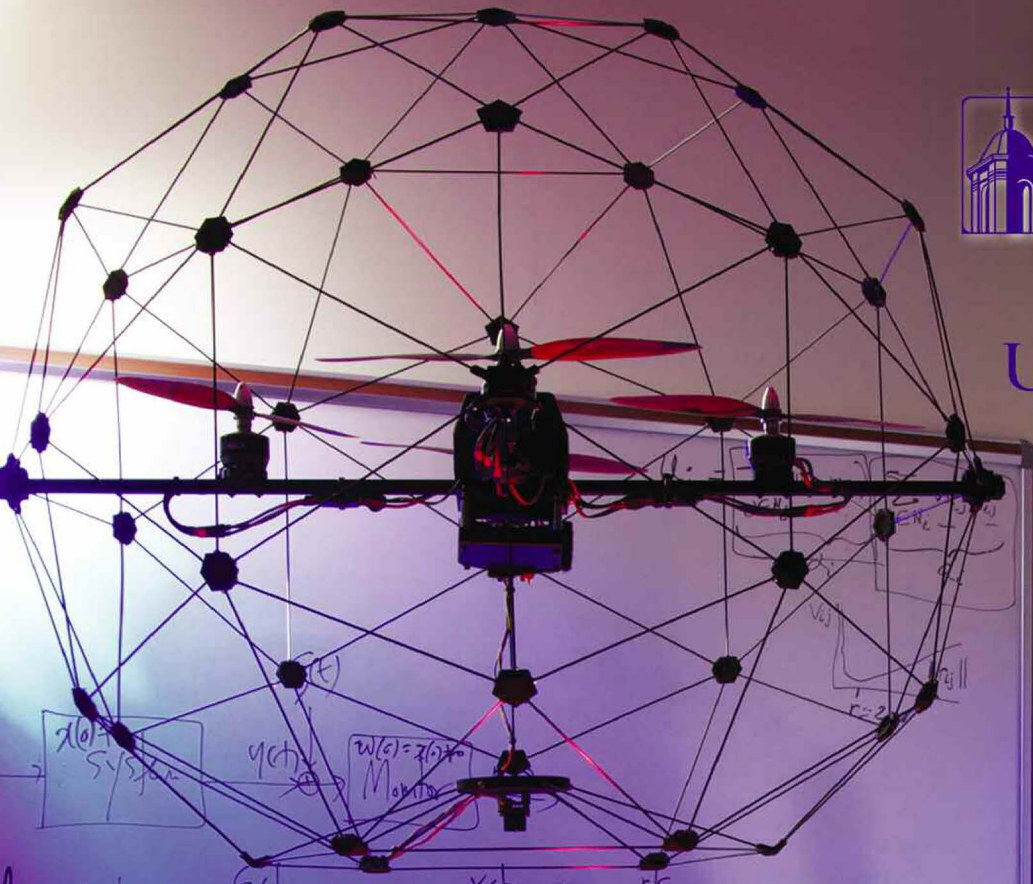




TENNESSEE  
STATE UNIVERSITY

36th Annual  
UNIVERSITY-WIDE  
RESEARCH  
SYMPOSIUM

MARCH 31-APRIL 4, 2014



when  $u_{ch} = 0, \xi_{ch} = 0, r_{ch} = 0$  ok  
when  $u_{ch} \neq 0, \xi_{ch} = 0, r_{ch} \neq 0$  detected  
when  $u_{ch} = 0, \xi_{ch} \neq 0, r_{ch} = 0$  undetected  
special  $r_{ch} + \xi_{ch} \in \text{bandwidths}$   $\uparrow$   
6 monitors



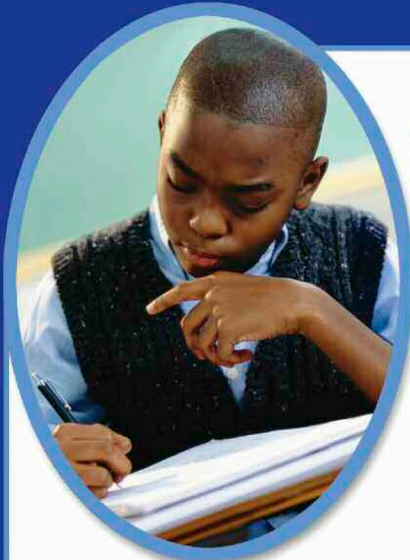
Research:  
Celebrating Excellence

***Building Capacities to Strengthen Communities Through Education***



Center of Excellence for Learning Sciences

**Proudly Supports the 36<sup>th</sup> Annual University-Wide  
Research Symposium**



## **ACADEMICS**

### **Child Care Provider Training and Academic Support**

The Center provides professional learning opportunities within higher education institutions, workplaces, and online environments, as well as other informal and non-traditional educational settings.

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### **Research that addresses the needs and priorities of the educational community**

The Center's research focus is the field of Learning Sciences an interdisciplinary/multidisciplinary field that draws on multiple theoretical perspectives and research paradigms with the goal of advancing knowledge about human learning and development in formal and informal settings.



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The Center's service programs are examples of the successful outreach and community partnerships that enhance the opportunities for the growth and development of children and adults in Tennessee and throughout the nation.



**For more information visit [www.tnstate.edu/learningsciences](http://www.tnstate.edu/learningsciences)**

**or contact Valerie Williams, Director • 615-277-1651 • [learningsciences@tnstate.edu](mailto:learningsciences@tnstate.edu)**

**Research and Sponsored Programs Building • Suite 1B**



*Division of Research and Sponsored Programs*

**36th Annual University-Wide Research Symposium  
Official Symposium Program Booklet  
Commemorative Issue**

*Research:  
Celebrating Excellence*

**Glenda Baskin Glover, Ph.D., J.D., CPA**  
*University President*

**Mark G. Hardy, Ph.D.**  
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*Contributing Editor*

April 2014 issue. This booklet is published by the Division of Research and Sponsored Programs and is published once a year.  
Cover photograph by Vando L. Rogers, Nashville, TN, 2014.  
Graduate student researchers majoring in Computer and Information Systems Engineering featured are: Sirisha Kallakuri (left), Samba Fall (center), and Esther Amullen (right).  
The engineering systems research is led by Lee-Hyun Keel, Ph.D., Professor, Department of Electrical and Computer Engineering.  
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OFFICE OF  
THE PRESIDENT

**TENNESSEE STATE UNIVERSITY**  
3500 JOHN A. MERRITT BOULEVARD  
NASHVILLE, TENNESSEE 37209-1561

March 31, 2014



Dear Colleagues:

It gives me great pleasure to welcome each of you to the 36<sup>th</sup> Annual University-Wide Research Symposium, themed "*Research: Celebrating Excellence*", here at Tennessee State University. I also want to extend a heartfelt welcome and honor to our distinguished speaker, Dr. Sylvester James Gates, Jr. As an American theoretical physicist, Dr. Gates currently serves as a University System Regents professor, the John S. Toll Professor of Physics at the University of Maryland – College Park, and the Center for String and Particle Theory Director. His research on supersymmetry, supergravity and superstring theory has brought him national and international acclaim. This month he will be honored as the Harvard University 2014 Scientist of the Year.

As we continue to move forward, both gracefully and strategically, we must awaken the Tiger within us all. We must also reflect on our years of past progress while embracing the incredible opportunities shaping our future. Let the pioneering achievements of Dr. Gates be an inspiration to us all.

In this exciting information age where we take on a global perspective, I am pleased by the extent that our students and faculty embrace multi-disciplinary research and the advancement of technology in science, engineering, business, and the emerging humanities disciplines. This knowledge is transmitted to our students by the collaborative educational interactions and networking which this annual Symposium at TSU provides. Our students are offered a challenging and supportive arena for presenting their undergraduate and graduate research. I congratulate them all for their outstanding work.

The 2014 Symposium continues to serve as a bridge to the TSU family and broader community. It also provides an additional opportunity for me to reach out to faculty, students, alumni, and the community for innovative ideas and inspiration.

The TSU family is committed to promoting and encouraging student and faculty researchers, who are striving and blazing trails for the next generation of *Think, Work, and Serve* ambassadors.

Have fun and enjoy these wonderful achievements.

Sincerely,

  
Glenda Glover  
President



*"Think. Work. Serve."*

Office of the Vice President  
Academic Affairs  
3500 John A. Merritt Boulevard  
Nashville, Tennessee 37209-1561  
Office: (615) 963-5301  
Fax: (615) 963-5597



March 11, 2014

Dear Colleagues:

I am excited to welcome you all to the 36th Annual University-Wide Research Symposium. The theme "Research: Celebrating Excellence" at Tennessee State University expresses our desire to be one of the top HBCUs in the country in research and sponsored programming. I am also pleased to know that Dr. Sylvester J. Gates, John S. Toll Professor of Physics, University of Maryland-College Park, will be our keynote speaker.

We are proud of our history and accomplishments in the research arena at Tennessee State. Yet there is still work we must do to achieve the goals we have set for ourselves. Given the extraordinary opportunities that exist, or aspirations are attainable as we continue to pursue our goals and objectives allowing us to shape and mold our future. There is no doubt we will continue the rich legacy we have obtained given the success we have enjoyed and the work we continue to do through our strategic research agenda.

This week we celebrate the research productivity our faculty and student researchers have produced this past year. There will be an exchange of knowledge and ideas through stimulating dialogue and collaborative interactions graduate and undergraduate students engage in during the symposium. It is through these sessions faculty and students engage in conversations specific to research topics investigated across the globe.

I extend my congratulations to Dr. Michael Busby and all of the TSU family for the effort that has been expended to sponsor this symposium. It is a capstone event that provides value not only to our student participants, but to the broader research community.

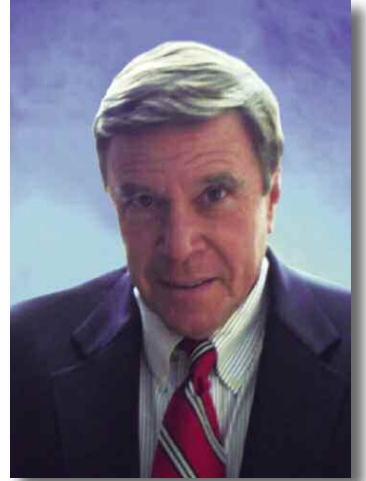
Sincerely,

Mark G. Hardy, Ph.D.  
Vice President for Academic Affairs



*"Think. Work. Serve."*

Office of the Vice President  
Research and Sponsored Programs  
3500 John A. Merritt Boulevard  
Nashville, Tennessee 37209-1561  
Office: (615) 963-7631  
Fax: (615) 963-5068



March 31, 2014

Dear Colleagues:

Welcome to the 36th Annual University-Wide Research Symposium at Tennessee State University.

The Symposium is comprised of a week of interdisciplinary presentations by student and faculty researchers, in active and beneficial collaboration, seeking competitive awards for their research projects. Researchers from across the university spectrum experience a week of multi-disciplinary presentations, and each working day of the Symposium features a speaker and a luncheon, facilitating interdisciplinary networking.

During research week, we acknowledge that students and faculty conducting research is a key component of both higher education and technological innovation because research tests exciting or abstract ideas and theories against harsh or tangible realities and rules. These discoveries lead to more knowledge, which leads to even more ideas and innovation. Research is and must be a student-centered educational necessity at Tennessee State University in order to continue to deliver a world-class education for our graduates to compete and thrive in a challenging global marketplace.

The Symposium constitutes an annual capstone of university-wide research endeavors that deliver academic value to Tennessee State University undergraduate and graduate students, who promise to continue our legacy of excellence and perseverance.

As you confer and discuss the illuminating issues along every spectrum and endeavor of knowledge during the research symposium, your dedicated efforts continue to animate and inspire our motto *Think, Work, and Serve*.

Sincerely,

Michael Busby, Ph.D.  
Interim Associate Vice President of Academic Affairs  
Office of Research and Sponsored Programs

# OVERVIEW OF EVENTS

## ON-SITE REGISTRATION SCHEDULE

Presentation Type	Location	Monday, March 31, 2014	Tuesday, April 1, 2014	Wednesday, April 2, 2014	Friday, April 4, 2014
Oral	RSP Building 1st Floor Lobby	8:30 am – 1:00 pm	8:30 am – 1:00 pm	8:30 am – 1:00 pm	8:30 am – 1:00 pm
Poster	Jane Elliott Hall Lobby	1:00 pm – 4:00 pm	8:30 am – 1:00 pm		

### MONDAY, MARCH 31, 2014

**Division of Nursing Research Day: James E. Farrell - Fred E. Westbrook Building, 118**

7:30 a.m. – 1:00 p.m.

Poster Sessions. Awards.

Luncheon. Speaker – Ms. Grace S. Smith

**Presentations:**

9:00 a.m. – 11:30 a.m.

**Graduate Engineering I Orals, RSP 163**

9:00 a.m. – 12:30 p.m.

**Graduate Sciences I Orals, RSP 209**

9:00 a.m. – 10:00 a.m.

**Graduate Education and Health Sciences Orals, RSP 161**

10:30 a.m. – 11:15 a.m.

**Preliminary Research: Graduate Engineering Orals, RSP 161**

2:00 p.m.

**OPENING CEREMONY AND PLENARY SESSION**

E. T. Goins Recital Hall, Performing Arts Center.

Symposium Keynote Address – Sylvester James Gates, Ph.D.

### TUESDAY, APRIL 1, 2014

**Presentations:**

9:00 a.m. - 12:30 p.m.

**Graduate Sciences II Orals, RSP 163**

9:00 a.m. - 11:30 a.m.

**Graduate Engineering II Orals, RSP 209**

1:00 p.m. – 4:30 p.m.

**Graduate Sciences III Orals, RSP 163**

1:00 p.m. – 2:00 p.m.

**Undergraduate Engineering Orals, RSP 209**

**Psychology Research Day: James E. Farrell - Fred E. Westbrook Building, 118**

2:30 p.m.

**Oral sessions. Poster sessions. Awards**

5:30 p.m.

**Speaker, Neil Woodward, Ph.D.**

Posters will be displayed in the Jane Elliott Hall Auditorium, April 1-3, 2014



# OVERVIEW OF EVENTS

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## WEDNESDAY, APRIL 2, 2014

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### Presentations:

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9:00 a.m. - 11:45 a.m.	Undergraduate Sciences Orals, RSP 163
9:00 a.m. - 10:00 a.m.	Preliminary Research: Graduate Education and Sciences Orals, RSP 209
10:30 a.m. - 11:00 a.m.	Undergraduate Social Sciences Orals, RSP 209

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## THURSDAY APRIL 3, 2014

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### Presentations:

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9:00 a.m. - 11:00 a.m.	Faculty Poster Session Jane Elliott Hall Auditorium
9:00 a.m. - 11:00 a.m.	Graduate Poster Session and Judging Jane Elliott Hall Auditorium
1:00 p.m. - 3:00 p.m.	Undergraduate Poster Session and Judging Jane Elliott Hall Auditorium

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### Engineering Research Day: James E. Farrell – Fred E. Westbrook Building, 118

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11:30 a.m. - 1:00 p.m.	Luncheon. Speaker – William H. Robinson, Ph.D.
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## FRIDAY, APRIL 4, 2014

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### Presentations:

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9:00 a.m. - 11:15 a.m.	Faculty Orals, RSP 163
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### Biology Research Day: McCord Hall

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9:00 a.m. - 11:00 a.m.	Speaker – Eric Floyd, Ph.D.
12:00 p.m. - 2:00 p.m.	Awards Luncheon and Closing Ceremony James E. Farrell-Fred E. Westbrook Building, 118 Luncheon. Address from the Vice President, Mark G. Hardy, Ph.D.

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*Research: Celebrating Excellence*

OPENING CEREMONY AND PLENARY SESSION

MONDAY, MARCH 31, 2014

2:00 P.M. – 4:00 P.M.

