and made into Permeable Environmental Leaching Capsules for leach testing (Spalding, 2005). FTIR, Raman spectroscopy, optical microscopy, and SEM, and EDAX were used to analyze the association of chitosan with contaminants and to determine chitosan's potential to capture contaminants. It was observed that exposure to chitosan can act as an effective method for removal of toxic metal contaminants.

CZTS: THIN FILM SOLAR CELLS

Chelsea Patterson (SPSU) Oral Presentation

Phillip Patterson, Southern Polytechnic State University

With the reality that our supply of natural gas is slowly being dwindling down to nothing, there is no surprise that there is a great push being put behind renewable energy. One of the most prominent forms of renewable energy is solar power. There has been a rise in the popularity of solar energy in the past few decades since the discovery of CZTS and its great absorption properties. CZTS (Cu2ZnSnS4) is non-toxic, low cost and made of elements abundant in the earth's crust. During the creation of CZTS many factors must be manipulated, these factors include but are not limited to: chemical composition, temperature, pressure, time, and the method used to create CZTS. There are different studies being completed worldwide by several different parties where all of these factors are varied. This research was a two part study. The first was an is an investigative study to gage research progress versus current CZTS progress made across the field of solar energy. The 2nd portion of the research was a developmental study on how to program LabView to output IV plots to help quantify results for future research.

FABRICATION AND CHARACTERIZATION OF LACTOFERRIN FIBERS

Benjamin Pickard (FVSU) Poster Presentation

Eric James and Lakshmi S. Nair, University of Connecticut

Lactoferrin is an 80kda iron binding globular protein. It is produced by various exocrine glands and is present in breast milk. Lactoferrin's uniqueness as a skeletal regenerative molecule lies in its ability to modulate the response of various cells involved in musculoskeletal tissue regeneration. Lactoferrin promotes proliferation of osteoblast cells and inhibits osteoclast mediated bone resorption, which makes it a potential candidate for use in bone tissue engineering. Electro spinning is a technique, which uses an electrical charge to ejaculate very fine fibers out of a syringe. The final product is a non-woven fiber mat composed of nanofibers. The purpose of this study was to test feasibility of developing nanofibrous structures from human recombinant lactoferrin by the process of electro spinning. In this study different concentrations of lactoferrin solutions (100,150, 200, 250 mg/ml) were spun along with gelatin (75mg/ml), which was used as a control. The Scanning Electron Microscope (SEM) images demonstrated the feasibility of forming fibers in the nanoscale.

EXTRA-LIGHTWEIGHT UAV COMPOSITES STRUCTURES VIA ADDITIVE MANUFACTURING

Marquese Pollard (SSU) Poster Presentation

Richard Liang, Florida State University

Unmanned aerial vehicles that can be piloted autonomously or via remote

control and perform tactical missions have become of increased interest to police & military personnel over the past decade. While most UAV's are manufactured via mold fabrication, this method limits options for a customized design for the growing customers in a timely manner due to time consumption of the fabrication process. This research includes the designing of an UAV via computer-aided design, which includes fuselage and wings. The design is based on a previously fabricated UVA at the AFRL. However, instead of the aircraft having a solid finish, it will initially possess a scaffold structure to reduce material usage & weight. Once the CAD model is printed via additive manufacturing, carbon fibers are applied to the structure. The goal is to reduce the weight of the aircraft with the scaffolds while still enabling it to retain its structural & aerodynamic integrity. It is intended for this method to allow countless number of customized designs to be additively manufactured and produce equal flight characteristics while meeting cost & time requirements.

HYDROGEN PEROXIDE AS A MODEL OF CELL DEATH FOR THE STUDY OF THE NEUROPROTECTIVE PROPERTIES OF PHYTOESTROGENS

Mariah Pollard (SSU) Poster Presentation

Merhavan Singh, University of North Health Texas Science Center

Estrogen has been shown to be neuroprotective in a variety of experimental models. However, given recent concerns about estrogen therapy, women are increasingly interested in alternatives. One such alternative are phytoestrogens, plant derived compounds with structural similarity to estrogens. As such, it must first be demonstrated that phytoestrogens exert neuroprotective properties similar to estrogens.To study such effects, an appropriate model must be established. The purpose of this study was to establish such a model. Here, we used the murine neuroblastoma cell line, SN56 to determine conditions in which Hydrogen peroxide (H202) causes cell death. SN56 cells were differentiated into neuronal like cells using 1mM cyclic adenosine monophosphate (cAMP) and 1mM all transretinoic acid. After cells were completely differentiated (76 hours), H202 (100 uM) was applied to the cells for 1-5 hours. Cell survival was assessed using the calcein AM assay. Results show that after 5 hours, 100 uM H202 resulted in 45% decrease in cell viability. This data suggests that this cell line and treatment regimen serves as a reliable model of cell death which could in turn be used to study the neuroprotective effects of phytoestrogens.

THE SYNTHESIS OF SIGMA RECEPTOR LIGANDS

Gabrielle Powell (SSU) Oral Presentation

Karla-Sue Marriott, Savannah State University

There are two different sigma receptors in the body, sigma-1 and sigma-2. Sigma-1 has received the most scientific attention to date. Previous research of sigma-1 receptors showed that various drugs act as ligands and bind to the sigma-1 receptor. These drugs are antipsychotics, neuroleptics, and neuroactive steroids. Sigma-1 receptors are located in various areas of the human body both centrally and peripherally. Sigma-1 receptors function as a modulator for dopamine, acetylcholine, NMDA, and opioid receptors. Sigma-1 receptors have potential application in the treatment of addiction as well as other neurological disorders such as Alzheimer's and Parkinson's. A common feature of sigma-1 ligands is an amine moiety, such as an N-alkyl, N,N-dialkyl, or N-arylalkyl. We are currently engaged in the synthesis of amide derivatives of benzofuran carboxylic acids via a DCC\DMAP condensation reaction in an effort to produce ligands that are selective for the sigma-1 receptor.