E. T. GOINS RECITAL HALL, PERFORMING ARTS CENTER  
MASTER OF CEREMONIES, OSCAR MILLER, PH.D.  
DEPARTMENT CHAIR AND PROFESSOR  
SOCIOLOGY, SOCIAL WORK, AND URBAN PROFESSIONS

PRELUDE.....MUSIC STUDENT

TENNESSEE STATE UNIVERSITY “ALMA MATER”, Laura M. Averitte, 1918

WELCOME AND GREETINGS ..... PRESIDENT GLENDA GLOVER  
*Tennessee State University*

OCCASION..... MRS. NANNETTE C. MARTIN  
*Research Symposium Co-chair*

INTRODUCTION OF KEYNOTE SPEAKER ..... DR. MICHAEL BUSBY  
*Interim Associate Vice President  
for Academic Affairs for Research and Sponsored Programs*

KEYNOTE ADDRESS ..... DR. SYLVESTER JAMES GATES, JR.  
*University System Regents Professor  
John S. Toll Professor of Physics  
Director, Center for String and Particle Theory  
University of Maryland – College Park*

“FROM THE MATHEMATICS OF SUPERSYMMETRY TO THE MUSIC OF ARNOLD SCHOENBERG”

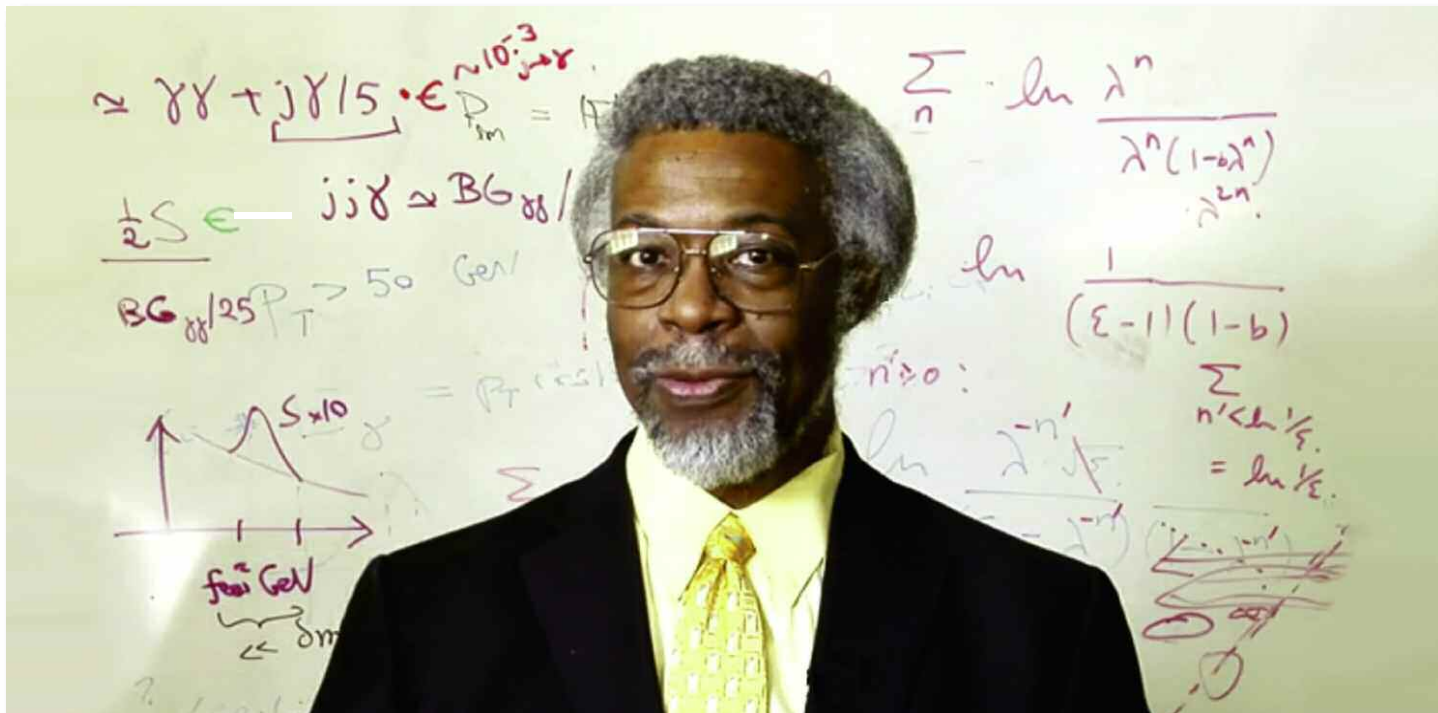
REMARKS AND PRESENTATION OF AWARD..... DR. MICHAEL BUSBY

SPECIAL MUSIC..... MUSIC STUDENT

CLOSING ..... DR. TAMARA ROGERS  
*Research Symposium Co-chair*

RECEPTION TO FOLLOW IN THE ROTUNDA

## SYLVESTER JAMES GATES, JR., PH.D.



Sylvester James Gates, Jr., is an American theoretical physicist. He received the B.S. degree in Physics (1973), the B.S. degree in Mathematics (1973), and a Ph.D. degree in Physics (1977) all from the Massachusetts Institute of Technology (MIT). His doctoral thesis was the first thesis at MIT to deal with supersymmetry. He also completed postgraduate studies at both Harvard University and the California Institute of Technology (CalTech). 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 (PCAST). 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-authored *Superspace*, the first comprehensive book on the topic of supersymmetry. In 2006, he released, the book *L'arte della Fisica* (The Art of Physics), and has authored over 200 scientific publications.

Professor Gates has been featured on many documentary programs on physics. Among these are "The Elegant Universe," "Einstein's Big Idea," "Fabric of the Cosmos," and "The Hunt for the Higgs." In 2006, he completed a DVD series titled *Superstring Theory: The DNA of Reality for The Teaching Company*, composed of 24 half-hour lectures to make the

complexities of unification theory comprehensible to non-physicists. In the spring of 2009, he was appointed to the U.S. President's Council of Advisors on Science and Technology (PCAST), and serves as co-chair of its working group on STEM (science, technology, engineering, and mathematics) preeminence for the nation. At the 2008 World Science Festival, Professor Gates narrated a ballet "The Elegant Universe" with an on-line resource presentation of the artist forms (called *adinkras*) connected to his scientific research. This was the topic of "Symbols of power: *Adinkras* and the nature of reality," a cover story of the British magazine *Physics World* in 2010.

Professor Gates was inducted into the American Academy of Arts and Sciences in October 2011. In 2012, he was named a University System of Maryland Regents Professor, only the sixth person to be so recognized since 1992.

In 2013, President Obama awarded Professor Gates the National Medal of Science, the highest recognition given by the U.S. to scientists with the citation, "For his contribution to the mathematics of supersymmetry in particle, field, and string theories and his extraordinary efforts to engage the public on the beauty and wonder of fundamental physics." Professor Gates was also elected in 2013, to the National Academy of Sciences, becoming the first African-American

physicist so recognized in its 150-year history. In November 2013, Professor Gates was awarded the Mendel Medal by Villanova University.

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 is a member of the board of trustees of the Society for Science & the Public, and the Board of Directors for Fermi National Accelerator Laboratory. He also is currently serving as a Distinguished Research Chair at Canada's Perimeter Institute. He has been elected to membership in the American Academy of Arts and Sciences, and the American Philosophical Society. Professor Gates was honored as the Harvard Foundation's 2014 Scientist of the Year in March 2014.

Dr. Gates' continuing research in supersymmetry, supergravity and superstring/M-theory can be seen via a link on his homepage that leads to a popular-level discussion entitled, "Symbols of Power" and as well the link marked as "Q2C Festival 2009 Talk" describing some of his current investigations on links of *adinkras*, error-correcting codes, and equations of fundamental physics.

# Dr. Rubye P. Torrey

Founder of Research Day at Tennessee State University, 1979

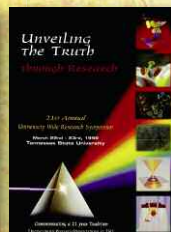
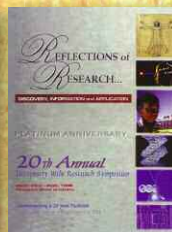
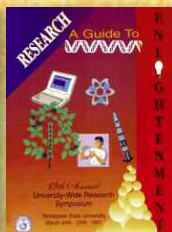
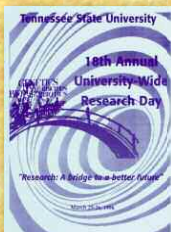
Dr. Rubye Mayette Prigmore Torrey, Founder of Tennessee State University's (TSU) "Research Day" in 1979, is Assistant Vice President for Research and Professor of Chemistry (Emeritus), Tennessee Technological University (TTU) in Cookeville, Tennessee. While active in this capacity, Dr. Torrey worked with faculty to develop proposals, and kept faculty apprised of agencies with available funds compatible with their research interests. She conducted Proposal Development Workshops for faculty and administrators and served as the Executive Officer for the federally regulated institutional committees on "The Use of Human Subjects in Research" and "The Use of Experimental Animals in Research." Dr. Torrey applied for and received a grant from two federal agencies for sponsoring a state-wide conference on "Human Subjects in Research" that included internationally acclaimed speakers. Under her guidance the campus Sigma Xi Club (a research honor society) became a valid chapter. Dr. Torrey launched a successful Inaugural Student Research Day at TTU in 2005.

Dr. Torrey grew up in East Tennessee in the town of Sweetwater. She attended Swift Memorial Junior college and earned both her Baccalaureate and Master of Science degrees at TSU with honors. Her Master of Science degree research was sponsored by the Tennessee Valley Authority, wherein she developed a chemical method for determining insipient spoilage in fruits and vegetables indigenous to the State of Tennessee. Dr. Torrey earned her doctoral degree in radiation-electroanalytical chemistry at Syracuse University in Syracuse, New York where she was elected to the Research Honor Society of Sigma Xi. After receiving her doctorate, Dr. Torrey did post-doctoral research at Brookhaven National Laboratory in Long Island, New York in the Mass Spectrometry Division. At TSU, she established a research laboratory in gaseous ion chemistry with funds from the Atomic Energy Commission. Dr. Torrey was invited to be a Visiting Chemist at the National Bureau of Standards (now the National Institute of Standards & Technology). She has held professorships in chemistry at TSU, the University of Tennessee-Nashville, and TTU.

Dr. Torrey has for many years reviewed and evaluated proposals for Federal government agencies such as the U.S. Department of Education and the National Science Foundation. Dr. Torrey has published articles in scientific journals and has been an invited speaker and workshop conductor at numerous professional conferences. She has also achieved the illustrious status of Emeritus membership in the American Chemical Society.



*Celebrating Excellence for*  
**36** YEARS



# How Research Day Began

A new president, Dr. Frederick Humphries, came to Tennessee State University in 1975; shortly after his arrival, many faculty committees were established. One such committee was a small university-wide Research Committee (“Committee”) whose duty was to work with Dr. Calvin Atchison, the Vice President of Research and Sponsored Programs. The Committee mainly reviewed proposals before they were submitted to an agency for funding. Dr. Rubye Torrey, who had received a continuation grant from the Atomic Energy Commission (in year 5+), was chosen to represent the College of Arts & Sciences on the university-wide Committee. Dr. Robert Hudson, Dean of the College of Arts and Sciences, then asked Dr. Torrey to establish and chair such a committee for the College of Arts and Sciences. The following faculty made up the committee: Dr. Richard Hogg, Biological Sciences; Dr. Jacqueline Martin, Biological Sciences; Dr. Harold Mitchell, Speech Therapy; Dr. Ernest Rhodes, Social Sciences; Dr. Rubye P. Torrey, Physical Sciences and chair of the committee.

Dr. Torrey was very concerned that the research experience be an intricate part of the training of all students. Furthermore, she was concerned over the fact that those students who participated in research did not have a platform to present their findings. She had tried on previous occasions to get University funding to take analytical chemistry students to meetings and to visit the then National Bureau of Standards (now The National Institute of Standards and Technology/“NIST”) — home of the measurement standards that are in use—to no avail. Dr. Torrey suggested to the College of Arts and Sciences Research Committee that they host a university-wide “Research Day” in an effort to give students a platform and proper environment for presenting their research findings. Each presenter must have a faculty sponsor-mentor, and a panel of appropriate judges would be assembled. First, second,

and third prizes would be awarded in the Graduate and Undergraduate Divisions. Attire would be professional; a time-keeper would be employed, plus all other aspects of a session at a national professional meeting.

There were no funds available in the College of Arts and Sciences for such a function. Dr. Torrey approached TSU President Humphries who confirmed the fact that there were no funds in the University for such a function; however, he gave Dr. Torrey permission to solicit funds for the event in the name of the University. Dr. Torrey solicited funds from First American National Bank, Third National Bank and Citizens Savings Bank, all of whom responded very favorably, but there was still not enough to cover event expenses and the financial awards to the students. Everyone who attended received a souvenir—a six-inch ruler/letter holder with the name of the University on it and Research Day, 1979. The Committee members gave the prize money out of their pockets. “Research Day” was successful!

Due to the reviews received and the interest created, Dr. Torrey presented her future plans for expanding the program and requiring students to attend a research session for class credit. The second year (April, 1980), those recommendations were implemented and the program was expanded to cover two days. In that same year, Dr. Torrey applied for and received a grant from the National Science Foundation—designing a program to increase the population of students majoring in chemistry, physics, and mathematics. Since she was the Director of the grant, known as the “Technologically-Assisted Physical Science” program (“TAPS”), she served as consultant to the Research Day Committee until she left the university in 1983 to go to NIST.

Dr. Torrey is extremely pleased and honored that the “seed” of Research Day planted in 1979 has strongly flourished in the annual event of the University-Wide Research Symposium.



## ORAL PRESENTATIONS - MONDAY, MARCH 31, 2014

### GRADUATE ENGINEERING I

9:00 am – 11:30 am - Presentations will be in the Research and Sponsored Programs Building, Room 163

9:00 AM	GR ENGR 1	<b>A CASE STUDY OF NEAR DOWNTOWN UNIVERSITY CAMPUS PARKING PROBLEMS</b> Keaton Browder*. <i>Civil and Environmental Engineering</i> , College of Engineering. Advisor(s): Deo Chimba
9:15 AM	GR ENGR 2	<b>DIMENSION REDUCTION FOR PATTERN DETECTION OF GENE EXPRESSION DATA</b> Linda Emujakporue*. <i>Computer Sciences</i> , College of Engineering. Advisor(s): Wei Chen
9:30 AM	GR ENGR 3	<b>A SURVEY OF PHYSICS-BASED MODELS FOR LITHIUM-ION BATTERY APPLICATIONS</b> Adrian Parker* and Jonathan Reynolds. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Samuel Hargrove and Lizhi Ouyang
9:45 AM	GR ENGR 4	<b>CLOUD COMPUTING BASED DETECTION OF MALICIOUS URL ATTACKS ON ANDROID SMART PHONES</b> Husam Adas*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
10:00 AM	GR ENGR 5	<b>DETECTING DENIAL OF SERVICE ATTACKS IN NFC-ENABLED SMARTPHONES</b> Kimberly Gold*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty and Tamara Rogers

#### 10:15 – 10:30    **BREAK**

10:30 AM	GR ENGR 6	<b>BEHAVIOR-BASED APPROACH TO DETECT ANDROID MOBILE CLOUD MALWARE</b> Paul McNeil*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
10:45 AM	GR ENGR 7	<b>DETECTING CO-RESIDENCY WITH ACTIVE TRAFFIC ANALYSIS</b> James Savage*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
11:00 AM	GR ENGR 8	<b>DELAY ANALYSIS OF PRIMARY USER EMULATION ATTACKS</b> Meena Thanu*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
11:15 AM	GR ENGR 9	<b>MODELING OF MICRO-HYBRID ENERGY SYSTEM FOR APPLICATION IN A DEVELOPING COUNTRY</b> Kehinde Oke*. <i>Mechanical and Manufacturing</i> , College of Engineering. Advisor(s): Landon Onyebueke

### GRADUATE SCIENCES I

9:00 am – 12:30 pm - Presentations will be in the Research and Sponsored Programs Building, Room 209

9:00 AM	GR SCI 1	<b>MARKETING AND MANAGEMENT PRACTICES FOR TENNESSEE MEAT GOAT PRODUCERS</b> Azubuike Ezeadam*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Enefiok Ekanem
9:15 AM	GR SCI 2	<b>PHOSPHORUS LOADING AFFECTED BY LANDSCAPE METRICS IN ALBEMARLE SOUND ESTUARY</b> Tigist Jima*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Solomon Haile, Tekleab Gala, De'Etra Young, Dafeng Hui and Allen Roberts
9:30 AM	GR SCI 3	<b>OPTIMAL BIOMASS HARVESTING AND HAULING COST MODEL FOR ETHANOL BIOREFINERIES</b> Yayuan Jin*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Prabodh Illukpitiya, Surendra P. Singh and Fisseha Tegegne
9:45 AM	GR SCI 4	<b>THE EFFECT OF BIOLOGICAL CONTROL AGENTS ON THE GROWTH, DEVELOPMENT AND CONTROL OF POWDERY MILDEW INFECTIONS IN <i>CORNUS FLORIDA</i></b> Emily Rotich* and Margaret Mmbaga. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Mmbaga
10:00 AM	GR SCI 5	<b>METAGENOMICS PROFILING OF CHICKEN GASTROINTESTINAL TRACT MICROBIALS IN SEARCH FOR DIRECT-FED MICROBIALS WITH POTENTIAL TO ENHANCE UTILIZATION OF PHOSPHORUS IN BROILER CHICKENS</b> Joseph Donkor*, Sarayu Bhogaju, Boniface Kimathi and Beverly Dixon. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Samuel Nahashon

## P R E S E N T A T I O N   S C H E D U L E S

10:15 AM	GR SCI 6	<b>DEVELOPMENT OF A RECOMBINANT BACTERIOCIN FOR PROBIOTICS APPLICATIONS</b> Ahsan Raza*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Samuel Nahashon
<b>10:30 – 10:45      BREAK</b>		
10:45 AM	GR SCI 7	<b>A STUDY ON DROUGHT TOLERANCE OF SWITCHGRASS</b> Zhujia Ye* and Chihli Yu. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Suping Zhou and Dafeng Hui
11:00 AM	GR SCI 8	<b>PARENTS' SOURCE PREFERENCE FOR NUTRITION INFORMATION FOR CHILDREN AGES 2 TO 4: DIFFERENCES BY ETHNICITY AND ASSOCIATION WITH BMI PERCENTILE STATUS</b> Darnell Towns*. <i>Center for Prevention Research (CPR)</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Janice Emerson and Van A. Cain
11:15 AM	GR SCI 9	<b>DETECTION OF UNIVERSAL STRESS PROTEIN AND POLY-3-HYDROXYBUTYRATE IN STRAINS OF BACILLUS THURINGIENSIS</b> Letimicia Fears*. <i>Biological Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Anthony Ejiofor and Terrance L. Johnson
11:30 AM	GR SCI 10	<b>THE EFFECTS OF DIFFERENT ENVIRONMENTS IN DISC1 CONDITIONAL KNOCKOUT MICE</b> Christianna Howard*. <i>Biological Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Brenda McAdory
11:45 AM	GR SCI 11	<b>EFFECTS OF QUERCETIN AND GENISTEIN ON ARGININE AND LYSINE RESIDUES IN HEMOGLOBIN AND MYOGLOBIN</b> Damitea Johnson*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): William Boadi
12:00 PM	GR SCI 12	<b>SYNTHESIS AND CHARACTERIZATION OF PBS/TIO<sub>2</sub> NANOCOMPOSITES FROM COVALENTLY INCORPORATED LEAD THIOLATES VIA THE SOL-GEL PROCESS</b> Khushikumari Patel*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Joshua Moore
12:15 PM	GR SCI 13	<b>POLYSACCHARIDES AS ENZYMES? THE CASE OF CU<sup>2+</sup> -MEDIATED OXIDATION OF DOPAMINE, NOREPINEPHRINE AND EPINEPHRINE IN THE PRESENCE OF POLYSACCHARIDES</b> Astiney Clark* and Koen Vercruyssen. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Koen Vercruyssen

### GRADUATE EDUCATION AND HEALTH SCIENCES

9:00 am – 9:45 am - Presentations will be in the Research and Sponsored Programs Building, Room 161

9:00 AM	GR ED-HSCi 1	<b>THE IMPORTANCE OF SELF-DIRECTED LEARNING IN HIGHER EDUCATION FOR ADULTS IN THE CLASSROOM SETTING</b> Oluwakemi Elufiede*. <i>Education Administration</i> , College of Education. Advisor(s): Janet Finch
9:15 AM	GR ED-HSCi 2	<b>AQUATIC EXERCISE FOR WEIGHT REDUCTION IN CHILDREN AND OLDER ADULTS: A COMPARATIVE ANALYSIS</b> Kirsten Ferrigan*, Kailey Honn, Jessica Hice and Sarah Singer. <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): Natalie Housel and Timothy Jones
9:30 AM	GR ED-HSCi 3	<b>COLLEGE STUDENTS PERCEPTION OF TEACHING EFFECTIVENESS IN INSTRUCTORS WITH ACCENTS</b> Beth Heringer*, Cierra Love Baker and Cait Robertson. <i>Speech Pathology and Audiology</i> , College of Health Sciences. Advisor(s): Iris Johnson Arnold and Owen Johnson

### PRELIMINARY RESEARCH: GRADUATE ENGINEERING

10:30 a.m. - 11:15 a.m. - Presentations will be in the Research and Sponsored Programs Building, Room 161

10:30 AM	PR:GR ENGR 1	<b>USING THE BICYCLE LEVEL OF SERVICE MODEL TO PROPOSE A BICYCLE NETWORK FOR THE CITY OF PLEASANT VIEW, TN</b> Tonjanika Robinson*. <i>Civil and Environmental Engineering</i> , College of Engineering. Advisor(s): Deo Chimba
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P R E S E N T A T I O N   S C H E D U L E S

10:45 AM	PR:GR ENGR 2	<b>ECONOMIC MODELING OF HYBRID ENERGY SYSTEM</b> Olumide Bello*. <i>Mechanical and Manufacturing</i> , College of Engineering. Advisor(s): Landon Onyebueke
11:00 AM	PR:GR ENGR 3	<b>ROBUST STOCHASTIC STABILIZATION OF MARKOVIAN SWITCHING GENETIC REGULATORY NETWORKS</b> Samba Fall*. <i>Physics and Mathematics</i> , College of Engineering. Advisor(s): Sivapragasam Sathananthan and Lee Keel

**ORAL PRESENTATIONS - TUESDAY, APRIL 1, 2014**

**GRADUATE SCIENCES II**

9:00 am – 12:30 pm - Presentations will be in the Research and Sponsored Programs Building, Room 163

9:00 AM	GR SCI 14	<b>CHARACTERIZATION OF HYPERVIRULENT TRANSPOSON TN5 INSERTION RSMK-MUTANT OF PECTOBACTERIUM CAROTOVORUM THAT ALSO OVERPRODUCES EXTRACELLULAR VIRULENCE FACTORS</b> Urmila Adhikari*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Korsi Dumenyo
9:15 AM	GR SCI 15	<b>BIOMASS PRODUCTIVITY OF INDIANGRASS AS BIOFUEL FEEDSTOCK IN FLY ASH AND POULTRY LITTER AMENDED SOIL</b> Vanaja Kankarla*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Kudjo Dzanor
9:30 AM	GR SCI 16	<b>AN ASSESSEMENT OF US AND MEXICO AGRICULTURAL TRADE: BEFORE AND AFTER NAFTA</b> Oladayo Omosa*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Enefiok Ekanem
9:45 AM	GR SCI 17	<b>A TREND ANALYSIS OF AMERICAN CONSUMERS FOOD CONSUMPTION PATTERNS BY CULTURAL, SOCIAL GROUPS AND DESIGNING MARKETING STRATEGIES</b> Abimbola Akinya*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Prabodh Illukpitiya, Surendra P. Singh and Enefiok Ekanem
10:00 AM	GR SCI 18	<b>ECONOMIC ANALYSIS OF BIOENERGY PRODUCTION FROM PAULOWNIA</b> Kuldeep Singh*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Prabodh Illukpitiya, Surendra P. Singh and Fisseha Tegegne
10:15 AM	GR SCI 19	<b>IDENTIFICATION OF MICROSATELLITE MARKERS OF POWDERY MILDEW RESISTANCE/SUSCEPTIBILITY IN FLOWERING DOGWOODS</b> Lipi Parikh*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Mmbaga
10:30 AM	GR SCI 20	<b>EVALUATION OF METHIONINE AND CYSTEINE REQUIREMENTS OF THE FRENCH GUINEA FOWL BROILER</b> DeKarra Johnson*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Samuel Nahashon

**10:45 – 11:00      BREAK**

11:00 AM	GR SCI 21	<b>GOAT RUMEN METAGENOME EXTRACTION, ANNOTATION AND SCREENING FOR CELLULASE AND HEMI-CELLULASE GENES</b> Hui Li*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Suping Zhou
11:15 AM	GR SCI 22	<b>PRELIMINARY BREED EVALUATION FOR INTERNAL PARASITE LOADS</b> Li Wang*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Richard Browning
11:30 AM	GR SCI 23	<b>LEAF PHOTOSYNTHESIS AND SOIL CO<sub>2</sub> EMISSION FROM SWITCHGRASS POTS AND CORN FIELDS</b> Chih-Li Yu*. <i>Biological Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Dafeng Hui and Samuel Dennis
11:45 AM	GR SCI 24	<b>EFFECTS OF GLUTATHIONE AND PLANT FLAVONOIDS QUERCETIN AND KAEMPFEROL ON PROTEIN OXIDATION</b> Andrew Lo*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): William Boadi



## P R E S E N T A T I O N   S C H E D U L E S

12:00 PM	GR SCI 25	<b>ELEVATION OF TUMOR-PROMOTING CYTOKINES IN MICE EXPOSED TO THE ENVIRONMENTAL CONTAMINANT TRIBUTYL TIN</b> Shanieek Lawrence*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Whalen
12:15 PM	GR SCI 26	<b>HARVEST TIMING EFFECTS ON CARBON CONSTITUENTS IN SWITCHGRASS GROWN FOR BIOENERGY</b> Priya Saini*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Jason de Koff

### GRADUATE ENGINEERING II

9:00 am – 11:30 am Presentations will be in the Research and Sponsored Programs Building, Room 209

9:00 AM	GR ENGR 10	<b>SITE SELECTION AND SAFETY EVALUATION OF MEDIAN CABLE BARRIERS IN TENNESSEE</b> Evarist Ruhazwe*. <i>Civil and Environmental Engineering</i> , College of Engineering. Advisor(s): Deo Chimba
9:15 AM	GR ENGR 11	<b>NOVEL MOTIF DETECTION ALGORITHMS FOR FINDING PROTEIN-PROTEIN INTERACTION SITES</b> January Wisniewski*. <i>Computer Sciences</i> , College of Engineering. Advisor(s): Wei Chen
9:30 AM	GR ENGR 12	<b>ROBUST TRANSMIT BEAMFORMING IN COGNITIVE RADIO NETWORK FOR STEERING VECTOR UNCERTAINTY</b> Monzurul Alam*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Liang Hong and Sachin Shetty
9:45 AM	GR ENGR 13	<b>CLASSIFICATION BASED IP GEOLOCATION APPROACH TO LOCATE DATA IN THE CLOUD DATACENTERS</b> Biswajit Biswal*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
10:00 AM	GR ENGR 14	<b>NETWORK AWARE VM MIGRATION IN CLOUD DATA CENTERS</b> Hellen Maziku*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty

#### 10:15 – 10:30 BREAK

10:30 AM	GR ENGR 15	<b>GENERATION OF NETWORK TRACES FOR ANOMALY DETECTION IN CLOUD DATA CENTERS</b> Sai Kiran Mukkavilli*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
10:45 AM	GR ENGR 16	<b>A SCALABLE CLASSIFIER BASED SYSTEM TO DETECT SMARTPHONE MALWARE</b> Waled Tayib*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
11:00 AM	GR ENGR 17	<b>DESIGNING A RECONFIGURATION SIMULATION MODEL FOR LITHIUM-ION BATTERY MANUFACTURING</b> Jerrika Cox*. <i>Mechanical and Manufacturing</i> , College of Engineering. Advisor(s): Samuel Hargrove and Amir Shirkhodaie
11:15 AM	GR ENGR 18	<b>SYSTEM IDENTIFICATION FOR CANCER CELL VIABILITY</b> Yvette Tolliver*. <i>Mechanical and Manufacturing</i> , College of Engineering. Advisor(s): Hamid Hamidzadeh and E. Lewis Myles

### GRADUATE SCIENCES III

1:00 pm – 4:30 pm Presentations will be in the Research and Sponsored Programs Building, Room 163

1:00 PM	GR SCI 27	<b>PURIFICATION OF THE CHEMICAL INDUCER OF SOFT ROT DISEASE FROM THE EXTRACTS OF CELERY (<i>APIUM GRAVEOLENS</i>) PETIOLES</b> Md. Niamul Kabir*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Korsi Dumenyo, Mohammad Karim and Tasneem Siddiquee
1:15 PM	GR SCI 28	<b>ASSESSING THE COMPETITIVENESS OF THE U.S. GOAT MEAT INDUSTRY</b> Allen Denkins*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Enefiok Ekanem
1:30 PM	GR SCI 29	<b>AN ANALYSIS OF TENNESSEE'S SMALL FARMER RESPONSE TO AGRICULTURAL RISK</b> Danielle Towns-Belton*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Enefiok Ekanem

## P R E S E N T A T I O N   S C H E D U L E S

1:45 PM	GR SCI 30	<b>ENERGY EFFICIENCY OF PRODUCING ETHANOL FROM SWITCHGRASS AND MISCANTHUS IN TENNESSEE</b> Ankit Bansal*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Prabodh Illukpitiya, Surendra P. Singh and Fisseha Tegegne
2:00 PM	GR SCI 31	<b>MANAGING CHERRY LEAF SPOT DISEASE IN FLOWERING CHERRY IN MID-TENNESSEE</b> Jacqueline Joshua*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Mmbaga
2:15 PM	GR SCI 32	<b>EVALUATION OF LYSINE REQUIREMENT OF THE PEARL GREY GUINEA FOWL</b> Sarayu Bhogoju*, Joseph Donkor, Boniface Kimathi and Sri Harsha Kupachi. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Samuel Nahashon
2:30 PM	GR SCI 33	<b>CHARACTERIZATION OF PROTEINS ASSOCIATED WITH ADIPOSE TISSUE ACCRETION IN BROILER CHICKENS</b> Boniface Kimathi*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Samuel Nahashon
<b>2:45 – 3:00</b>	<b>BREAK</b>	
3:00 PM	GR SCI 34	<b>DETECTION OF HUMAN PATHOGENS ON FRESH STRAWBERRIES</b> Himabindu Gazula*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Suping Zhou and Fur-Chi Chen
3:15 PM	GR SCI 35	<b>AMERICAN GINSENG AND ITS BIOACTIVE COMPOUNDS INHIBIT PREADIPOCYTE DIFFERENTIATION BY SUPPRESSING PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR GAMMA IN 3T3-L1 CELLS AND HUMAN PRIMARY PREADIPOCYTES</b> Longyun Zhang*. <i>Family and Consumer Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Hongwei Si
3:30 PM	GR SCI 36	<b>EXTRACTION AND PURIFICATION OF VIOLACEIN FROM DIFFERENT C. VIOLACEUM STRAINS AND ITS EFFECT ON DIFFERENT CANCER CELL LINES</b> Toral Mehta*. <i>Biological Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Terrance Johnson and Anthony Ejiofor
3:45 PM	GR SCI 37	<b>SYNTHESIS AND ANTIBACTERIAL STUDY OF 5-SUBSTITUTED 2, 9-DIMETHYL-1,10-PHENANTHROLINE DIALDEHYDES AND THEIR SCHIFF BASES WITH SULFUR-CONTAINING AMINES</b> Zinia Jaman*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Mohammad Karim and Korsi Dumenyo
4:00 PM	GR SCI 38	<b>PENTACHLOROPHENOL (PCP) AFFECTS SECRETION OF INTERLEUKIN 1- BETA FROM HUMAN IMMUNE CELLS</b> Tamara Martin*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Whalen
4:15 PM	GR SCI 39	<b>COUPLING MICROALGAE BIOMASS PRODUCTION TO WASTEWATER TREATMENT AND BIOFUEL FEEDSTOCK PRODUCTION</b> Omowunmi Fadeyi*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Kudjo Dzantor

### UNDERGRADUATE ENGINEERING

1:00 pm – 2:00 pm

*Presentations will be in the Research and Sponsored Programs Building, Room 209*

1:00 PM	UG ENGR 1	<b>ANALYZING IMPACT OF ATTACKS ON VARIOUS SWARM OF ROBOT FORMATION SCENARIOS</b> Daniel Henke* and Eniola Adamson. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
1:15 PM	UG ENGR 2	<b>TENNESSEE STATE UNIVERSITY CAMPUS TRANSPORTATION EMERGENCY EVACUATION SIMULATION</b> Jon Michael*. <i>Civil and Environmental Engineering</i> , College of Engineering. Advisor(s): Deo Chimba and Sachin Shetty
1:30 PM	UG ENGR 3	<b>BANDWIDTH OPTIMIZATION VIA DNS AUTOMATION</b> Daniel Flannigan*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty and Tamara Rogers

# P R E S E N T A T I O N   S C H E D U L E S

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1:45 PM      UG ENGR 4      **BANDWIDTH ANALYSIS OF VIDEO TRANSMISSION IN A DISTRIBUTED ENVIRONMENT**  
Jared Wagnac\*. *Electrical and Computer Engineering*, College of Engineering. Advisor(s): Sachin Shetty and Tamara Rogers

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## ORAL PRESENTATIONS - WEDNESDAY, APRIL 2, 2014

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### UNDERGRADUATE SCIENCES

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9:00 am – 11:45 am Presentations will be in the Research and Sponsored Programs Building, Room 163

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9:00 AM      UG SCI 1      **APPARENT NATURAL ANTIBIOTIC RESISTANCE DEVELOPMENT IN BACILLUS THURINGIENSIS**  
Derek Platt\*. *Biological Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Terrance Johnson

9:15 AM      UG SCI 2      **GROWTH ANALYSIS OF COLON CANCER CELL LINE HT-29 WITH SERIALY DILUTED EXTRACTS FROM CAMELLIA SINENSIS**  
Erin Malone\* and Carla Gibbs. *Biological Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Elbert Myles

9:30 AM      UG SCI 3      **THE EFFECT OF POLYSACCHARIDES ON OXIDATION REACTIONS: THE OXIDATION OF CINNAMYL ALCOHOL BY AU NANOPARTICLES AND THE OXIDATION OF CAFFEIC ACID BY CU<sup>2+</sup>**  
Jade Readus\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): Koen Vercruyse

9:45 AM      UG SCI 4      **A MILD AND EFFICIENT PROCESS OF SYNTHESIZING ARYL NITRITES FROM POTASSIUM ARYLTRIFLUOROBORATES AND BISMUTH NITRATE PENTAHYDRATE**  
Rebecca Welch\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): Mohammad Al-Masum

10:00 AM      UG SCI 5      **ANALYSIS OF SPATIAL LEARNING AND MEMORY IN NEUROFILIN-2 KNOCKOUT MICE**  
Eduardo Constantino\* and Francis Nwaneri. *Biological Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Brenda McAdory

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### 10:15 -10:30 BREAK

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10:30 AM      UG SCI 6      **SYNTHESIS OF LEAD THIOLATE COMPLEXES AS POTENTIAL PRECURSORS TO LEAD SULFIDE NANOPARTICLES**  
Amadou Fall\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): Joshua Moore

10:45 AM      UG SCI 7      **GROWTH ANALYSIS OF COLON CANCER CELL LINE HT-29 WITH SERIALY DILUTED EXTRACTS FROM CAMELLIA SINENSIS**  
Eleanor Troyanovskaya\* and Ashley Blair. *Biological Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Elbert Myles

11:00 AM      UG SCI 8      **COPPER-CATALYZED CROSS-COUPPLING REACTION OF POTASSIUM ARYLTRIFLUOROBORATES AND ETHANOL AMINES**  
Linda Quinones\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): Mohammad Al-Masum

11:15 AM      UG SCI 9      **AURORA KINASE INHIBITOR & TNF-RELATED APOPTOSIS INDUCING LIGAND (TRAIL) OR DR5 RECEPTOR AGONIST REDUCE PROLIFERATION AND INCREASE APOPTOSIS IN BREAST CANCER CELLS**  
Carla Gibbs\*. *Biological Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Elbert Myles, Margaret Whalen and Terrance Johnson