PURIFICATION OF XYLOGLUCAN-SPECIFIC ENDO-β-1, 4-GLUCANASE AFTER EXPRESSION IN ESCHERICHIA COLI

Ramon Reddick (UGA) Poster Presentation

William S. York, University of Georgia

A protein consisting of xyloglucan-specific endo-β-1, 4-glucanase (XEG) and enhanced Green Fluorescent Protein (eGFP) was prepared by heterologous expression of a genetically engineered plasmid in Escherichia coli. Initial experiments indicated that an eGFP-pET28a vector is efficiently expressed in E. coli to generate eGFPi. Another pET28a vector containing DNA encoding XEG fused to eGFP was then generated and transfected into E. coli, which expressed the desired chimeric protein. Conditions for optimizing the production of soluble forms of the fusion proteins were identified and the soluble proteins were purified. Mutagenesis of the XEG component of the protein inactivates the catalytic mechanism of XEG on xyloglucan, but still enables the protein to attach to the polysaccharide. Attachment to the polysaccharide without catalysis allows for the fusion protein to be administered in living plant tissue for further observation. These proteins are potentially powerful new tools for studying the chemical structure and physical properties of plant cell walls.

FOR YOUTH, FOR LIFE

Cecil Reid (GT) Poster Presentation

Cheryl Seals, Auburn University

Poster presentation will provide a highlight of three projects I worked on during an Research Undergraduate Experience at Auburn University. These projects include the revision of the Extension.org website for youth, creating a site for a virtual badge system in relation to For Youth, For Life and 4H, as well as creating a game to teach and practice the concepts of finite state machines using Java.

C-JUN N-TERMINAL KINASE BINDS TO AND INHIBITS ENDOTHELIAL NITRIC OXIDE SYNTHASE

Katherine Rhoades (KSU) Poster Presentation

Jonathan McMurry, Kennesaw State University

Mitogen-activated protein kinases (MAPKs) are enzymes involved in translating extracellular stimuli to intracellular responses. Stress or mitogens can activate MAPK activity, which in turn activates other molecules via. The MAPKs include extracellular signal-regulated kinase (ERK), p38, and c-Jun N-terminal kinase (JNK). The current study focused on the role of JNK in regulating endothelial nitric oxide synthase (eNOS). Biolayer Interferometry was utilized to characterize interactions between eNOS and active JNK. eNOS bound JNK with a KD of 35 nM. Wild type, inactive JNK (WT) and an variant (JNK-KR) evinced no binding to eNOS. Conditions to activate heterologously expressed JNK will be described. JNK phosphorylates eNOS and inhibits its activity. This is the first report of direct binding to and phosphorylation of eNOS by JNK. Understanding these interactions will contribute to the continuing characterization of the signaling cascades that lead to activation of MAPK-activated kinases.

BENEFICIAL TRAIT DETERIORATION IN NEMATODES

Jessica Rich (FVSU) Oral Presentation

David Shapiro, Fort Valley State University

This research focused on using the basic procedures for comparing beneficial traits in measuring the base-line fitness of nematodes produced from three host treatments: Tenebrio molitor (yellow mealworm), Galleria mellonella (greater wax moth) and Agrotis ipsilon (black cut worms). Bioassays will include virulence, reproductive capacity, and heat tolerance. Differential nutrition leads to differential fitness. A host that is poor in nutrition will lead to nematodes with lower fitness and can alter the direction of evolution in the nematode population. The impact of host nutrition on rate and quality of trait deterioration in entomopathogenic nematodes will be determined. Our hypothesis is that the rate of trait deterioration in the nematodes will vary among the treatments due to the varying levels of nutrition that are provided among the hosts. Methods used for the study included inoculation of nematodes on D. abbreviatus host, bioassays, and serial culturing of entomopathogenic nematodes.

ANTIRETROVIRAL DRUGS EFAVIRENZ AND TENOFOVIR AND THEIR EFFECTS ON ARTERIAL REMODELING AND PROTEASE ACTIVITY

LaDeidra Monet Roberts (GT) Oral Presentation

Manu O. Platt, Georgia Institute of Technology/Emory University

Highly antiretroviral therapies (HAART) have been implemented to slow the progression of the human immunodeficiency virus (HIV). Although these new advances in the medications for HIV-positive patients have contributed in longer life expectancy, comorbidities, such as cardiovascular disease, have increased the number of deaths among these patients. Because of the intrinsic inflammation caused by the HIV virus, atherogenesis is more likely to occur and is driven by infected macrophages. These macrophages are known to secrete cathepsins , but infection causes the macrophages to not perform their function properly as an immune agent. We hypothesize that antiretroviral drugs play an important role in arterial remodeling by altering cathepsin activity, contributing to the exacerbation of atherosclerosis in HIV patients. To test this, we incubated THP-1 monocytes with antiretroviral drugs Efavrienz and Tenofovir individually and in combination with Lamivudine or Emtricitabine to model a HIV patient's drug regimen. Changes in cathepsin acitivty were analyzed through multiplex cathepsin zymography. We found that our hypothesis held true for Efavirenz and Tenofovir, which caused the cells to have a decrease in cathepsin activity compared to vehicles. Together, our data suggests that the HAART interaction with monocytes possibly contributes to the advancement of atherogenesis in HIV+ patients.