11:30 AM      UG SCI 10      **STORAGE PRACTICES AND MICROBIOLOGICAL CONTAMINATION OF HOME REFRIGERATED FOODS**  
Natalia Johnson\*. *Family and Consumer Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Fur-Chi Chen, Sandria Godwin and Rick Stone

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**PRELIMINARY RESEARCH: GRADUATE EDUCATION AND SCIENCES**

9:00 am – 10:00 am *Presentations will be in the Research and Sponsored Programs Building, Room 209*

9:00 AM	PR:GR Ed-Sc 1	<b>PERCEPTIONS OF HOME SCHOOL EDUCATORS REGARDING THE INTEGRATION OF AGRICULTURAL CONCEPTS IN A TRADITIONAL HOME SCHOOL SCIENCE CURRICULUM</b> Frank Brown*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): John Hall
9:15 AM	PR:GR Ed-Sc 2	<b>ISSUES IN EARLY CHILDHOOD DEVELOPMENT (BEHAVIORAL PERSPECTIVE)</b> Rasheed Batong*. <i>Teaching and Learning</i> , College of Education. Advisor(s): Mathis Dolores
9:30 AM	PR:GR Ed-Sc 3	<b>EFFECTIVENESS OF THERAPEUTIC ULTRASOUND IN TREATING CHRONIC LOW BACK PAIN, SOFT TISSUE INJURIES OF THE SHOULDER AND OSTEOARTHRITIS OF THE KNEE: SYSTEMATIC REVIEW</b> Heidi Bender*, Briana Brown*, Nikki Patel* and Martine Twist*. <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): Deborah Edmondson
9:45 AM	PR:GR Ed-Sc 4	<b>THE PROVISION OF NUTRITIONAL COUNSELING BY PHYSICAL THERAPISTS</b> George Abell*, Elizha Burdette, Matt Lindeman and Ryan Stromberg. <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): David Lehman

**UNDERGRADUATE SOCIAL SCIENCES**

10:30 am – 11:00 am *Presentations will be in the Research and Sponsored Programs Building, Room 209*

10:30 AM	UG SSCi 1	<b>AUDITORY CORTICAL CONNECTIONS WITH AREA 6V IN THE MARMOSET MONKEY</b> Martina Mitchell*, Cory Miller and Lisa de la Mothe. <i>Psychology</i> , College of Education. Advisor(s): Lisa de la Mothe
10:45 AM	UG SSCi 2	<b>VISUAL CLUTTER AND CONTEXTUAL CUEING</b> Derien Rivers* and Denisha Jackson. <i>Psychology</i> , College of Education. Advisor(s): Joshua Shive

**ORAL PRESENTATIONS - FRIDAY APRIL 4, 2014**

**FACULTY**

9:00 am – 11:30 am *Presentations will be in the Research and Sponsored Programs Building, Room 163*

9:00 AM	FAC O 1	<b>THE COST OF HARVESTING LOGISTICS OF FOREST BIOMASS</b> Dalia Abbas*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
9:15 AM	FAC O 2	<b>RECOMBINANT INBRED LINES AND INDIVIDUAL-POLLEN BASED GENETIC-LINKAGE ANALYSES IN COTTON</b> Ahmad Aziz*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
9:30 AM	FAC O 3	<b>PERCEPTIONS OF STUDENT CLICKER USE BY GRADUATE STUDENTS IN AGRICULTURAL SCIENCES AT TENNESSEE STATE UNIVERSITY</b> Jason de Koff*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
9:45 AM	FAC O 4	<b>ECONOMIC FEASIBILITY OF ON-FARM BIODIESEL PRODUCTION FROM WINTER OILSEED CROPS</b> Prabodh Illukpitiya*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
10:00 AM	FAC O 5	<b>FEEDBACK FROM SELECTED SMALL TENNESSEE PRODUCE GROWERS</b> Fisseha Tegegne*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
10:15 AM	FAC O 6	<b>IN VITRO INVESTIGATION OF GLYCEMIC INDEX OF BREAD FORTIFIED WITH DIFFERENT FRACTIONS OF SOY DIETARY FIBER</b> Ying Wu*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
10:30 AM	FAC O 7	<b>IN SEARCHING FOR INTERESTING GENES FROM METAGENOMES</b> Suping Zhou*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
10:45 AM	FAC O 8	<b>EXPLORING THE MENTORING EXPERIENCE FOR UNDERREPRESENTED GROUPS IN STEM FIELDS</b> Andrea Tyler*. <i>Institutional Effectiveness &amp; Research</i> , Institutional Effectiveness & Research

# P R E S E N T A T I O N   S C H E D U L E S

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11:00 AM	FAC O 9	<b>LIVING INSIDE OF SELF: THE LGBTQ EXPERIENCE AT THE HBCU</b> Naykishia Head*. <i>Language, Literature and Philosophy</i> , College of Liberal Arts
11:15 AM	FAC O 10	<b>EXPLORING INTERNET MARKETING OPPORTUNITIES FOR TENNESSEE LIMITED RESOURCE GOAT MEAT PRODUCERS</b> Enefiok Ekanem, Mary Mafuyai, Prabodh Illukpitiya, Fisseha Tegegne, H.Peischel, and Roy Bullock. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences

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## POSTER PRESENTATIONS

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Posters will be displayed in the Jane Elliott Hall Auditorium, April 1-3, 2014.

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## FACULTY POSTERS

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FAC-P 1	<b>SELECTION OF COWPEA (BLACK-EYED PEA) ACCESSIONS FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) CORE COLLECTION</b> Matthew Blair*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
FAC-P 2	<b>VEGETABLE COWPEA (YARD-LONG BEAN) VARIETAL EVALUATION</b> Matthew Blair*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
FAC-P 3	<b>COMPARISON OF YIELD POTENTIAL IN FIVE GRAIN LEGUMES WITH POTENTIAL IN TENNESSEE</b> Matthew Blair*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
FAC-P 4	<b>MEAT GOAT ENTERPRISES IN TENNESSEE: OPPORTUNITIES FOR TENNESSEE'S SMALL FARMERS</b> Enefiok Ekanem*, Mary Mafuyai, Surendra Singh and Fisseha Tegegne. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
FAC-P 5	<b>EFFICACY OF THYME OIL, THYMOL, VINEGAR and BAKING SODA ON <i>SALMONELLA</i> IN FRESH PRODUCE</b> Agnes Kilonzo-Nthenge* and Deborah Long. <i>Family and Consumer Sciences</i> , College of Agriculture, Human and Natural Sciences
FAC-P 6	<b>A TREE IDENTIFICATION GUIDE: TURNING TSU RESEARCH INTO PUBLIC OUTREACH PRODUCTS</b> Richard Link*, Jason de Koff and Solomon Haile. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
FAC-P 7	<b>MICROBIAL DIVERSITY IN DOGWOOD SEED AND POTENTIAL APPLICATIONS</b> Margaret Mmbaga*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
FAC-P 8	<b>EVALUATION OF LYSINE REQUIREMENT OF THE FRENCH GUINEA FOWL BROILER</b> Samuel Nahashon*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences
FAC-P 9	<b>EFFECTIVENESS OF BUPRESTID AND CERAMBYCID BEETLE CAPTURE WITH PURPLE AND TRANSLUCENT STICKY TRAPS</b> Nadeer Youssef*. <i>Otis L. Floyd Research Center</i> , College of Agriculture, Human and Natural Sciences
FAC-P 10	<b>MAJOR SOURCE OF PHYTOPHTHORA SPECIES AND OTHER PATHOGENS IN MIDDLE TENNESSEE NURSERIES</b> Lucas A. Mackasmiel* and Margaret T. Mmbaga. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences

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## GRADUATE POSTERS

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### GRADUATE POSTER JUDGING THURSDAY APRIL 3, 2014

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9:00 a.m. – 11:00 a.m. in Jane Elliott Hall Auditorium

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GR-P PR1	<b>AN EVALUATION OF RESEARCH EVIDENCE ON THE EFFECTIVENESS OF WHOLE BODY VIBRATION ON MUSCLE STRENGTH AND MUSCLE MASS IN ADULTS AGED 55 AND OLDER</b> Harmonie Foster*, Margarita Norina Weatherman and Jerry Hudson. <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): Ronald Barredo
GR-P PR2	<b>BRIDGING THE COVERAGE GAP FOR TENNESSEE COLLEGE STUDENTS</b> Jaquelyn Favours* and Arielle Arzu. <i>Healthcare Administration &amp; Health Sciences</i> , College of Health Sciences. Advisor(s): Elizabeth Brown

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# P R E S E N T A T I O N   S C H E D U L E S

GR-P PR3	<b>THE IMPACT OF THE AFFORDABLE CARE ACT ON TENNCARE: A WHITE PAPER</b> La'Darius Madison*, Gwendolyn Holman and Farnaz Niknejad. <i>Healthcare Administration &amp; Health Sciences</i> , College of Health Sciences. Advisor(s): Elizabeth Brown
GR-P PR4	<b>MASTER GARDENERS AND VOLUNTEERISM WITH YOUTH: SYNTHESIS OF RESEARCH FROM HORTICULTURAL SCIENCE AND EXTENSION EDUCATION</b> Alison Leathers*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Thomas Broyles
GR-P PR5	<b>KINESIOTAPE COMPARED TO OTHER FORMS OF TAPING IN FACILITATING MUSCULAR PERFORMANCE</b> Lizzy Barrett* and Brandon Burns. <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): Derek Charles
GR-P PR6	<b>A LITERATURE REVIEW OF THE USE OF PRENATAL PREVENTION ACTIVITIES TARGETING PREGNANT WOMEN TO REDUCE EARLY CHILDHOOD CARIES IN YOUNG CHILDREN</b> Sowmya Renuka*. <i>Healthcare Administration &amp; Health Sciences</i> , College of Health Sciences. Advisor(s): Wendelyn Inman
GR-P PR7	<b>THE EFFECTIVENESS OF REHABILITATIVE ULTRASOUND IMAGING (RUSI) AS A BIOFEEDBACK TOOL FOR SUBJECTS WHO HAVE SCAPULAR WINGING</b> Liz Fuhrop*, Lauren Pierce, Branan Read and Natalie Shetromph. <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): David Lehman
GR-P PR8	<b>WHOLE BODY VIBRATION AND RESISTIVE EXERCISES MAY REDUCE RISK FACTORS FOR FRACTURES IN TYPE I OSTEOGENEIS IMPERFECTA</b> Taylor Barnes*, Hillary Dow*, Robert Felts*, and Elizabeth Robbins* <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): Edilberto Raynes
GR-P 1	<b>MICROWAVE IRRADIATED PALLADIUM-CATALYZED N-ALDOL REACTION FOR NEW CARBON-NITROGEN BOND FORMATION</b> Wejdan Shaban*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Mohammad Al-Masum
GR-P 2	<b>SURVIVAL ANALYSIS OF PATHOGENIC MICROBIAL POPULATION ON FRESH STRAWBERRIES</b> Himabindu Gazul*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Fur-Chi Chen and Suping Zhou
GR-P 3	<b>USING LATENT DEMAND SCORE (LDS) TO EVALUATE BICYCLE ROUTES FOR PLEASANT VIEW CITY</b> Emmanuel Kidando*. <i>Civil and Environmental Engineering</i> , College of Engineering. Advisor(s): Deo Chimba
GR-P 4	<b>TRANSFORMATION OF PLASMIDS INTO ERWINIA TRACHEIPHILA, THE CAUSAL AGENT OF BACTERIAL WILT OF CUCURBITS</b> Peter Prestwich*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Korsi Dumenyo
GR-P 5	<b>BARRIERS TO HEALTHY EATING IN WIC PARTICIPANTS IN NASHVILLE, TN</b> Ronita Adams*. <i>Center for Prevention Research (CPR)</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Janice Emerson and Van A. Cain
GR-P 6	<b>FACTORS INFLUENCING THE DEMAND FOR GOAT MEAT IN TENNESSEE: RESULTS FROM A CONSUMER SURVEY</b> Clarence Pongo*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Ekanem Enefiok
GR-P 7	<b>INFLUENCE OF 1890 LAND GRANT UNIVERSITIES AND SCHOOL BASED AGRICULTURAL EDUCATION: A CASE STUDY APPROACH</b> Mia Sullivan*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): John Hall
GR-P 8	<b>SOCIO-ECONOMIC STATUS, SOCIAL CLASS AND DISTANCE FROM PRIVILEGE AND POWER AMONG UNDERGRADUATE STUDENTS AT AN HBCU</b> Sokari Atkins* and LeAnne Zaire. <i>Psychology</i> , College of Education. Advisor(s): Marie Hammond
GR-P 9	<b>CO-OCCURRING MILD TRAUMATIC BRAIN INJURY AND POST-TRAUMATIC STRESS DISORDERS IN THE MILITARY</b> Jordan Joyner*. <i>Psychology</i> , College of Education. Advisor(s): Marie Hammond
GR-P 10	<b>DIFFERENCES IN PERCEIVED SELF-EFFICACY OF SENIOR GRADUATE STUDENTS IN HEALTH SCIENCES, COMPARED TO VANDERBILT LONG-TERM LEND TRAINEES: AN ASSESSMENT OF PROGRAM EFFECTIVENESS</b> Jamila Toranzo*. <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): Natalie Housel
GR-P 11	<b>LEVEL OF ETHNIC IDENTITY AMONG AFRICAN AMERICAN FEMALE COLLEGE STUDENTS AND THE INFLUENCE ON BEAUTY STANDARDS AND SELF ESTEEM</b> Erica Brice*. <i>Psychology</i> , College of Education. Advisor(s): Evelyn Hunter

# P R E S E N T A T I O N   S C H E D U L E S

GR-P 12	<b>THE EFFECT OF PERSONALITY ON SPIRITUAL DISPOSITION: AN EXAMINATION OF SPIRITUALITY, RELIGIOUSNESS AND THE FIVE-FACTOR MODEL OF PERSONALITY IN A SAMPLE OF TRADITIONAL COLLEGE STUDENTS</b> Christopher Mclin*. <i>Psychology</i> , College of Education. Advisor(s): Evelyn Hunter
GR-P 13	<b>DESIRABLE QUALITIES IN MARITAL PARTNERS FOR AFRICAN AMERICAN COLLEGE WOMEN</b> Esther Mendez*. <i>Psychology</i> , College of Education. Advisor(s): Evelyn Hunter
GR-P 14	<b>EFFECTS OF DOMESTIC ABUSE ON AFRICAN AMERICANS' ATTACHMENT STYLE</b> Natalie Rochester*. <i>Psychology</i> , College of Education. Advisor(s): Evelyn Hunter
GR-P 15	<b>HOW FATHERLESSNESS RELATES TO ACADEMIC ACHIEVEMENT, DELINQUENT BEHAVIOR AND SEXUAL BEHAVIOR</b> Jasmine Scott*. <i>Psychology</i> , College of Education. Advisor(s): Evelyn Hunter
GR-P 16	<b>LYSINE MEDIATION OF AVIAN NEUROENDOCRINE FOOD REGULATION</b> Ashley Payne*. <i>Biological Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Michael Ivy and Samuel Nahashon
GR-P 17	<b>SYNTHESIS OF CYCLIC SCHIFF BASES FROM 2,9-PHENANTHROLINE-1,10-DIALDEHYDE</b> Rejaul Hoq*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Mohammad Karim
GR-P 18	<b>ZnCl<sub>2</sub> CATALYZED EFFICIENT SYNTHESIS OF 1,3,4-OXADIAZOLE AND 1,3,4-THIADIAZOLE</b> Md Anisur Rahman*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Mohammad Karim
GR-P 19	<b>CLOSTRIDIUM DIFFICILE: AN EMERGING FOODBORNE PATHOGEN?</b> Kunle Joshua*. <i>Family and Consumer Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Agnes Kilonzo-Nthenge
GR-P 20	<b>THE EFFECT OF FREQUENT POSTURAL EXERCISES ON CERVICAL AND THORACIC SPINE PAIN IN INDIVIDUALS WHO SIT FOR MORE THAN SIX HOURS PER DAY WHILE WORKING</b> Amanda Hickle*, Alex Krusic, Jamila Toranzo, Jendayi Hogan and Micah Givens. <i>Physical Therapy</i> , College of Health Sciences. Advisor(s): Kevin Lawrence
GR-P 21	<b>IDENTIFICATION OF INHERITANCE OF DISEASE RESISTANCE IN DOGWOOD AND CONSTRUCTION OF LINKAGE MAP</b> Srikanth Kodati*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Mmbaga
GR-P 22	<b>EFFECT OF BACTERIAL BIOLOGICAL CONTROL AGENTS ON SELECTED <i>CORNUS FLORIDA</i> PLANT PATHOGENS</b> Emily Rotich*, Margaret Mmbaga and Lucas Mackasmiel. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Mmbaga
GR-P 23	<b>INTERNATIONAL STUDENTS' ACCULTURATION PROGRAM: A QUALITATIVE NEEDS ASSESSMENT</b> Susan Githua*. <i>Agricultural Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): John Ricketts
GR-P 24	<b>SCALABLE EVOLUTIONARY COMPUTATION FOR EFFICIENT INFORMATION EXTRACTION IN REMOTE SENSED IMAGERY</b> Laila Almutairi* and Pan Gao. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
GR-P 25	<b>CLOUD-BASED INTRUSION DETECTION AND RESPONSE TOOL FOR ANDROID SMARTPHONE DEVICES</b> Prachi Mandil*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
GR-P 26	<b>NETWORK BANDWIDTH PROVISIONING FOR ENSURING SERVICE LEVEL AGREEMENT (SLA)-BASED SERVICE GUARANTEES</b> Manu Misra*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
GR-P 27	<b>SMARTPHONE BOTNET MALWARE ANALYSIS</b> Prasanthi Vankayalapati*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
GR-P 28	<b>WILL CAREGIVERS 18 YEARS OF AGE OR OLDER EXPERIENCE A HIGHER RATE OF PHYSICAL STRESS OR EMOTIONAL STRESS WHILE PROVIDING CARE A MINIMUM OF 20 HOURS PER WEEK TO A CARE RECEIVER WHO IS OVER THE AGE OF 30?</b> Erin Cleary*, Casey Callis, Jourdan Kirk and Adrienne West. <i>Occupational Therapy</i> , College of Health Sciences. Advisor(s): Larry Snyder
GR-P 29	<b>WILL FINE MOTOR ABILITY, GRIP STRENGTH, OR PINCH STRENGTH BE A BETTER PREDICTOR OF HANDWRITING LEGIBILITY?</b> Ryan Stornes*, Joey Beach, Andrew Kurek and Dan Grider. <i>Occupational Therapy</i> , College of Health Sciences. Advisor(s): Larry Snyder
GR-P 30	<b>DOES VERBAL ENCOURAGEMENT INFLUENCE THE SPEED OF FINE MOTOR TASKS?</b> Aaron Thomas* Andrea Faugstad, Grace Pitts, Meghan Meehan and Catherine McGuire. <i>Occupational Therapy</i> , College of Health Sciences. Advisor(s): Larry Snyder
GR-P 31	<b>THE COMPREHENSIVE CRIME CONTROL ACT OF 1984 AND THE EFFECT OF INCENTIVE STRUCTURE ON ENFORCEMENT BEHAVIOR</b> Jessica Huddleston*. <i>Public Administration</i> , College of Public Service & Urban Affairs. Advisor(s): Meg Streams