DEVELOPMENT OF THE PERSONALIZED SIGN LANGUAGE TRANSLATOR UTILIZING THE MOTION SENSING DEVICE

Jasmine Roberts, Tiffany Villanueva (SSU) Poster Presentation

Hyounkyun Oh, Savannah State University

A number of individuals in the world suffer from hearing issues, e.g. deafness, hearing impairment, hearing loss, etc. which often causes trouble in communication with normal people. Moreover, the fact that each country adopts a different sign language, which also has thousands of expressive patterns, delays the development of an efficient translator. Thus, this research focuses the general outline and simple implementation of PC-based personal sign language translator which can fill up the user based necessity. It begins with analyzing the patterns of personal unique finger position/movement while considering distances, angles, and directions of fingers or palms. Informed pattern data are then saved in the library together with corresponding audio sounds. From the starting motion, finger/hand movement information are extracted from the color image and depth images, and then identified with patterns in the library to generate an appropriate audio output. Here, the translator is temporarily implemented through the Visual Studio 2010 with C# programming. Further study addresses potential of more convenient and effective interface.

EXPRESSION AND PURIFICATION OF SIGMA-1 RECEPTOR

Diamond Rogers (SSU) Oral Presentation

Kai Shen, Savannah State University

The sigma-1 receptor (s1R) has 223 amino acids, and is found primarily in the endoplasmic reticulum. S1R could be involved in Alzheimer's Disease (AD) by regulating neuronal cholesterol levels. We expressed and purified s1R for future AD studies. We investigated the yield of the two different constructs and also studied the effect of detergent concentration on the protein yield. Neurodegenerative disease that destroys memory and thinking skills Exhibits over production amyloid β-peptide (Aβ) in forms of "plaques" and "tangles". Approximately 5.1 million people have AD in America. Estimated worldwide costs of dementia are US $604 billion in 2010. Elevated neuronal cholesterol levels increase Aβ generation. Binding of amyloid precursor protein (APP) toward cholesterol may promote amyloidogenesis, increasing the risk of AD.

"A PASSION FOR TOMATOES: THE SCIENTIFIC PROCESS OF IMPROVING FLAVOR."

Ke'Erra Rozier (FVSU) Poster Presentation

Sarwin Dhir, Harry Klee & Denise Tieman, Fort Valley State University & University of Florida

Tomatoes, the fruit we all love to hate. Tomatoes are usually red fruit from plants of Solanum lycopersicum, commonly known as tomato plants. When picking a tomato, the appearance and firmness is the number one factor for commercial growers, but consumers want better flavor. The flavor of a tomato is fairly complicated because of its many ingredients, which basically makes breeding for better flavor very difficult. Breeding for high yields has destroyed flavor. As yield has gone up, sugar, acid, volatile and micronutrient content has gone down. The tomatoes tested in this study were derived from crosses of Maglia Rosa Cherry (a variety with good flavor) and FL8059 (a variety with poor flavor, but good commercial qualities). Fruit from plants derived from this cross were examined to find the best tasting tomato with good commercial attributes. Important commercial properties were looked at like fruit size, fruit appearance, and yield.

BROOKHAVEN ATMOSPHERIC TRACER SAMPLER: URBAN ATMOSPHERIC DISPERSION STUDY

Jessica Saintibert (TCC) Poster Presentation

John Heiser, Brookhaven National Laboratory

The New York City Police Department requested that Brookhaven National Laboratory (BNL) develop an air flow survey for the Tristate Area. This Subway Surface Air- Flow Exchange project will produce a detailed map of air flow patterns between the surface and subway systems to assist against chemical terrorism on a large populated city. In this study, a chemical (Perflurocarbon (PFT)) will be dispersed on surface and below surface, and then it will imitate a chemical that can be either accidentally or intentionally released. The tracers being used are odorless, tasteless and non-radioactive, thus the population will not be affected in any way. Air samplers developed by BNL were used to record flow rates of PFTs. The city was divided into three sections labeled as Intensive Operation Period (IOP) 1, IOP 2 and IOP 3. These areas were surveyed during a period of three days, which were weather and wind based. The Brookhaven Atmospheric Trace Samplers (BATS) and Black Box Sampler (BBS) units were assembled by our specialized team in the laboratory from ground up for this specific study.

MAXIMUM POWER TRANSFER THEOREM

Shavonda Seabrooks (SSU) Poster Presentation

Andreou Spyros, Savannah State University

Maximum Power Transfer Theorem Shavonda Seabrooks & Spyros Andreou, Associate Professor This project examines the maximum power transfer theorem as applied to resistive electrical circuits. It states that the resistance of the load must equal the resistance of the source as viewed from its output terminals. The theorem is a very useful tool in applied electronics especially in amplifiers. Utility companies are using it as they provide power to consumers. The efficiency of the system is sacrificed at the cost of delivering maximum power to the load. The theorem will be proved and a MATLAB program will be written to provide maximum power transfer of any resistive load.

AN EVALUATION OF THE EFFECTIVENESS OF THE HAZARD PLAN AT FORT VALLEY STATE UNIVERSITY'S MEAT TECHNOLOGY FACILITY AND THE POTENTIAL DETECTION OF DRUG RESISTANT BATERIA

Precious Simpson (FVSU) Oral Presentation

Frederick McLaughlin, Fort Valley State University

This study was conducted to evaluate the effectiveness of the Hazard Plan in controlling or eliminating potential harmful, multi-antibiotic resistant bacteria at Fort Valley State University's meat technology center. The Food Safety and Inspection Service has administered guidelines for management

in all slaughterhouse plants to ensure proper hygienic practices. Research has shown that there are commonly three mutated forms of E. coli and Salmonella found in slaughterhouse plants that make their way to the meat we eat; they are Campylobacter, E. coli 0157: H7, and Salmonella typhimurium. Results show the need to monitor the prevalence and resistance multi-antimicrobial resistant bacteria. We hypothesize that with the proper use of the Hazard Plan, pathogenic strains of bacteria should be kept a minimum before and after slaughter, as well as preventing the presence of multi-antimicrobial resistant bacteria. Samples were collected from various areas on the "Kill Floor" and processing room. These samples were taken pre-slaughter and post-slaughter. Afterwards, swabs were inoculated and sub cultured on appropriate media.

SPRING-NEAP VARIATION IN EGG-LENGTH CORRELATIONS AND EMBRYONIC DEVELOPMENT FOR THE DAGGERBLADE GRASS SHRIMP PALAEMONETES PUGIO

Renee F. Smith (SSU) Oral Presentation

Sue Ebanks, Savannah State University

The daggerblade grass shrimp Palaemonetes pugio is found throughout the Atlantic and Gulf coasts. It serves as a vital food source for many invertebrate and fish species that have significant economic importance to fisheries and marine life. In this study, we sought to determine possible relationships between weight (g) and clutch size, length (mm) and clutch size, and developmental stage of P. pugio over the monthly tidal (spring-neap) cycle in Country Club Creek (Wassaw Sound Estuary, GA, USA). A developmental stage scoring was derived, grouping the 11 published embryonic development stages into 6 stages from fertilized egg (group 1) to post-nauplius with visible eye condensation (group 6). Thirty shrimp were collected by dip net at low tide during two spring and two neap tides from May 31 to July 22, 2013. Based on data collected, a correlation between length or weight and the number of eggs was determined. By using the regression percentage (R2-value) and regression equation, we were able to determine a mathematical (quantitative) method for predicting egg count in grass shrimp for use in future toxicological studies.

UNDERWATER COMMUNICATION USING SINUSOIDAL WAVES

William Snyper (SSU) Oral Presentation

George Tessema, Savannah State University

The ocean has been a mystery to human for so many years, but through the use of advance technology we are able to explore it. Though we can explore it we are faced with many problems such as establishing a way to communicate underwater. Communication is the biggest concern of any operation which could determine success or failure. The purpose of this research is to study an existing underwater diver communication system and identify its strength and weakness. The system we intend to study utilizes sound wave as a means of communication. There have been countless research into the possibility of this. Many devices used sound waves for underwater communication one such device is the Neptune Space. Our goal is to find a permanent solution to eliminate its weakness. By fully understanding this device we may be able to create an effective and efficient way of establishing a communication channel for divers that provide clarity of sound and range.

OBESITY: GLP-1'S ADIPOGENIC EFFECTS

Asia Stinson (SSU) Poster Presentation

Johnny Johnson, Savannah State University

Obesity, an increasing epidemic across the world, is directly related to adipogenesis which is key to energy homeostasis. Adipogenesis is a cellular differentiation process that causes preadipocytes to differentiate into adipocytes. GLP-1, a hormone that regulates postprandial insulin secretion, is a major promoter of adipogenesis and cell differentiation. Therefore, obesity plays a direct role in the levels of GLP-1, in which at low levels were found in obese subjects. This therefore leads to the belief that GLP-1 levels effect hyperplasia and hypertrophy. At high levels of GLP-1 there is an increase in hyperplasia. At low levels there is an increase in hypertrophy. The growth of GLP-1 is via pathways such as PKA (protein kinase pathways, and Notch (very conservative signaling pathway that controls cell fate). If the pathways that lead to cell hypertrophy can be stopped and the pathways that lead to hyperplasia can be enhanced it could potentially cause a reduction in obese individuals and result in a decrease in societal obesity all together. Using varying concentrations of GLP-1, we have elucidated a role for the Notch pathway.

STUDY OF OPTIMIZED DRAG REDUCTION SYSTEM FOR SEMI-TRAILERS

Joseph Tanner Jr. (SPSU) Oral Presentation

Mir Atiqullah, Southern Polytechnic State University

Considering semitrailers are a critical part of the transportation industry and with an average of 4-8 miles per gallon, it's important that engineers develop solutions for them to consume less energy. Over the past few years the efficiency of engines have improved, but the creation of aerodynamic devices has become a popular investment for large delivery companies to reduce drag. Drag is air resistance to movement, usually at higher speed. In the study, we needed to calculate the drag coefficient (by using the Drag Coefficient Equation) which has been proven reflect a change in fuel consumption. We used Solidworks Flow Simulation to test a 3D semi-trailer with various aerodynamic devices attached. Our goal was to decrease the drag coefficient of .70 by at least 5%. In conducting this research, an understanding of the magnitude of drag forces on semi-trailers and the importance of reducing fuel use has been examined and realized. This study has shown that an optimized 3 piece system can greatly diminish drag forces. The best system reduced the drag coefficient from .70 (from last year's study) to .55: a reduction of 21%.