## P R E S E N T A T I O N   S C H E D U L E S

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- GR-P 32      **THE DIFFUSION OF GOVERNANCE IN STATE ECONOMIC DEVELOPMENT**  
Kenyatta Lovett\*. *Public Administration*, College of Public Service & Urban Affairs. Advisor(s): Meg Streams
- 
- GR-P 33      **HOW DOES SOUND DELIVERY METHOD AFFECT THE READING COMPREHENSION OF GRADUATE STUDENTS LISTENING TO MUSIC**  
Olivia Roney\*, Nicole Sutton, Tia Sneed and Farrah Lowery. *Occupational Therapy*, College of Health Sciences. Advisor(s): Christine Watt
- 
- GR-P 34      **THE EFFECTS OF HANDWRITING VERSUS TYPING ON SHORT TERM MEMORY**  
Michael Trimble\*, Michael Anne Brown, Christopher d'Aquino and Heather Sprunger. *Occupational Therapy*, College of Health Sciences. Advisor(s): Christine Watt
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- GR-P 35      **DOES PROPENSITY TO TYPE VERSUS WRITE HAVE AN EFFECT ON GRIP OR PINCH STRENGTH**  
Chelsea Whatley\*, Cait Rocco, Katie Sellers and Terri Ellison. *Occupational Therapy*, College of Health Sciences. Advisor(s): Christine Watt
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- GR-P 36      **EFFECTS OF PENTACHLOROPHENOL AND DICHLORODIPHENYLTRICHLOROETHANE EXPOSURES ON SECRETION OF TUMOR NECROSIS FACTOR ALPHA FROM HUMAN IMMUNE CELLS**  
Leon Drabo\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Whalen
- 
- GR-P 37      **TETRABROMOBISPHENOL A DYSREGULATES INTERLEUKIN 1 BETA SECRETION FROM IMMUNE CELLS**  
Sharif Anisuzzaman\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Whalen
- 
- GR-P 38      **EFFECTS OF TRIBUTYLTIN EXPOSURES ON SECRETION OF INTERLEUKIN 1 BETA FROM HUMAN IMMUNE CELLS**  
Shyretha Brown\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Whalen
- 
- GR-P 39      **ALUMINUM EFFECTS ON THE EXPRESSION OF PROTEINS AND ANTIOXIDANT ENZYMES IN TOMATO FRUIT TISSUES**  
Ikenna Okekeogbu\* and Sasikiran Sangireddy. *Agricultural Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Suping Zhou
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- GR-P 40      **IDENTIFICATION OF DROUGHT-INDUCED LEAF PROTEOMES IN SWITCHGRASS**  
Zhujiya Ye\*. *Agricultural Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Suping Zhou, Theodore W. Thannhauser, Chihli Yu and Dafeng Hui
- 
- GR-P 41      **IDENTIFICATION OF MOLECULAR AND PHYSIOLOGICAL CHANGES IN TOMATO IN RESPONSES TO ALUMINUM STRESS**  
Sasikiran Sangireddy\* and Ikenna Okekeogbu. *Agricultural Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Suping Zhou
- 
- GR-P 42      **CLONING OF GENES ENCODING FOR CELLULOLYTIC ENZYMES FROM METAGENOME IN GOAT'S RUMEN**  
Santosh Thapa\* and Hui Li. *Agricultural Sciences*, College of Agriculture, Human and Natural Sciences. Advisor(s): Suping Zhou
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## UNDERGRADUATE POSTERS

### UNDERGRADUATE POSTER JUDGING THURSDAY APRIL 3, 2014

1:00 p. m. – 3:00 p. m. in Jane Elliott Hall Auditorium

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- UG-P 1      **PALLADIUM-CATALYZED CROSS-COUPPLING REACTION OF CARBOXYLIC ACID AND AROYL CHLORIDES FOR ANHYDRIDE SYNTHESIS**  
Sara Chrisman\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): Mohammad Al-Masum
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- UG-P 2      **STUDIES ON THE BIOACTIVE COMPONENTS OF VERNONIA AMYGDALINA**  
Jennifer Benbow\*. *Chemistry*, College of Agriculture, Human and Natural Sciences. Advisor(s): William Boadi
- 
- UG-P 3      **DISTRIBUTION OF CALCIUM BINDING PROTEINS IN THE AUDITORY CORTEX OF MACAQUE MONKEYS**  
Sterling Hubbard\* and Lisa de la Mothe. *Psychology*, College of Education. Advisor(s): Lisa de la Mothe
- 
- UG-P 4      **THE EFFECTS LIVING ARRANGEMENTS HAVE ON COLLEGE STUDENTS DIET AND HEALTH**  
Tiffany Scales\*. *Psychology*, College of Education. Advisor(s): Lisa de la Mothe
- 
- UG-P 5      **DIFFERENCES IN CAREER DEVELOPMENT AMONG STEM STUDENTS**  
DeAndre Caldwell\* and Denisha Jackson. *Psychology*, College of Education. Advisor(s): Marie Hammond
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- UG-P 6      **COMMUNICATION PARADIGMS FOR COOPERATIVE NANONETWORKS**  
Christopher Jones\* and Ryan Duncan. *Electrical and Computer Engineering*, College of Engineering. Advisor(s): Liang Hong
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# P R E S E N T A T I O N S C H E D U L E S

UG-P 7	<b>DIURNAL VARIATIONS OF LEAF PHOTOSYNTHESIS AMONG DIFFERENT WINTER GREEN WOODY SPECIES</b> Sara Chrisman*, Jessica Lozada, Camerra Miller, Rhia Nelson and Sharia Yeasmin and Morgan Zialcita. <i>Biological Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Dafeng Hui
UG-P 8	<b>DEVELOPING AN EXPERIMENTAL STRATEGY USING QPCR TO STUDY THE ROLE OF COLLAGEN IV IN REGENERATION OF NEMATOSTELLA</b> Jessica Dix*. <i>Biological Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Michael Ivy
UG-P 9	<b>DEVELOPING AN EXPERIMENTAL STRATEGY USING QPCR TO STUDY A SMAUG HOMOLOG IN REGENERATION OF NEMATOSTELLA</b> Jamal Jarrett*. <i>Biological Sciences</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Michael Ivy
UG-P 10	<b>ASSESSING THE ROBUSTNESS OF SIGNATURE RECOGNITION SYSTEMS</b> Aaron Henderson*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
UG-P 11	<b>SECURITY COMPLICATIONS IN ELECTRONIC VOTING SYSTEMS</b> Alyxandria Henry*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
UG-P 12	<b>ASSESSING THE ROBUSTNESS OF MULTI ROBOT COORDINATION IN NOISY AND JAMMING ENVIRONMENTS</b> Sameer Lodhi*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
UG-P 13	<b>A VIRTUAL AUGMENTED REALITY SYSTEM FOR TEACHING &amp; LEARNING IN MECHANICAL ENGINEERING</b> Benjamin Morton*. <i>Electrical and Computer Engineering</i> , College of Engineering. Advisor(s): Sachin Shetty
UG-P 14	<b>EFFECTS OF DIBUTYLTIN EXPOSURES ON IL-1B SECRETION FROM LYMPHOCYTES</b> Sean Tehrani*. <i>Chemistry</i> , College of Agriculture, Human and Natural Sciences. Advisor(s): Margaret Whalen
UG-P 15	<b>SOIL AND FILTER BACTERIAL RESPONSE TO SURFACTANTS AND STORM RUNOFF</b> JeTara Brown*. <i>Civil and Environmental Engineering</i> , College of Engineering. Advisor(s): Thomas Byl
UG-P 16	<b>THE TSU UNDERGRADUATE RESEARCH PORTAL</b> Dan Fishler*, Michael Williamson, and J. Ted Maxwell. Center of Excellence-Information Systems and Engineering Management. Advisor(s): Matthew Muterspaugh

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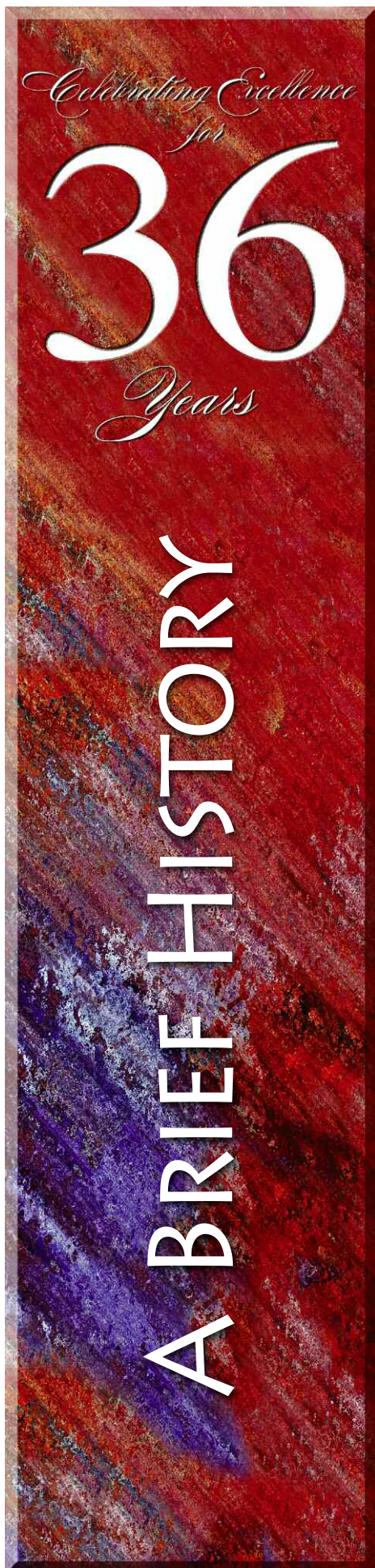


The Bachelor of Business Administration Degree (BBA)

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## THE RESEARCH SYMPOSIUM

The Annual University-Wide Research Symposium at Tennessee State University is celebrating 36 years of providing an opportunity for faculty, undergraduate, and graduate students to present their research. In 1979, the event started as Research Day and it was renamed University-Wide Research Day in 1981. During the early years, only oral presentations were given. Since 1995, both poster and oral presentations have been included. Also, in 1995, the number of presentations had increased so much that all activities could not be completed in one day. Consequently, the name was changed from Research Day to Research Symposium where there are now five days of activities, including presentations from several speakers from various disciplines. Dr. Rubye Torrey, Assistant Vice President for Research and Professor of Chemistry (Emeritus), was the first Research Day Chair (1979-1981). TSU honored Dr. Torrey at the 2008 Symposium.

In 1979, the winners of the student presentations and their advisors were: Tyrone McKinnie (Richard Hogg, Advisor), George Pruitt (Rudolph Woodberry, Advisor) and Karen Sharp (Sandra Sheick, Advisor). Faculty presenters included Baqar A. Husaini (Sociology); Robert Taylor (currently Dean of Agricultural and Environmental Sciences, Alabama A&M University); Asalean Springfield (English), and Sandra Scheick (Mathematics). Remarks were given by then-Governor Lamar Alexander, Congressman John Bray, Mayor Richard Fulton, Fisk University President Walter Leonard, Meharry Medical College President Richard Lester, and Vanderbilt University President Emmett Fields.

Over the ensuing 36 years of annual symposia, the following persons have served as symposium chairs; Rubye Torrey (1979-1981), Jacquelyn Martin (1982-1986), Joan Elliot (1987-1994), Carolyn Caudle (1995-1999), E. Lewis Myles (2000-2004), Elaine Martin (2005-2007), Brenda McAdory and Valerie Williams (2008-2010), and Carolyn Caudle and Nannette Martin (2011-2013); with current symposium chairs, Nannette Martin (2011-present) and Tamara Rogers (2014).

The Dean of the College of Arts and Sciences (Wendolyn Bell, Bobby Lovett, William Lawson, and Interim Dean Gloria Johnson) has supported the research symposium from its inception. In 1995, Maurice Mills (Director, Office of Sponsored Research) embraced the vision of the research symposium being campus wide and being supported by, not only the College of Arts and Sciences, but also by the Office of Sponsored Research with increased financial and human resources. With Carolyn Caudle (Faculty Liaison, OSR) at the helm of the research symposium leadership, activities moved to a new level. She re-established the presentation times to 15 minutes and introduced concurrent sessions. The symposium reached a peak of 130 presentations during her chairmanship. Caudle instituted advertisements in the symposium booklet from schools, departments and institutes throughout the University. Caudle's co-chair, Nannette Martin, and later Jovita Wells, assisted in the design of the Research Symposium booklets and many of the advertisement pages. In 2004, Marcus W. Shute, first Vice President for the Division of Research and Sponsored Programs, significantly increased the level of financial support for the Symposium and began the tradition of inviting TSU alumni engaged in research careers to speak to students during the awards luncheon. In 2009, as a part of TSU's grand recruitment campaign for students, the Division of Research and Sponsored Programs, under the leadership of Dr. Maria Thompson introduced unit research days for various disciplines and programs; and in 2010, she initiated the Spring Break Academy for high school students. The research symposium booklets were given to all attendees and were used as a recruitment tool for students and faculty by the University's president, School of Engineering and other departments and schools of the University. The research symposium booklet (or program) also became a means to showcase various research activities at Tennessee State University.

Interim Associate Vice President Michael Busby of the Division of Research and Sponsored Programs continues to support the chairs of the Research Symposium. Only the research titles and authors are now published in the program booklet, while the abstracts and presentations are published on Tennessee State University's research website ([www.tnstate.edu/research](http://www.tnstate.edu/research)).



Grace S. Smith, LMSW *Speaker*

“GERIATRIC  
EDUCATION  
CENTERS:  
FROM  
EVIDENCE TO  
PRACTICE”

**Grace S. Smith, LMSW, Program Manager,  
Meharry Consortium Geriatric Education Center  
Meharry Medical College**

Ms. Smith received a B.A. degree in American Government from the University of Virginia and a MSW degree with a focus on adults and aging from the University of Georgia.

Her professional career experience includes, developing Elder Care HR policies for the U.S. Environmental Protection Agency (EPA); implementing a federal grant to assist older Georgians with developmental disabilities;

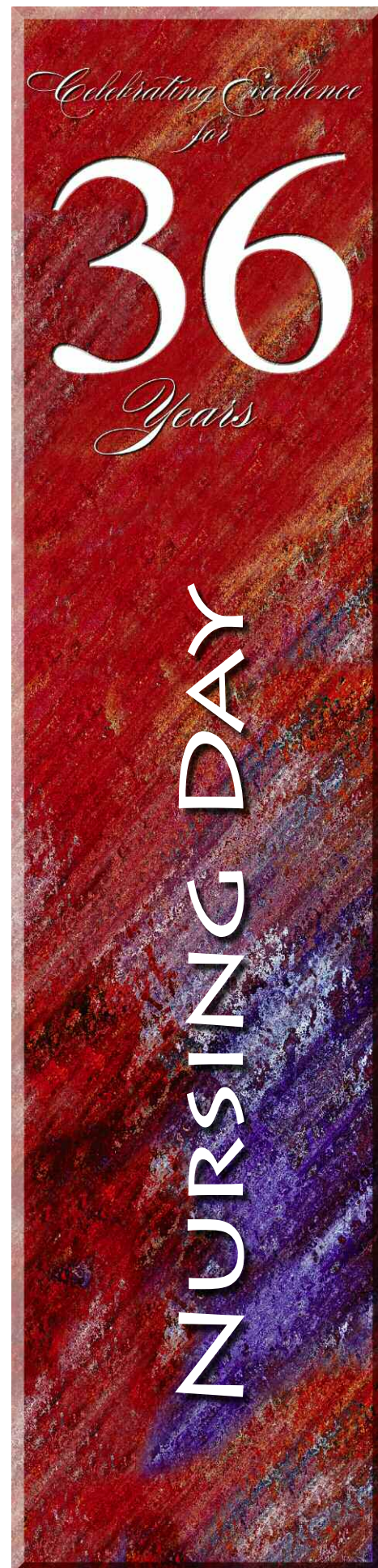
managing a Caregiver Support Program as the Coordinator of Aging Services at the Mental Health Association of Middle Tennessee; and developing and facilitating a senior transportation initiative for the Council on Aging.

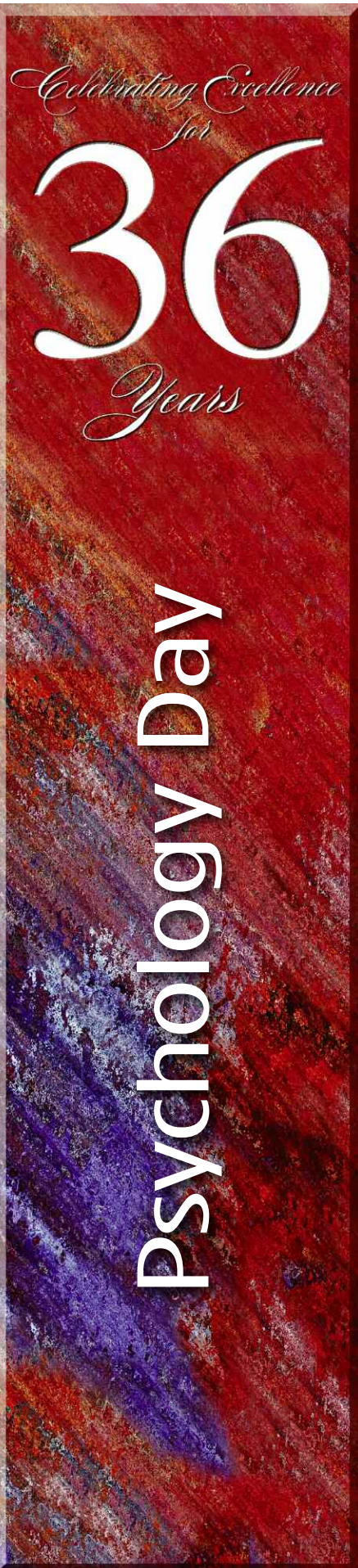
Since 2010, Ms. Smith has worked for the Dean of Meharry Medical College as the Program Manager for the Meharry Consortium Geriatric Education Center (GEC) in Nashville, Tennessee.

## Schedule of Events

**Monday, March 31, 2014 - James E. Farrell - Fred E. Westbrook Building, 118**

8:30 am	<b>Occasion - Mrs. Deirdre Jones, Chairperson</b>
8:45 am	<b>Welcome - Dr. Stephanie Bailey, Dean - College of Health Sciences Dr. Kathy Martin, Associate Dean - College of Health Sciences and Executive Director - Division of Nursing</b>
9:00 am - 9:35 a.m.	<b>MSN and BSN Poster Presentations</b>
9:40 am - 11:15 a.m.	<b>Concurrent Sessions</b>
11:20 am - 12:05 p.m.	<b>Lunch</b>
11:40 am - 12:15 p.m.	<b>Speaker, Ms. Grace S. Smith, LMSW, Program Manager, Meharry Consortium Geriatric Education Center</b>
12:20 pm - 1:00 p.m.	<b>Q &amp; A</b>





## “BRAIN NETWORKS IN HEALTH AND DISEASE”



Neil Woodward, Ph.D., *Speaker*

**Neil Woodward, Ph.D., Department of Psychiatry  
Vanderbilt University School of Medicine**

Dr. Woodward's background includes training in clinical neuropsychology, neuroimaging, and neuropsychopharmacology. Dr. Woodward received a Ph.D. in clinical psychology from Vanderbilt University in 2007 following completion of an accredited internship in clinical neuropsychology at the Edmonton Consortium Clinical Psychology Residency program. He then took a post-doctoral research fellowship in psychiatric neuroimaging in the Department of Psychiatry at Vanderbilt University School of Medicine. Dr. Woodward has been an Assistant Professor in the Department of Psychiatry and a member of the Psychiatric Neuroimaging Program at Vanderbilt since July 2009.

The Woodward Research Lab is dedicated to understanding the

etiology and treatment of schizophrenia and related psychotic disorders. Schizophrenia is a chronic, debilitating disorder that affects about 1% of the population. People with schizophrenia experience psychotic symptoms like hallucinations and delusions, negative symptoms, including social withdrawal, and moderate to severe impairments in cognitive functions such as intellectual ability, attention, and memory. We are especially interested in understanding why individuals with schizophrenia have cognitive problems and if the cognitive deficits can be alleviated. We hope that our work will shed light on the neural basis of schizophrenia, contribute to the development of better treatments, and improve the lives of those affected by this illness.

## Schedule of Events

**Tuesday, April 1, 2014 - James E. Farrell - Fred E. Westbrook Building, 118**

2:30 p.m. – 4:00 p.m.	<b>Poster Session</b> ( <i>posters will be judged from 2:30 p.m. – 3:30 p.m.</i> )
4:00 p.m. – 5:00 p.m.	<b>Oral Presentations</b>
5:00 p.m. – 5:30 p.m.	<b>Awards Ceremony</b>
5:30 p.m. – 6:30 p.m.	<b>Speaker, Dr. Neil Woodward, Assistant Professor, Department of Psychiatry, Vanderbilt University School of Medicine</b>



**William H. Robinson, Ph.D., Speaker**

**“ADDRESSING THE  
CHALLENGES OF  
HARDWARE  
ASSURANCE IN  
RECONFIGURABLE  
SYSTEMS”**

**William H. Robinson, Ph.D., Associate Professor of Electrical Engineering, Associate Professor of Computer Engineering, Director of Undergraduate Studies for Computer Engineering, Vanderbilt University**

William H. Robinson received his B.S. in electrical engineering from the Florida Agricultural and Mechanical University (FAMU), his M.S. in electrical engineering from the Georgia Institute of Technology (Georgia Tech), and his Ph.D. in electrical and computer engineering from Georgia Tech in 2003. Dr. Robinson joined the Department of Electrical Engineering and Computer Science at Vanderbilt University in 2010 where he currently is Associate Professor. He is the first African American to earn promotion and win tenure in the Vanderbilt University School of Engineering.

Dr. Robinson leads the Security and Fault Tolerance (SAF-T) Research Group at Vanderbilt University, whose mission is to conduct transformational research that addresses the reliability and security of computing systems. He collaborates with both the Institute for Space and Defense Electronics (ISDE) and the Institute for

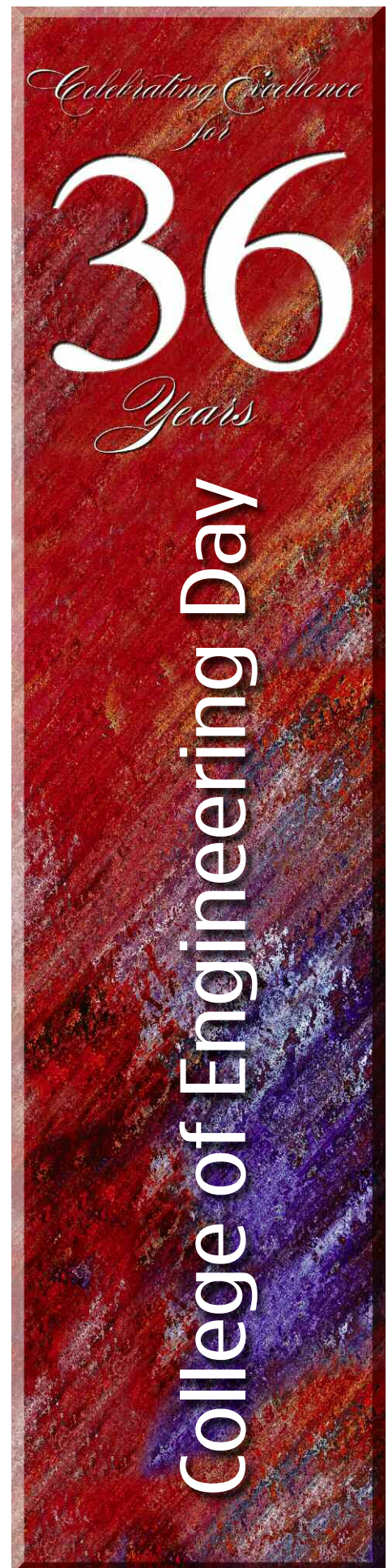
Software Integrated Systems (ISIS) at Vanderbilt. Dr. Robinson also serves as the Director of Undergraduate Studies for Computer Engineering and as the Outreach Director for the Team for Research in Ubiquitous Secure Technology (TRUST), an NSF Science and Technology Center.

Dr. Robinson’s major honors include selection for a National Science Foundation (NSF) Faculty Early Career Development (CAREER) Program Award and the Defense Advanced Research Projects Agency (DARPA) Computer Science Study Panel. He is a senior member of both the Institute of Electrical and Electronics Engineers (IEEE) and the Association for Computing Machinery (ACM); he has additional memberships in the American Society of Engineering Educators (ASEE) and the National Society of Black Engineers (NSBE). Dr. Robinson is a life member of Alpha Phi Alpha Fraternity, Inc. and a member of The 100 Black Men of Middle Tennessee, Inc.

**Schedule of Events**

**Thursday, April 3, 2014 James E. Farrell - Fred E. Westbrook Building, 118**

11:30 a.m.	<b>Welcome - Dr. S. Keith Hargrove, Dean, College of Engineering</b>
11:35 a.m.	<b>Occasion</b>
11:40 a.m.	<b>Introduction of Speaker - Dr. S. Keith Hargrove, Dean, College of Engineering</b>
11:45 a.m.	<b>Luncheon</b>
12:10 p.m.	<b>Speaker, Dr. William H. Robinson, Associate Professor, Electrical Engineering and Associate Professor of Computer Engineering, Director of Undergraduate Studies for Computer Engineering, Vanderbilt University</b>
12:50 pm	<b>Presentation of Award</b>



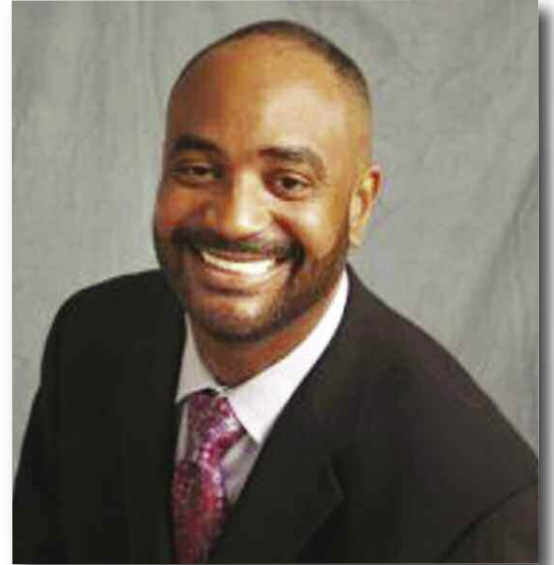
*Celebrating Excellence  
for*

36

*Years*

Biology Research Day

## “THE BIOLOGY DEGREE: BEYOND MEDICINE”



**Eric A. Floyd, MS, MBA, Ph.D., Speaker**

**Eric A. Floyd, MS, MBA, PhD**  
**Senior Vice President,**  
**Global Head of Regulatory Affairs & Quality Assurance**  
**Lundbeck, Inc.**

Dr. Eric Floyd serves as the Senior Vice President and Global Head of Regulatory Affairs and Quality Assurance at Lundbeck, Inc. He is the senior company advisor and liaison with government regulators, most significantly with the FDA, EMEA, sFDA, and other key health authorities for Lundbeck, Inc. on regulatory and quality matters. His key responsibilities include providing strategy and direction regarding the regulatory oversight of Lundbeck investigational and marketed products as well as developing long-term company-wide regulatory strategies and operating principles/practices.

Prior to joining Lundbeck, Dr. Floyd was Vice President & Global Head for Hospira, Inc. and formerly Vice President & Global Head of Respiratory, Dermatology, and Tropical Medicines - Drug Regulatory Affairs at Novartis Pharmaceutical Corporation. He was responsible for the development and marketed products globally (US, Europe, Japan, and ROW) and directed the regulatory strategies and support for therapeutic-specific development compounds (registration) and

marketed products (life cycle management) within the Novartis Pharma therapeutic portfolio. Dr. Floyd has held previous regulatory roles at Merck, Bristol Myers Squibb, Aventis Pharmaceuticals, and Cephalon, Inc.

Dr. Floyd serves as an adjunct faculty member in the Department of Neuroscience at Harvard Medical School and Wake Forest University School of Medicine. He serves as a board member to Scilex Pharmaceuticals providing guidance to clinical development programs, and he is also a member of the Board of Trustees of Meharry Medical College. Dr. Floyd completed his undergraduate degree in Biology from the University of Illinois, a Masters degree in Biology from Tennessee State University, a Doctorate in Neurophysiology from Meharry Medical College, an Executive MBA in Pharmaceutical Marketing from Saint Josephs University, and completed a degree in International Business from the INSEAD Business School in Fountainebleu, France. He is currently pursuing a JD in Health Law.

## Schedule of Events

**Friday, April 4, 2014 – McCord Hall**

- 
- 9:00 a.m. **Welcome - Dr. Brenda McAduy,** *Associate Professor, Dept of Biological Sciences*
- 
- 9:05 a.m. **Occasion - Dr. Carolyn Caudle,** *Associate Professor, Dept of Biological Sciences*
- 
- 9:10 a.m. **Introduction of Speaker - Dr. Terrance Johnson,** *Chair, Dept of Biological Sciences*
- 
- 9:20 a.m. **Speaker - Dr. Eric A. Floyd,** *Senior Vice President,*  
*Global Head of Regulatory Affairs & Quality Assurance, Lundbeck, Inc.*
- 
- 10:30 a.m. **Presentation of Award**
-

**Dr. Mark G. Hardy**, Vice President for the Division of Academic Affairs (DAA) at Tennessee State University (TSU) since July 1, 2013, oversees the College of Agriculture, Human and Natural Sciences, College of Business, College of Education, College of Engineering, College of Health Sciences, College of Liberal Arts, College of Public Service and Urban Affairs, School of Graduate Studies and Research, Division of International Studies, and the Division of Library. He has fiduciary responsibility for the DAA's budget (state and federal funds) and physical resources. Another integral part of the DAA is the Division of Research and Sponsored Programs which advances the research mission of the University.

Prior to the TSU appointment, Dr. Hardy served a distinguished tenure at Jackson State University (JSU): Provost and Vice President for Academic Affairs; Dean of the College of Science, Engineering and Technology, managing the college's 40 million dollar budget (state and federal funds); chair of the Department of Biology where he secured over 1.5 million dollars in external funding from state and federal agencies; Site Coordinator for the Mississippi Alliance for Minority Participation Program; Director for the Office of Naval Research Program; and active participant in JSU's Faculty Senate as departmental faculty senator and faculty senate secretary, vice president, and president.

Dr. Hardy continues to enjoy his professional career as an educator and higher education administrator. He previously was selected as an American Council on Education (ACE) Fellow. Dr. Hardy received Outstanding Citizen in the City of Jackson and the State of Mississippi Awards from the Jackson City Council (2008, 2011); the Tiger P.R.I.D.E. Outstanding Service to Students Award; and the \$500,000 Grantsmanship Award (2003). He has published articles in scientific journals: Journal of Phycology, Black College Magazine, and Journal of the Mississippi Academy of Sciences. Dr. Hardy has received honors and awards, including induction into the Sigma Xi Research Society, Association of Southeastern Biologists, Beta Kappa Chi Honor Society, and Who's Who in Science and Engineering.

Dr. Hardy is married to the former Ms. Vivian Lewis and is the father of two daughters and two sons: Jessica, Viviauna, Gary, and Austin.