THE MODIFICATION OF ASPIRIN

Mandisa Taqqee (SSU) Poster Presentation

Adegboye Adeyemo, Savannah State University

Aspirin, also known as acetylsalicylic acid, is a salicylate drug, often used as an analgesic to relieve minor aches and pains, as an antipyretic to reduce fever, and as an anti-inflammatory medication. Aspirin was first isolated by Felix Hoffmann, a chemist with the German Company Bayer in 1897 (4). Salicylic acid, the main metabolite of aspirin, is an integral part of human and animal metabolism. While in humans much of it is attributable to diet, a substantial part is synthesized endogenously (3). Aspirin also has antiplatelet effect by inhibiting the production of thromboxane, which under normal circumstances bind platelet molecules together to create a patch over damaged walls of blood vessels. We believe the chemical properties of aspirin can be modified by introducing certain atoms and group of atoms such as F, Cl, NH2 and CH3, to the phenyl ring or the side chain of acetylsalicylic acid. It is hoped that such modification could reduce most of the side effects associated with aspirin usage.

NANODISC NEW TOOLS FOR MEMBRANE PROTEIN STUDY

Chantia Taylor (SSU) Poster Presentation

Kai Shen, Savannah State University

Nanodiscs are commonly known as small-size flat model membranes that help provide a common environment for reconstitution of integral membrane proteins. The process of membrane proteins into Nanodiscs results from water-soluble phospholipid particles that makes membrane proteins amenable to a multitude of bioanalytical techniques that were designed for soluble proteins. Nanodisc is a disc shaped assembly of phospholipids and membrane scaffold proteins(MSP). Throughout the research we expressed and purified MSP APOAI, assembled and characterized nanodisc. We successfully obtained nanodisc with uniform size. The main purpose of my research was to prepare different size nanodisc using different APOAI proteins.

Ultimately we want to incorporate membrane proteins into nanodisc. Nanodiscs give the membrane protein a more native-like environment than detergent micelles or liposomes. The Nanodisc are assembled from protein in detergent micelles. Through the process MSP(Membrane Scaffold Protein) and lipids are added. Once the detergents are removed the nanodisc are assembled. Prepared and characterized nanodiscs.

A RAPID UV/VIS SPECTROPHOTOMETRIC METHOD FOR ANALYZING LYCOPENE CONTENT IN TOMATO FRUIT USING A STANDARD ADDITION METHOD

Cynthia Ines Tchio (KSU) Oral Presentation

Huggins Z. Msimanga, Kennesaw State University

The goal of this experiment is to extract lycopene from tomatoes, to determine the rate of degradation over time; to determine the best suitable solvent by finding a pseudo-partitioning coefficient; to compare solid phase extraction (SPE) and liquid-liquid extraction (LLE) in acidic and basic medium, and last but not least to estimate lycopene content by the standard addition method. The Mobile phase composition for HPLC is MeOH:ACN:TEA (90:10:1). A C18 reverse phase column was used for separating and identifying lycopene by its UV/VIS spectrum using a photodiode array detector (PDA). Results showed that when lycopene is refrigerated after use, it is sufficiently stable over three days. HPLC results showed that lycopene is the major component of tomato juice, with 72% relative abundance. Of the extraction solvents used, the mixture solvent (hexane: ethanol: acetone) had the highest partitioning coefficient (K) of 21.2 which means that the mixture solvent is the best solvent for the extraction of lycopene. Overall, either LLE or SPE were more favorable in acid medium versus a basic medium. Finally, Kroger tomato samples used in this study showed a content of 14 mg/kg tomato.

THE IMPORTANCE OF TRAINING AND CERTIFICATION FOR CONSTRUCTION INSPECTORS

Erica Thompson (GT) Poster Presentation

Jochen Teizer, Georgia Institute of Technology

As a construction inspector for the Georgia Department of Transportation and other state departments, it is essential for these workers to provide quality control in assuring that the construction work on projects meets specific requirements. The state Department of Transportations (DOTs) across the country is experiencing increases in transportation infrastructure projects but is limited in the number of experienced and knowledgeable construction inspectors. The main task for the DOT is to effectively provide the best resources for construction inspectors so they can be better trained and prepared for projects. Construction inspector's duties are to inspect and report virtually every phase of the construction process as well as ensure all contract documents represented by working drawings and specifications are properly executed. Transportation infrastructure inspection methods were limited to roadway, highway, and bridge infrastructures of construction projects. A web based training and certification modules were created based on the standards and specifications of the Georgia Department of Transportation. The partnership between GDOT and Georgia Tech Construction Engineering Department led to recommendations for best practices for transportation infrastructure inspection as well as a unique and cost effective training and certification method for construction inspectors.

CONTRIBUTION OF NKp46 RECOGNITION OF HEMAGLUTTIN TO ANTI-INFLUENZA IMMUNE RESPONSE

Lina Tibavinsky (UGA) Oral Presentation

Kimberly Klonowski, University of Georgia

Influenza causes a contagious respiratory disease in humans and is a worldwide public health threat. The influenza virus is characterized by neurominidase (NA) and hemagglutinin (HA) proteins expressed on the viral envelope. The HA protein allows viral entry by binding to sialic acid residues on respiratory epithelial cell surfaces. The high degree of variability of the HA proteins has resulted in different influenza subtypes such as H5N1 and H1N1 which can cause significant mortality and morbidity rates. Natural killer (NK) cells are effectors of the innate immunity and thus play an important role in anti-viral immune responses, including against influenza viruses. NK cell effector functions are activated in part when the cytotoxic receptor NKp46 interacts with the viral HA. Here, we examine how NKp46 recognition of influenza HAs with different sialic acid receptor specificities affects the anti-influenza immunity with an emphasis on NK cell activation, function and contribution to adaptive immunity.

EXPLORING MOLECULAR INTERACTIONS BETWEEN FLOURESCENT MOLECULES AND SOLVENTS IN SOLID STATE FOR SENSOR APPLICATIONS

Damian Todd (FVSU) Oral Presentation

Laurenee London, Xiu R. Bu, Clark Atlanta University

The molecular assembly of co-crystals is the objective this study. Co-crystals have significant properties such as, being soluble which allow it to be biodegradable in the human body. Pharmaceutical companies are the leading researchers in the formation of co-crystals. Crystallization of 1,4-cyclohexanedicarboxyllic acid with select imidazoles yielded 3 new mixed systems which were shown to be co-crystals by visual analysis. It is anticipated that the crystal structures are stabilized predominantly by intermolecular hydrogen bonds between N-H and OH groups. The synthesis of LPI, PI, and 4MBI were completed and recrystallized in a 2:1 THF:MeOH ratio to improve purity. LPI, PI, and 4MBI are starting materials that have been used to react individually with1,4-cyclohexanedicarboxyllic acid to form co-crystals. After using NMR and FTIR we found that PI and 4MBI formed a molecular assembly which concludes that they both reacted with the diacid. LPI didn't react with diacid. An adjustment in the ratio will be made to possibly react LPI and diacid to successfully complete its synthesis.

ENGINEERING NANOSCALE IMPRINTED POLYMER PARTICLES

Fabian Todd (FVSU) Poster Presentation

Ishrat Khan, Clark Atlanta University

The objective of this study was to form layered double hydroxides (LDH) and generate hydrophobic galleries that are favorable of absorbing neutral and anionic polymer precursors. The study of LDH's is important due to the galleries potential to absorb polymers. Being able to absorb material in the galleries will allow other compounds such as counterfeit drugs to be absorbed, enabling the LDH to perform as a detection mechanism for harmful or counterfeit drugs. LDH's are formed by a technique known as ion exchange. LDH's are composed of metal hydroxide layer that carry a net positive charge. In between the layers are hydrophilic galleries containing water molecule and nitrate ions. These nitrates within the galleries give the galleries a negative charge which holds the metal hydroxide layer ions together. The Layered doubled hydroxides (LDH-NO3) that were formed were engineered by adding an aqueous solution containing aluminum nitrate and magnesium nitrate to a sodium hydroxide solution. Infrared spectroscopy (IR) was used to verify that the LDH-NO3 formed.

SMART WHEELCHAIRS: IMPROVING ASSISTIVE NAVIGATION

Robert Townsend (GPC) Oral Presentation

Valerie Bennett, Georgia Perimeter College

For individuals with certain spinal or upper body impairments, the use of a conventional wheelchair can be impractical or impossible. For these individuals, a more effective solution is necessary. This new form of transportation should be able to autonomously navigate a predetermined path and to sense and avoid obstacles along the way. This research attempts to design a prototype for such a device. By following a line on the surface from the beginning of the path to the end, it is able to autonomously navigate. In addition, the device is equipped with a contact and ultrasonic sensor, allowing it to sense obstacles both at a distance and upon contact. Upon sensing a blockage in the path, the device's

programming logic is activated, allowing it to move around the obstacle and follow the path once more. The logic is designed for an indefinite amount of obstacles, as well as scenarios with restricted movement such as corners.

COMPRAISON OF PROTEIN PURIFICATION SYSTEMS FOR SUPPORTING FERMENTATION DEVELOPMENT IN THE BIOLOGICS INDUSTRY

Ezigbobiara Umejiaego (KSU) Poster Presentation

Michael Iammarino, Hong Li, Merck Research Laboratories

Development of therapeutic proteins involves the coordination of a series of activities in the upstream and downstream process development. In the upstream sector, the process of selecting a candidate amongst a group of mAb clones is largely dependent on the purity of the molecule. This fermentation support is provided by the protein purification group, in an efficient and timely fashion, to enable the optimization of the cell culture process development conditions using either the AKTAxpress or MEA protein purification system. We hypothesize that the AKTAxpress offers a better purification platform on which to facilitate speedy candidate screening at a representative column scale. First, the AKTAxpress modules were prepped and test run using three 40mL proA columns that had been packed and qualified. Subsequently, comparison and candidate screening experiments were performed using similar loading titers for the two purification systems. Results from the HPLC assays indicated that both systems yield highly comparable and replicable data. However, the percent product yield and ion variants for both systems differed significantly, and turbidity was only evident during pH-adjustment of the AKTAxpress product pools. These preliminary data suggest that the AKTAxpress modular system yield results that are comparable to what is obtainable in downstream processing.