*B.S. Biology and M.S. Biology - both from Jackson State University*

*Ph.D. Biology (Phycology) from University of Alabama (U of A).*

*The second African-American male to graduate with the Ph.D. in phycology from U of A.*

*Post-doctoral fellow at Alabama A&M University*



**Mark G. Hardy, Ph.D.**  
Speaker

*Vice President  
Academic Affairs  
Tennessee State  
University*

**Friday, April 4, 2014 12:00 P.M. – 2:00 P.M.**

**James E. Farrell - Fred E. Westbrook Building, 118  
Mistress of Ceremonies, Ms. Valerie Williams**

**Prelude**, Tennessee State University "Alma Mater", *Laura M. Averitte, 1918 (Instrumental)*

**Welcome, Mrs. Nannette C. Martin**, *Symposium Co-Chair*

**Invocation, Mr. John Barfield**

**The Luncheon**

**Presentation of Speaker, Dr. Michael Busby**, *Interim Associate Vice President for Academic Affairs for Research and Sponsored Programs*

**The Address from the Vice-President, Dr. Mark G. Hardy**,  
*Vice-President for Academic Affairs, Tennessee State University*

**Presentation of Awards, Symposium Co-chairs, and Dr. Michael Busby**

- *Speaker Award* • *Student Awards* • *Research Mentor Award*
- *Million Dollar Club for Research Inductions and Awards*

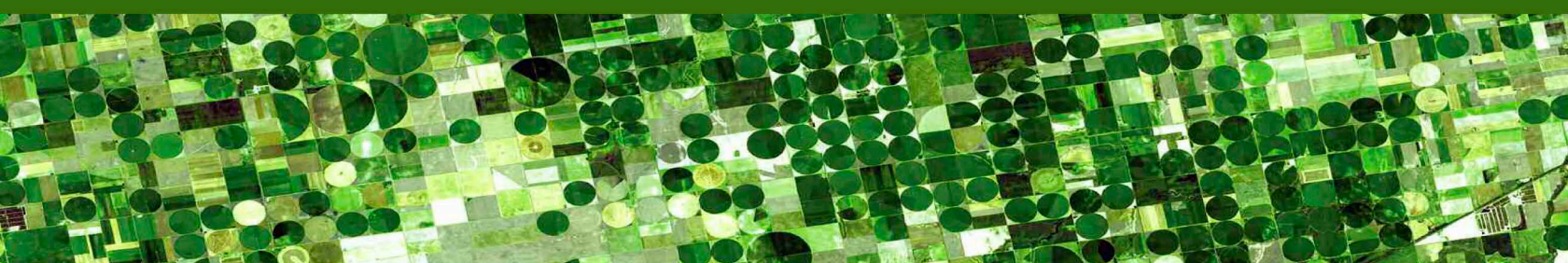
**Acknowledgements and Closing Remarks, Dr. Tamara Rogers** *Symposium Co-Chair*

**Adjournment**

# Awards Luncheon and Closing Ceremony

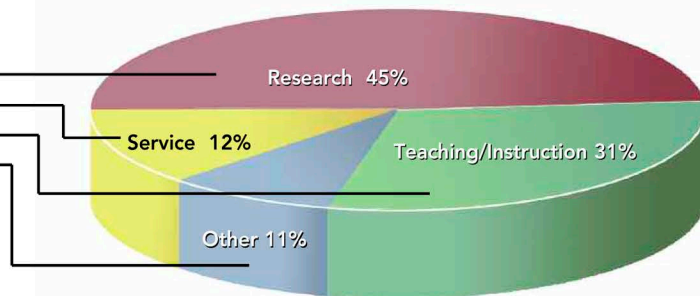
# AWARDS AND SUBMISSIONS

## Fiscal Year 2013



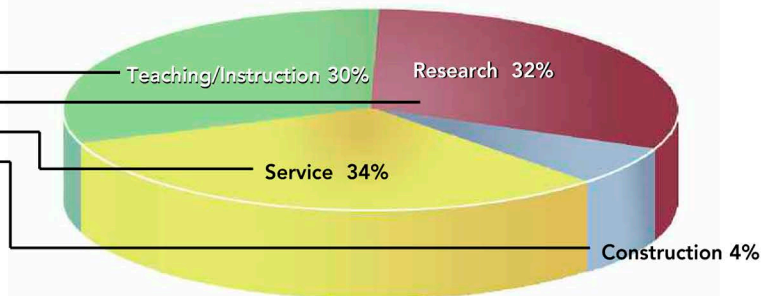
### SUBMISSIONS BY PROJECT TYPE

Research	\$21,242,887
Service	5,641,505
Teaching/Instruction	14,578,447
Other	5,333,796
<b>TOTAL</b>	<b>\$46,796,635</b>



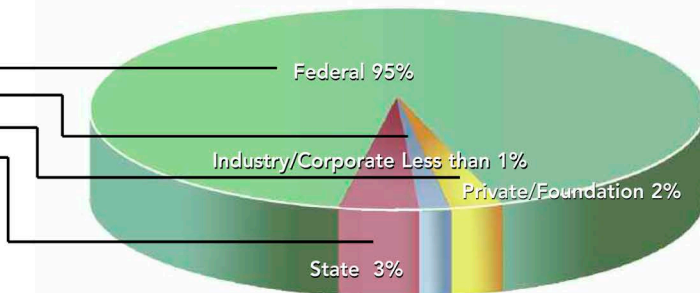
### AWARDS BY PROJECT TYPE

Teaching/Instruction	\$10,556,344 (55)
Research	11,100,301 (69)
Service	11,675,800 (50)
Construction	1,300,000 (1)
<b>TOTAL</b>	<b>\$34,632,445 (175)</b>



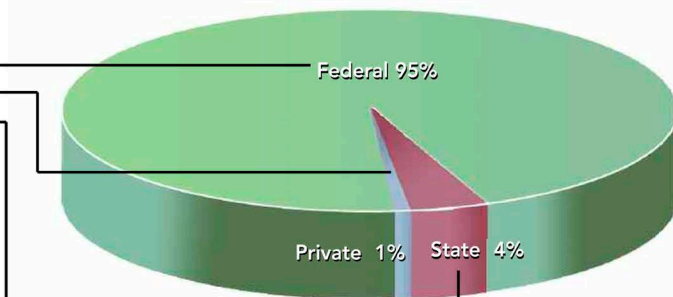
### SUBMISSIONS BY SOURCE

Federal	\$44,447,373
Industry/Corporate	107,063
Private/Foundation	967,830
State	1,274,369
<b>TOTAL</b>	<b>\$46,796,635</b>



### AWARDS BY SOURCE

Federal	\$32,850,702 (153)
Private	472,722 (8)
State	1,309,021 (14)
<b>TOTAL</b>	<b>\$34,632,445 (175)</b>





# OFFICE OF THE VICE PRESIDENT FOR ACADEMIC AFFAIRS

*“Committed to Excellence in Teaching, Research and Community Service”*

## **Academic Units and Programs**

- Center for Extended Education and Public Service
- College of Agriculture, Human, and Natural Sciences
  - College of Business
  - College of Education
  - College of Engineering
  - College of Health Sciences
  - College of Liberal Arts
- College of Public Service and Urban Affairs
  - Office of International Affairs
  - Office of Planning and Assessment
  - Research and Sponsored Programs
- School of Graduate Studies and Research
- Service Learning and Civic Engagement
  - University Libraries
  - University Honors Program
  - WRITE Center

**Dr. Mark G. Hardy**

*Vice President for Academic Affairs*

**615-963-5301**

*Celebrating Excellence*

## CONGRATULATIONS TO THE NEWEST MILLION DOLLAR CLUB MEMBERS

*Celebrating Researchers Awarded \$1,000,000 or More Per Grant*

*Four new Million Dollar Club members lead the National Science Foundation grant awarded to Tennessee State University for support of "Project Tiger Teach (PTT)."*

*Dr. Elaine Martin is the Principal Investigator. Co-Principal Investigators are Dr. Jeanetta Jackson, Dr. Heraldo Richards, and Dr. Artenzia Young-Seigler.*



### **Elaine Martin, Ph.D.**

Associate Professor, Department of Biology, College of Agriculture, Human, and Natural Sciences, Tennessee State University.

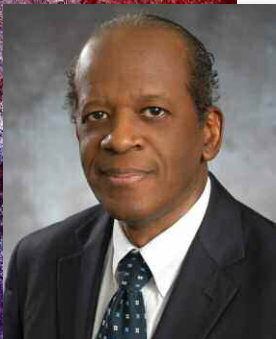
Dr. Martin was chosen as Tennessee State University 2011 "Teacher of the Year." She serves as the coordinator of the general biology courses for majors and is responsible for the corresponding curricula review and assessment. Dr. Martin also coordinates the biology teacher certification program and supervises internships for pre-service biology and chemistry teachers. She is a trained academic auditor and was team leader for the Department's 2010 Academic Audit.



### **Jeanetta Jackson, Ed.D.**

Professor, Department of Mathematical Sciences, College of Engineering, Tennessee State University.

Dr. Jackson coordinates the undergraduate mathematics program in which her duties entail a variety of activities: revising the undergraduate math curriculum, mentoring new faculty, advising math and math education majors, and serving as assessment coordinator, student teaching supervisor (math), and recruiter. Dr. Jackson served as the NSF HBCU-UP STEM Summer Institute Activity Director. Currently, she is the university math consultant for the TSU SITES-M Grant.



### **Heraldo Richards, Ph.D.**

Associate Dean and Associate Professor (Department of Teaching and Learning), College of Education, Tennessee State University.

Dr. Richards oversees the operations of the Teacher Education Program in the College, and directs the Ready2Teach initiative at TSU. He has published and presented on topics related to diversity in education, focusing on equity for individuals with disabilities, and the utilization of technology to enhance learning among students from diverse backgrounds.



### **Artenzia Young-Seigler, Ph.D.**

Assistant Professor, Department of Biological Sciences, College of Agriculture, Human, and Natural Sciences, Tennessee State University.

Dr. Young-Seigler serves as coordinator of the undergraduate non-majors biology courses, Introduction to Biology I and II, and is responsible for the design and implementation of the course curriculum. As Digital Faculty Consultant with McGraw-Hill Publishers, she trains faculty around the country in implementing content delivery within the classroom via diverse pedagogical techniques.

**Mr. Ronnie G. Brooks**  
*Facilities Management*

**Dr. Michael Busby**  
*Center for Excellence in  
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Engineering and Management*

**Dr. Katari Coleman**  
*Center of Excellence for  
Learning Sciences*

**Dr. Satinderpaul  
Devgan**  
*College of Engineering,  
Technology, and  
Computer Science*

**Dr. Soumen N. Ghosh**  
*Office of Business and  
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*College of Agriculture,  
Human, and  
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*Academic Affairs*

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*College of Engineering,  
Technology, and  
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*Center for Health Research*

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(Mathematical Sciences)*

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*Department of  
Biological Sciences*

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*Center for Excellence in  
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*School of Arts and Sciences*

**Mrs. Mary Love**  
*TRIO Programs*

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*Center of Excellence for  
Learning Sciences*

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*College of Engineering,  
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*College of Agriculture,  
Human, and Natural Sciences  
(Biological Sciences)*

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*College of Education*

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*Department of  
Biological Sciences*

**Dr. Robert F. Newkirk**  
*Department of  
Biological Sciences*

**Dr. Barbara Nye**  
*Center of Excellence:  
Basic Skills*

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*College of Engineering,  
Technology, and Computer  
Science*

**Dr. Landon Onyebueke**  
*College of Engineering*

**Dr. Herald Richards**  
*College of Education  
(Teaching and Learning)*

**Dr. Edward L. Risby**  
*Graduate School and Office of  
Sponsored Research*

**Dr. Decatur B. Rogers**  
*College of Engineering,  
Technology, and  
Computer Science*

**Dr. Lonnie Sharpe**  
*Massie Chair of Excellence in  
Environmental Engineering*

**Dr. Amir Shirkhodaie**  
*College of Engineering,  
Technology, and  
Computer Science*

**Dr. Marcus W. Shute**  
*Research and Sponsored  
Programs*

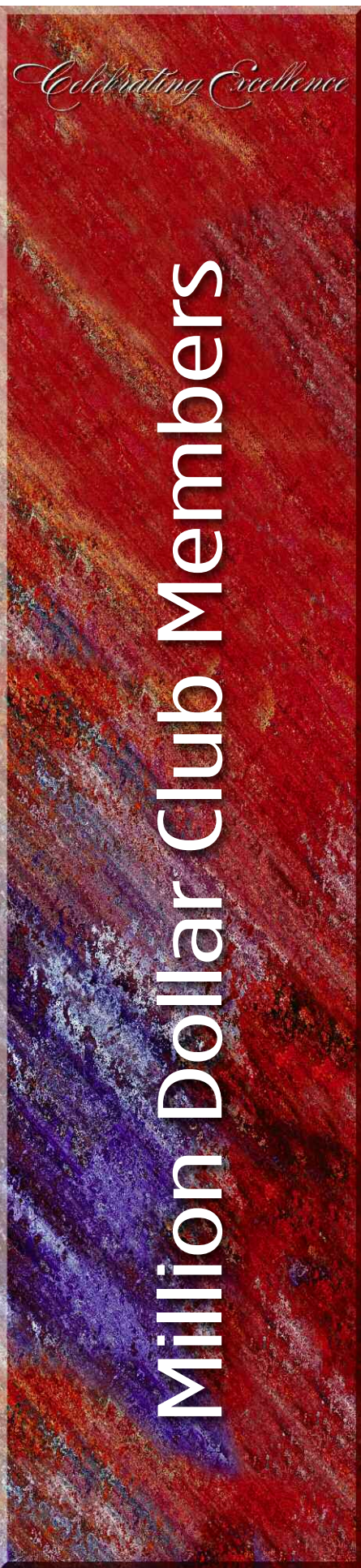
**Dr. Willard Smith**  
*Center for Excellence in  
Information Systems  
Engineering and Management*

**Dr. Jennifer Stewart-  
Wright**  
*Center of Excellence for  
Learning Sciences*

**Dr. Maria Thompson**  
*Division of Research and  
Sponsored Programs*

**Ms. Valerie Williams**  
*Center of Excellence for  
Learning Sciences*

**Dr. Artenzia Young-  
Seigler**  
*College of Agriculture,  
Human, and Natural Sciences  
(Biological Sciences)*



*Congratulations to the 35 members of the Million Dollar Club. This is an exclusive club populated by scholars who, due to their commitment to excellence, are on the cutting edge in research, teaching, and service. The steady increase in sponsored research and program support is a direct result of the million dollar projects awarded to these 35 distinguished scientists, engineers, and educators. Their efforts, although measurable in dollars, are immeasurable in terms of the positive impact their work has had on the University's ability to achieve its mission.*

# JUDGES

Dr. Mara del Pilar Aguinaga, *Meharry Medical College*  
 Dr. Donald Alcendor, *Vanderbilt University*  
 Dr. Carmen April, *The Foot & Ankle Health Care Center*  
 Dr. Earl Britt, *Vanderbilt University*  
 Dr. Kyle Brown, *Vanderbilt University*  
 Dr. Ronda Bryant, *Lipscomb University*  
 Dr. Cesar Cardona, *Meharry Medical College*  
 Dr. Xiwu Chen, *Vanderbilt University*  
 Dr. Sergei Chetyrkin, *Vanderbilt University*  
 Dr. Phillip A. Clifford, *Volunteer State Community College*  
 Dr. Christopher F. Cummings, *Vanderbilt University*  
 Dr. Steven Damo, *Fisk University*  
 Dr. Carl E. Darris, *Vanderbilt University*  
 Dr. Chandravanu Dash, *Meharry Medical College*  
 Dr. Edgar Diaz-Cruz, *Belmont University*  
 Dr. Conrad Douglas, *Capital City Dentistry*  
 Dr. Eugene Eiland, *Vanderbilt University*  
 Dr. Christopher S. English, *Vanderbilt University*  
 Ms. Nikki Fant, *ICON Clinical Research*  
 Dr. Pandu Gangula, *Meharry Medical College*  
 Dr. Robert Holt, *Meharry Medical College*  
 Dr. Sharon Horton-Jenkins, *University of Phoenix*  
 Dr. Justus Ike, *Fisk University*

Dr. Jeff Kent, *Volunteer State Community College*  
 Dr. Ewa A. Kowal, *Vanderbilt University*  
 Dr. Harvey Latimer, *Associated Dental Group*  
 Dr. Eun-Sook Lee, *Meharry Medical College*  
 Dr. Amanda R. Lowery, *Vanderbilt University*  
 Dr. Amosy M'Koma, *Meharry Medical College*  
 Dr. Dana Marshall, *Meharry Medical College*  
 Dr. Patricia McCarroll, *Fisk University*  
 Dr. Jeremy McDuffie, *Vanderbilt University*  
 Dr. Stephania Miller-Hughes, *Meharry Medical College*  
 Dr. Mukul Mittal, *Meharry Medical College*  
 Dr. Seoul Molette, *Top Flight Medical Group*  
 Dr. Susan Morley, *Lipscomb University*  
 Dr. Brittany Mortensen, *Vanderbilt University*  
 Dr. Vahid Motevalli, *Tennessee Technological University*  
 Dr. Evangeline Motley-Johnson, *Meharry Medical College*  
 Dr. Dedrick E. Moulton, *Vanderbilt University*  
 Dr. Shyamali Mukherjee, *Meharry Medical College*  
 Dr. Ahad S. Nasab, *Middle Tennessee State University*  
 Dr. Tultul Nayyar, *Meharry Medical College*  
 Dr. Brian Nelms, *Fisk University*  
 Dr. Josiah Ochieng, *Meharry Medical College*  
 Dr. Cynthia Paschal, *Vanderbilt University*  
 Mr. Marbin Pazos-Revilla, *Tennessee Technological University*

Dr. Charles Perry, *Middle Tennessee State University*  
 Dr. Shelia Peters, *Fisk University*  
 Dr. Lei Qian, *Fisk University*  
 Dr. Girish Rachakonda, *Meharry Medical College*  
 Dr. Periasamy Rajan, *Tennessee Technological University*  
 Dr. Aramandla Ramesh, *Meharry Medical College*  
 Dr. Tanu Rana, *Meharry Medical College*  
 Dr. Douglas Robinson, *Meharry Medical College*  
 Dr. Karim Salman, *Middle Tennessee State University*  
 Dr. Maureen Sanderson, *Meharry Medical College*  
 Dr. Anil Shanker, *Meharry Medical College*  
 Dr. Ujjal Singha, *Meharry Medical College*  
 Dr. Angela Southwell, *Associated Children's Dentistry*  
 Dr. LaMonica Stewart, *Meharry Medical College*  
 Dr. Isi Tolliver, *Vanderbilt University*  
 Dr. Andrew Van Schaack, *Vanderbilt University*  
 Dr. Robert Vanacore, *Vanderbilt University*  
 Dr. Catherine Wakeman, *Vanderbilt University*  
 Dr. Bryan Kent Wallace, *Fisk University*  
 Dr. Roslynn Webb, *State of Tennessee, Department of Disability Services*  
 Dr. Robert Wingfield, *Fisk University*  
 Dr. Eric Wood, *Associated Children's Dentistry*  
 Dr. Letha Woods, *Meharry Medical College*



## DIVISION OF BUSINESS AND FINANCE

OFFICE OF THE VICE PRESIDENT



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# STUDENT AWARDS

## 35TH ANNUAL UNIVERSITY-WIDE RESEARCH SYMPOSIUM 2013

Congratulations to the Tennessee State University student researchers and faculty advisors for their winning entries in the oral and poster presentation competition during the research symposium for 2013. There were 160 student authors and 21 faculty authors for the presentations.