GROWTH INHIBITION & HYDROGEN PEROXIDE PRODUCTION OF LACTOBACILLUS JOHNSONII IN PRESENCE OF PHENOLIC ACIDS

Sheena Vasquez (GPC) Poster Presentation

Claudio Gonzalez, Graciela Lorca (University of Florida)

Lactobacillus johnsonii N6.2, strain of the lactic acid bacteria, has been proven to delay the onset development of type 1 diabetes as for previous experimental results. It has also displayed strong ferulic acid esterase (FAE) activity, therefore its probiotic activity may be a result of the slow release of ferulic acid. The correlation between L. johnsonii and ferulic acid prompted our investigation of the bacterial interaction with other phenolic compounds. The growth of the cells was observed under different conditions: static and shaking. Under shaking conditions the cultures treated with ferulic acid and p-coumaric acid displayed considerably slower growth than other treatments. Cultures exposed to oxygen stress under shaking conditions produced larger quantities of hydrogen peroxide. Surprisingly, L. johnsonii in the presence of caffeic acid produced significantly lower amounts of hydrogen peroxide than those with rosmarinic acid. For further investigation to analyze the degradation of these compounds over time, cultures grown with caffeic and rosmarinic acids were separated through High Performance Liquid Chromatography (HPLC).

RFID TECHNOLOGY

Arthur Wesley (SSU) Poster Presentation

Asad Yousuf, Savannah State University

RFID technology is based on the simple idea that an electronic circuit or tag self powered or powered intermittently through radiation from a distance, can transmit information in air that can be read by a reader located at a distance, can transmit. These tags are nothing but plain antennae bonded to a silicone chip kept inside a plastic or glass case. The principal goal of his project is to successfully design, implement, and test a low power, low frequency (125 kHz) RFID tag reader for the passive RFID tags in Savannah State University ID cards. The tag reader system will be based on the Arduino and Parallax based Embedded System. The project was implemented in the following stages: Analysis of Design, Design Implementation, and Testing. The combination of hardware and software design is beneficial into understanding the basics of microcontrollers in both platforms and most important RFID Technology.

BILINEARIZATION OF SOLION EQUATIONS

Byron Williams (SSU) Oral Presentation

Alrazi Abdeljabbar, Savannah State University

Abstract In this research we are going to use the Hirota Operator to transform nonlinear partial differential equations into bilinear forms. The first example we are going to discuss is a generalization of the Kadomtsev-Pevitishvili (KP) equation (1). uxxxy+3(uxuy)x+utx+uty-uzz=0; (1) Followed by the (2+1)-dimensional system of nonlinear partial differential equations which can be considered as a generalization of the Boussinesq model (2a) and (2b), ut + α1(t)uxy + α2(t)(uw)x + α3(t)vx = 0; (2a) vt + β1(t)(wvx+ 2vuy+ uvy)+ β2(t)(uxw y- (uy)2)+ β3(t)vxy + β4(t)uxyy = 0; (2b) where wx=uy. When y = x; the system is reduced to the following variable coefficients Boussinesq model in the long gravity water waves: u t+ α1(t)uxx + α2(u2)x + α3(t)vx = 0; (2a) v t+ 2β1(t)(uv)x+ β2(t)vxx + β3(t)vxx+β4(t)u_xxx= 0; So our work will be a new generalization of the (1+1)-dimensional Boussinesq model. The bilinearization of the Kadomtsev-Pevitishvili equation (1) resulted as follows. (D_x^3 D_y+D_x D_t+D_y D_t-D_z^2)(f·f)=0. The bilinearization of the Boussinesq model equations (2a) and (2b). D_x D_y (f·f)+2gh=0;, (D_t+1/2 a(t)D_x D_y)(g·f)=0; (D_t-1/2 a(t)D_x D_y)(h·f)=0.

DETERMINING PHOSPHATE SOURCE UTILIZATION OF VIBRIO FISCHERI

Andrea Williams (FVSU) Poster Presentation

Julie Stoudenmire, Eric V. Stabb, University of Georgia

Vibrio fischeri ES114 is a bacterium isolated from the Hawaiian Bobtail Squid, Euprymna scolopes. V. fischeri uses pheromone sensing to regulate luminescence, however recent publications suggest PhoB, a protein activated by low phosphate in the environment in Escherichia coli, can also regulate and enhance luminescence in Vibrio fischeri. In addition, phoB is thought to play a role in enhancing transcription of genes involved in phosphate import, as seen in E. coli and other bacterial systems. The goal for this project was to determine what organic and inorganic phosphate sources can support the growth of V. fischeri and to determine if there are different luminescence phenotypes associated with various phosphate sources. Growth and luminescence curves were performed by using 10mM NAD+, 378 µM N P , 37.8 µM N P and other phosphate sources as the sole phosphate source in minimal media(MM)to determine growth and luminescence phenotypes. We found that ΔphoB had a higher final OD in NAD+ compared to ES114. Furthermore, the ΔphoB mutant displayed reduced luminescence when grown in NAD+. We didn't observe a difference in luminescence between ES114 and ΔphoB in high and low phosphate media as previously reported.

IDENTIFICATION OF PROTEINS IN DIFFERENTIATED SH-SY5Y NEUROBLASTOMA CELLS TREATED CHRONICALLY WITH MU-OPIOD AGONIST DAMGO

Shericka Williams (FVSU) Poster Presentation

Carl Goodman, Florida Agricultural and Mechanical University

Opiods used in treating chronic pain have a few disadvantages such as the development of tolerance and dependence. Opioid tolerance occurs when there is a loss of analgesic effectiveness because of prolonged opioid administration. The mechanism(s) of opioid tolerance is not well understood and a considerable amount of research is being conducted to understand these mechanisms. 2D-Gel based proteomic approach was used to identify proteins to investigate the mechanism for opioid tolerance. The purpose of this study is to identify proteins that are regulated during chronic treatment with mu-opioid agonist [D-Ala2, N-MePhe4, Gly-ol]-enkephalin (DAMGO). In this study, differentiated SH-SY5Y neuroblastoma cells were used as our model to show tolerance due to the natural expression of mu-opioid receptors 1 (MOR-1). The cells were grown in DMEM/F-12 media at 37°C, 95% air/5% CO2 and differentiated with Retionic Acid (RA) (10µM)

for six days. The cells were chronically treated with DAMGO (10μM) and Naloxone, an opioid antagonist, (10μM) alone for 24 hours or pre-treated with Naloxone for 1 hour followed by DAMGO treatment for 24 hours.