### ORAL PRESENTATIONS

#### GRADUATE ORAL PRESENTATION - ENGINEERING I

First place	GE7	Tayo Adedokun
Second place	GE6	Husam Adas
Third place Tie	GE4	Kiara McCummings
Third place Tie	GE11	Kimberly Gold

#### GRADUATE ORAL PRESENTATION - SCIENCES I

First place	GS12	Li Hui
Second place	GS1	Abimbola Allison
Third place	GS14	Lipi Parikh

#### GRADUATE ORAL PRESENTATION - ENGINEERING II

First place	GE25	Timothy Stratton
Second place	GE14	Manu Misra
Third place	GE23	Jamal Henderson

#### GRADUATE ORAL PRESENTATION - SCIENCE II

First place	GS26	Nabil Saleh
Second place	GS20	Jennifer Cartwright
Third place	GS28	Emily Rotich

#### GRADUATE ORAL PRESENTATION - EDUCATION, MEDICAL SCIENCES, AND BUSINESS

First place	GEMB6	Alexandra Stover, Joshua Maloney, Carmen Mitchell, and Crystal Smith
Second place	GEMB4	Shari Scott

#### UNDERGRADUATE ORAL PRESENTATIONS

First place	UG10	Derek Platt
Second place	UG14	Heather Housel
Third place	UG5	Natalia Mendez and Ashley Tyler

### POSTER PRESENTATIONS

#### GRADUATE POSTER PRESENTATION - SCIENCE

First place	GP15	Tasia Hurd-Brown
Second place	GP16	Zinia Jaman
Third place	GP1	Ankit Bansal

#### GRADUATE POSTER PRESENTATION - SOCIAL SCIENCE AND EDUCATION

First place	GP35	Angela Risto
Second place	GP25	Georgetta Harris-Wyatt
Third place	GP27	Brittany LaDuke

#### GRADUATE POSTER PRESENTATION - ENGINEERING

First place	GP36	Daniel Emaasit
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#### GRADUATE POSTER PRESENTATION - HEALTH SCIENCES

First place	GP57	Charlene Saunders, Cassie Christian, and Courtney Clayton
Second place	GP49	Ross Mckenzie, Danielle Richardson, and Anne McGinn
Third place	GP55	Chris O'Brien, Sara Foster, Kayla Vance, Jonathan Brown, and Gena Thurston

#### UNDERGRADUATE POSTER PRESENTATION - SCIENCE

First place	UP9	Tasfia Islam
Second place	UP16	Jade Readus
Third place	UP4	Jessica Dix

#### UNDERGRADUATE POSTER PRESENTATION - ENGINEERING

First place	UP24	David Solomon
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#### UNDERGRADUATE POSTER PRESENTATION - SOCIAL SCIENCES

First place	UP20	Ileana Mendoza
Second place	UP23	LeAnne Zaire and Sokari Atkins

### AWARDS

#### ORAL PRESENTATION:

First place = \$250
Second place = \$100
Third place = \$50

#### POSTER PRESENTATION:

First place = \$150
Second place = \$75
Third place = \$25



### 2013 RESEARCH MENTORSHIP AWARD WINNER SACHIN SHETTY, PH.D.

Congratulations to Dr. Sachin Shetty, Assistant Professor, Department of Electrical and Computer Engineering in the College of Engineering.

Dr. Sachin Shetty was awarded this honor for serving as mentor and/or advisor to the greatest number of winning student research entries during the 35th Annual University-Wide Research Symposium, 2013. Four of Dr. Shetty's 14 student entries placed in the student research competitions. He received \$1,000 cash in recognition for his research mentorship.

#### LIST OF DR. SHETTY'S WINNING STUDENT RESEARCH MENTEES

GRADUATE ORAL PRESENTATION ENGINEERING I  
2nd Place, Husam Adas  
3rd Place (Tie), Kimberly Gold

GRADUATE ORAL PRESENTATION ENGINEERING II  
2nd Place, Manu Misra

UNDERGRADUATE ORAL PRESENTATION  
2nd Place, Heather Housel



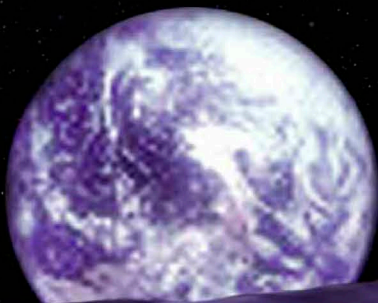
# Qualified Students Welcome



The Center of Excellence in Information Systems Engineering and Management is an interdisciplinary research facility located on the Tennessee State University Main Campus in the Division of Research and Sponsored Programs Building. At the Center, TSU graduate and undergraduate students are presented with opportunities to participate in a genuine research environment. Major areas of research include:

- Astrophysics
- Advanced Control Systems and System Identification
- Applied Mathematics

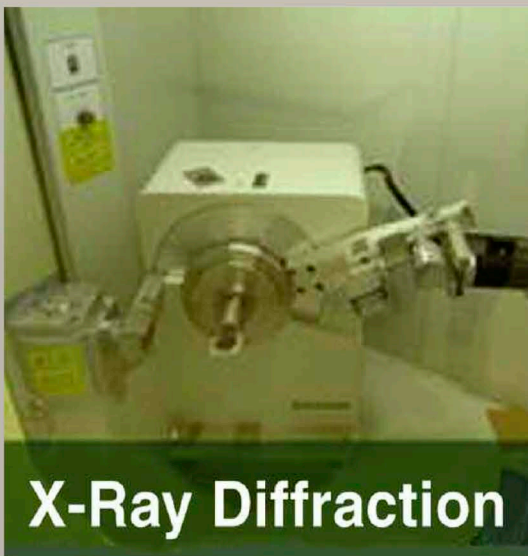
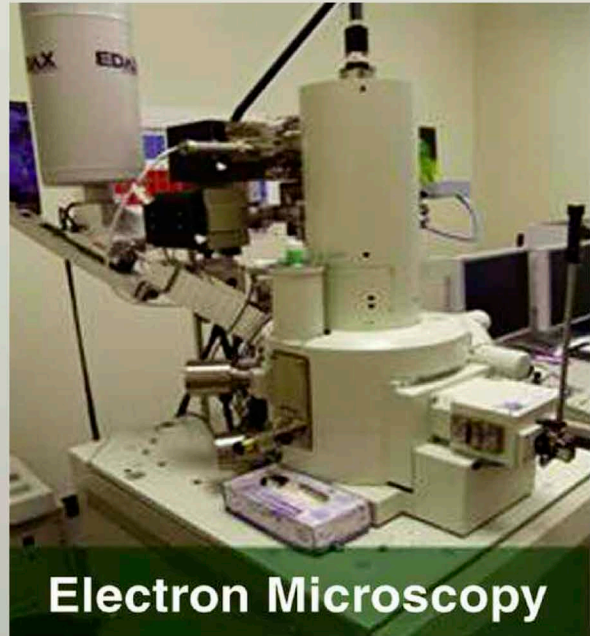
If you would like more information please call:  
Dr. Michael R. Busby, Director  
Center of Excellence in Information Systems  
(615) 277-1601  
<http://coe.tsuniv.edu>



# Nano-Bio Core Research Facility

*State-of-the-Art Science  
at your Fingertips*

***The Core Research Facility*** houses contemporary analytical tools open to all faculty on campus. Located on the second floor of the ***Research and Sponsored Programs*** building, the laboratories welcome researchers to discover the power these instruments can add to their research.



## ***Capabilities Include:***

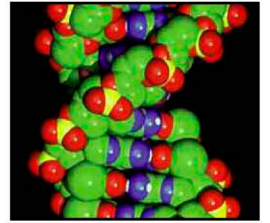
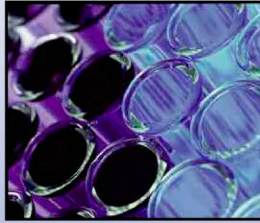
- Scanning Electron Microscopy
- Transmission Electron Microscopy
  - Flow Cytometry
  - X-Ray Diffraction
- Dynamic Light Scattering
- Inductively Coupled Plasma OES
  - Spectrophotometry
  - and more to come...

### **For more information contact:**

Research and Sponsored Programs Building  
Room 226  
Phone 615-963-2537

# TENNESSEE STATE UNIVERSITY

## THE DEPARTMENT OF BIOLOGICAL SCIENCES



### PREPARING SCHOLARS FOR THE PURSUIT OF RESEARCH CAREERS IN ACADEMIA, GOVERNMENT AND INDUSTRY

**The Department of Biological Sciences  
offers B.S., M.S. and Ph.D. degrees**

To inquire about Graduate or Undergraduate Programs, contact:

Dr. Terrance Johnson, Department Head

Email address: TJohnson@tnstate.edu • Telephone: (615) 963-5681



#### DEGREE PROGRAMS

Master of Social Work

Bachelor of Science in Social Work  
Child Welfare Certification

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Minor in Sociology

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Nashville, TN 37209-1561  
Phone: 615.963.5511  
[www.tnstate.edu/cpsua/degrees](http://www.tnstate.edu/cpsua/degrees)

COLLEGE OF PUBLIC SERVICE AND URBAN AFFAIRS  
DEPARTMENT OF SOCIOLOGY, SOCIAL WORK AND URBAN PROFESSION





# SALUTING THE 36TH ANNUAL UNIVERSITY-WIDE RESEARCH SYMPOSIUM



## Science, Engineering, Mathematics and Aerospace Academy (SEMAA)

Sponsored by National Aeronautics and  
Space Administration (NASA)



The Science, Engineering, Mathematics and Aerospace Academy (SEMAA) is a national leader in K-12 education; inspiring, engaging and educating K-12 students, parents, caregivers, and teachers. Since 2004, SEMAA has engaged more than 469,000 participants.

### The Goals of the SEMAA Program are to:

- Inspire a more diverse student population to pursue careers in STEM-related fields
- Engage students, parents/adult family members and teachers by incorporating emerging technologies
- Educate students utilizing rigorous STEM curricula, designed and implemented as only NASA can

### The Key Components of Service are:

- Hands-on, Inquiry-Based K-12 STEM Curricula
- Aerospace Education Laboratory (AEL)
- Family Café
- Professional Development
- Outreach

## Tennessee Space Grant College and Fellowship Program

Sponsored by National Aeronautics and Space Administration (NASA)



Visit SEMAA online: [www.tnstate.edu/SEMAA](http://www.tnstate.edu/SEMAA)



TENNESSEE  
STATE UNIVERSITY

## College of Engineering

S. Keith Hargrove, Ph.D., *Dean*

### B.S. Degrees

Architectural Engineering

Civil Engineering

Electrical Engineering

Mechanical Engineering

Computer Science

Aeronautical and Industrial Technology

Mathematical Sciences

### M.S. Degree

Computer and Information Systems Engineering

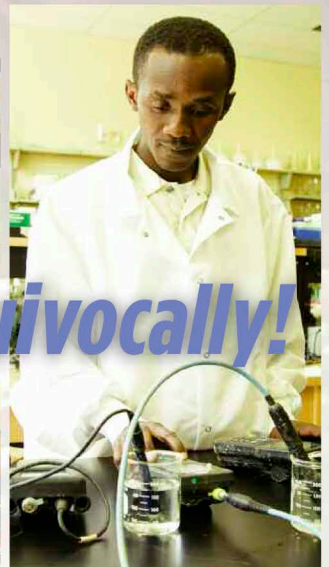
### Master of Engineering (M.E.) Degree

### Ph.D. Degree

Computer and Information Systems Engineering

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# TENNESSEE STATE UNIVERSITY

## College of Liberal Arts

*A broad education for achieving big dreams.*

### PROGRAMS

Art

Communications

Criminal Justice

English

History

Intelligence Studies

Interdisciplinary Studies

International Affairs

Foreign Languages

Geography

Music

Philosophy

Political Science

Teacher Certification

Women's Studies

Major and minor programs in the College of Liberal Arts bring academic disciplines at the heart of a university education together with the challenges and opportunities facing today's students. By engaging with rich intellectual traditions, exploring global cultures, and developing vital career skills, Liberal Arts programs prepare their graduates for resilience and adaptability, lifelong learning, and leadership in a changing world.



Symposium also reflects the College's vision of a genuinely collaborative intellectual and creative community in which its faculty and students work, discover, and learn together.

The College is proud again this year to support the Annual Research Symposium and congratulates participating faculty and students on their vital contribution to the life of the University.

**Gloria C. Johnson, Ph.D.**  
*-Dean*

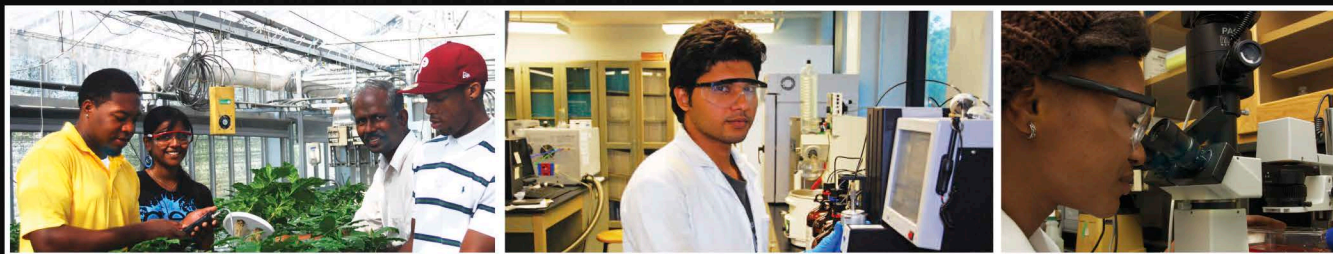


The goals of the Annual Research Symposium, now in its 36th year, exemplify the educational philosophy and mission of the College, which seeks to elevate the life of the mind on campus, to promote authentic creativity, and to honor the unique gifts, interests, and goals of each student. In its presentation of both student and faculty research, the



# College of Agriculture, Human and Natural Sciences

Chandra Reddy, Ph.D. – Dean, Director of Research, and Administrator of Extension



## ACADEMIC DEGREE OFFERINGS

### DEPARTMENT OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

#### • Bachelor of Science in Agricultural Sciences with concentrations in:

- ▶ AGRIBUSINESS
- ▶ AGRICULTURAL EDUCATION, LEADERSHIP AND EXTENSION
- ▶ ANIMAL SCIENCE/PRE-VETERINARY MEDICINE
- ▶ APPLIED GEOSPATIAL INFORMATION SYSTEMS (GIS)
- ▶ BIOTECHNOLOGY
- ▶ FOOD TECHNOLOGY
- ▶ PLANT AND SOIL SCIENCE

#### • Master of Science in Agricultural Sciences with concentrations in:

- ▶ AGRIBUSINESS MANAGEMENT AND ANALYSIS
- ▶ AGRICULTURAL EDUCATION, LEADERSHIP AND EXTENSION
- ▶ ANIMAL SCIENCE
- ▶ FOOD SUPPLY CHAIN MANAGEMENT
- ▶ PLANT AND SOIL SCIENCE

#### • Professional Science Master's (PSM) Program in Applied Geospatial Sciences

### DEPARTMENT OF BIOLOGICAL SCIENCES

#### • Bachelor of Science in Biological Sciences with concentrations in:

- ▶ GENERAL BIOLOGY (Pre-Medicine, Pre-Dentistry, etc.)
- ▶ CELLULAR AND MOLECULAR BIOLOGY
- ▶ BIOLOGY with TEACHER CERTIFICATION

#### • Master of Science in Biological Sciences

#### • Ph.D. in Biological Sciences through an interdisciplinary, joint program

### DEPARTMENT OF CHEMISTRY

#### • Bachelor of Science in Chemistry with concentrations in:

- ▶ PROFESSIONAL CHEMISTRY
- ▶ BIOCHEMISTRY
- ▶ CHEMISTRY WITH TEACHER  
CERTIFICATION
- ▶ COOPERATIVE PROGRAM IN  
PRE-PHARMACY

#### • Master of Science in Chemistry

### DEPARTMENT OF FAMILY AND CONSUMER SCIENCES

#### • Bachelor of Science in Early Childhood Education

#### • Bachelor of Science in Family and Consumer Sciences with concentrations in:

- ▶ CHILD DEVELOPMENT and FAMILY RELATIONS
- ▶ DESIGN
- ▶ FASHION MERCHANDISING
- ▶ FAMILY and CONSUMER SCIENCES EDUCATION
- ▶ FOODS and NUTRITION (Dietetics)
- ▶ FOOD SERVICE MANAGEMENT

#### • Certificate in Family Financial Planning

## EXTENSION

Performing public service across Tennessee in areas of food, agriculture, environmental science, and consumer sciences through the Cooperative Extension Program.



## CONTACT INFORMATION

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## RESEARCH

### Conducting a multi-million dollar research program:

- Agriculture, Biology, and Chemistry projects in research laboratories at Nashville
- The Research and Education Center at Nashville
- Research and Education Center at Cheatham County
- The Otis L. Floyd Nursery Crop Research Center at McMinnville
- Center for Prevention Research, Nashville
- International Agricultural Programs (IAP)

Agricultural Biotechnology Building erected in 2014. Supported by USDA-NIFA 1890 Facilities Grant Program.