AN APPLICATION OF PARAMETERS IDENTIFICATION ON STUDYING THE EFFECT OF ANTIBACTERIAL AGENT ON THE GROWTH OF A BACTERIAL POPULATION

Reggie Wootson (FVSU) Oral Presentation

Yuden Wei, Mercer University

This research focused on using Mathematical Modeling, Differential Equations and Numerical Analysis to describe the effects of an anti-bacterial agent on a bacterial population. To create Mathematical Models to describe the bacteria we had to identify unknown parameters within the differential equation given by the data. Our hypothesis was that the Mathematical Modeling we developed would describe the effects that an Anti-bacterial Agent would have on the growth of a bacterial population. Our results showed that the Models created were able to describe the growth and decay of the bacteria with and without the presence of the anti-bacteria , and also predict the growth and decay of the bacteria in the absence and presence of the anti-bacteria. Knowledge from this research can be useful is showing how mathematical modeling can be used to describe a real world phenomena.

VHDL MODELS IMPLEMENTED IN FPGA HARDWARE

Timothy Wright (SSU) Poster Presentation

Asad Yousuf, Savannah State University

Traditional digital design components are being replaced by FPGA (Field Programmable Grid Array). FPGA's are the most popular and becoming the mainstay of many re-programmable applications. FPGAs' re-programmability feature makes it more attractive since it can be completely changed by electrical process. As the technology scaling of chips continues then more and more logic will be available on the chip and will provide a great platform for FPGA systems.

PREVALENCE AND DISTRIBUTION OF HEALTH HAZARDOUS WATERBORNE MICROBIAL CONTENTS IN WATER SAMPLES COLLECTED FROM SAVANNAH WATER BODIES

Travis Young (SSU) Poster Presentation

Sivapatham Paramasivam; Sri Ranjini Arumugam, Savannah State University

Waterborne bacteria such as Escherichia coli (coli form) and Enterococci can be responsible digestive system illness if they get into biological systems. Humans can be exposed to these bacterial strains through consumption of food, water and or bathing at common places like beach, swimming pool, etc. This study was initiated during the latter part of June 2013 to enumerate the prevalence and distribution of "Escherichia coli and Enterococci" periodically from selected six sampling locations namely Fort Pulaski (Savannah River), Polk Street Site 1 & Site 2 (where Savannah River meets Atlantic Ocean – River-end near Tybee Island), and Tybee Island Beach (2nd, 8th, and 11th Street) within Savannah region. Colony forming units of Escherichia coli (coli form) and Enterococci were enumerated by employing EPA Method 1603 and 1600 respectively. This study is expected to continue on bi-weekly basis for a year (till 2014 summer end) to assess the seasonal trend of distribution of Escherichia coli and Enterococci. Water quality parameters (such as pH, salinity, alkalinity, hardness, dissolved carbon, dissolved nitrogen, elemental composition through ICP-OES) along with other local environmental conditions will be collected during sampling times and be used to relate with the distribution of these waterborne microbes.

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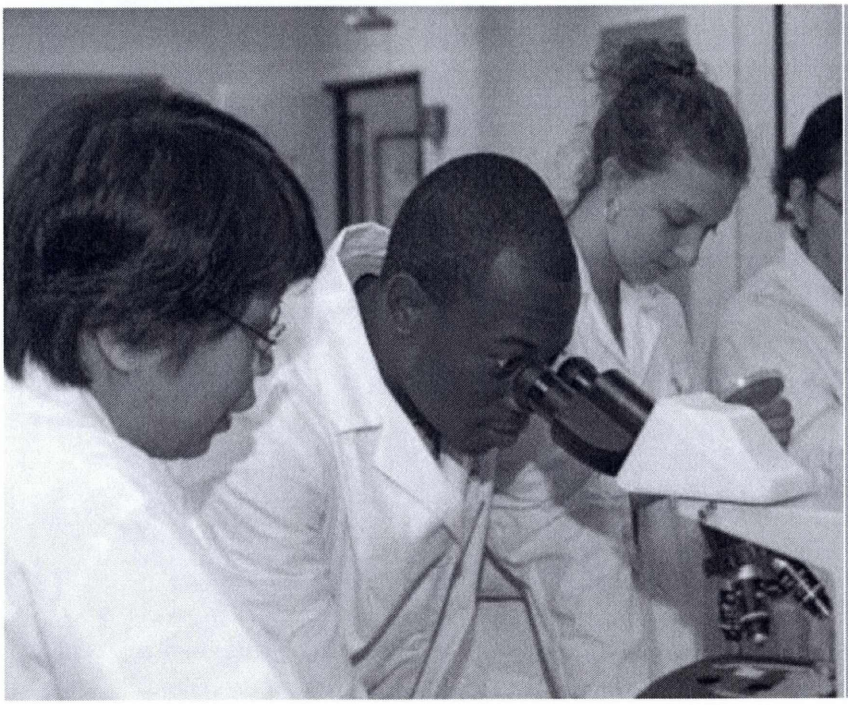

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