



Undergraduate
Research Center

U R S C A S C E N E



Vol. 1 No. 2

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**Special points
of interest:**

- **URSCA Proposal Deadline**
10/2/07
- **URC has new home:** 123A
Ingram Bldg.
- **URC Website:**
www.mtsu.edu/~urscp/index.html

From the Director

Over the past several months, people have asked me to explain the difference between URSCA and URC. The Undergraduate Research Center (URC) is an administrative structure whose mission is to promote and champion an institutional change of culture to one of student-centered inquiry and scholarship. The URC is a clearinghouse for information regarding all such programs aimed at involving students in research and creative activity. Programs and activities on campus that support UG scholarship include STEP^{MT},

the McNair Program, TLSAMP, the TN Undergraduate Social Science Symposium, Scholars Week, and URSCA.

The purpose of the Undergraduate Research, Scholarship, and Creative Activity (URSCA) Committee is to provide financial support to undergraduate students who want to do research and creative work. Its membership represents all colleges on campus and its budget is \$120,000 per year. Applications are accepted twice per year. Much more information

about both the URC and URSCA is available on their revised websites.

I hope this issue of the newsletter gives you a good sense of how active MTSU's undergraduate students are in research and creative activity. Through their efforts, MTSU is becoming known around the world! Congratulations to all of them and to their faculty mentors who guided them through their process of discovery.

Sincerely,
Dr. Diane Miller, Director

MTSU's Posters At The Capitol program Receives the TBR Academic Excellence Award



Last February, 7 MTSU undergraduate students were selected to present their research at the Tennessee State Capitol for the annual Posters at the Capitol presentation. In June, President Sidney McPhee and Dean Thomas Cheatham accepted the award for Academic Excellence on behalf of MTSU at the Tennessee Board of Regents Board Meeting. This was an outstanding honor, and we want to congratulate all students and mentors who had posters displayed.

URSCA Announces Undergraduate Recipients for the Summer and Fall 2007

The Undergraduate Research and Creative Activity Committee (URSCA) awarded over \$59,000.00 last April to students who applied to pursue research or creative activity in their field of interest. This amount was awarded in stipends, supplies and travel to 31 students who applied to either be an assistant or a scholar. The 12 students funded at the Assistant level contributed to a faculty member's project, and those 19 students funded at the Scholar level took more ownership of their project while collaborating with one or more faculty members. The committee received another record setting number of 49 proposals to review, with the majority (13) coming from the College of Basic and Applied Sciences. Students from the College of Liberal Arts submitted 12 proposals, while students from the College of Education and Behavioral Science contributed 4. Mass Communication also had two proposals submitted by students in Recording Industry. Our congratulations to all students and faculty mentors!

12 Assistants:

Salina Branson	Emily McDonald
Cameron Chiles	John Neuhoff
Sandra Franks	Amy Petty
Hannah Green	Chandlin Ringgold
Meggan Haase	Erica Roe-Fehrman
Heather Lee	Rachel Lampley

19 Scholars:

Evan Barker	Megan Imboden	Leonela Carriedo
Taylor Barnes	Teresa Ingalls	Mallory Faulkner
Cassandra Boller	Dione Johnson	Eric Fields
Brandon Bouchillon	Joshua Parker	John Ingle
Nate Brady	Matthew Schmidt	Amy Petty
Jeremy Curtis	Chad Wilson	Andrea VanHoozer
		Jazmin Johnson-Baxter

Recording Industry Scholar Spends his Last Semester with the Pros

Chad Wilson spent his summer working on his URSCA project, *Multi Platinum Pro Tools: Mixing with the Pros*, which is the third and capstone piece to a 3 DVD series. In this project he worked with independent producer and engineer John Merchant, who is well respected in the industry for his work with the Bee Gees, Celine Dion, Toni Braxton, R. Kelly, Lenny Kravitz, Barbra Streisand, Michael Jackson, Richie Sambora and others. In this series Merchant walks the viewer through 8 hours of a real mixing session, sharing his most prized secrets to mixing multiple platinum selling records. The viewer is supplied with a real Pro Tools session and can follow along with Merchant through the mix, learning first hand from the pro. Chad says, "This type of experience would take an audio intern years of long days to acquire."



Nathan Adam, Chad's mentor and the lead producer on the MPPT series, has been working closely with Sweetwater in Indiana to get the series distributed through their well respected audio retail store and website. The 1st DVD in the series includes a book and condensed DVD that has nearly sold through one printing with the national publisher Focal Press. The team plans to submit a test chapter to Focal for the Mixing series with John Merchant. For more information visit www.multiplatinumprotools.com.

Chad Wilson, Recording Industry August 07 Graduate

"This type of experience would take an audio intern years of long days to acquire."

Tennessee Undergraduate Social Science Symposium Nov 15-16

The Annual Tennessee Undergraduate Social Science Symposium will celebrate its sixteenth year at Middle Tennessee State University this coming November 15th and 16th in the James Union Building.

The current symposium began as the West Tennessee Undergraduate Sociological Symposium, which was organized in 1976 at Lambuth College in Jackson, Tennessee, by Dr. Rodger Bates. In 1993, Dr. Bates left Lambuth and asked that MTSU assume sponsorship of the program. The move to Middle Tennessee brought a name change -- The Tennessee Undergraduate Sociological Symposium, as well as a leadership change; Professor Ben Austin assumed the role of organizer. The name was changed again in 1996 to the Tennessee Undergraduate Social Science Symposium to reflect the involvement of a wide range of students from Liberal Arts disciplines and the Honors Program.

The Symposium is modeled after a typical professional conference with students presenting their research papers to an audience. Each topical section is followed by an open discussion of the issues raised by the presenters. The preparation of papers fosters a closer relationship between faculty and students as they work together to produce a quality paper and presentation; indeed a number of the student presenters are also recipients of funding through the McNair and URSCA programs. Whether a student is planning to go on to graduate school or enter the job market after graduation, the public presentation of ideas is a valuable skill, and one which can be acquired only through experience. The regional and interdisciplinary nature of the Symposium provides a rich opportunity for students from diverse academic backgrounds to meet, share ideas and compare approaches in addition to forming valuable friendships and social contacts. For more information please visit the Symposium website: www.mtsu.edu/~soc/socscisymp/symposium.html or contact the Symposium organizers, Dr. Vicky MacLean (vmaclean@mtsu.edu) or Dr. Tanya Peres (tperes@mtsu.edu).

Mr. Stephens Goes to Washington



Brent Stephens, who completed a BS in Mathematics in August, was one of only 60 undergraduate students from across the nation invited to present his work titled "Enumeration of Orientable Embeddings of Odd Graphs" at the annual Posters-on-the-Hill event in Washington, D.C., in April. Brent's work, funded by URSCA, was completed under the guidance of Dr. Xiaoya Zha. Brent is currently a Ph.D. student in the Dept of Mathematics at Indiana University.

Anthropology Students Lee and Roe-Fehrman to Present Research in Washington, D.C.

Earlier this month the American Anthropological Association (AAA) notified two MTSU anthropology students - Heather Lee and Erica Roe-Fehrman - that their research had been accepted for presentation at the annual meetings to be held in Washington D.C. November 28th-Dec. 2nd. To put this in perspective, the AAA meetings are the single most important congregation of anthropologists that exists on this planet. Erica and Heather will be presenting alongside the best and brightest from around the world! As undergraduates, they have out-competed many PhD students, as well as university professors, to secure a spot at this very competitive conference. This is quite a milestone for the Department of Sociology and Anthropology and the University. It is particularly important to note the financial assistance of URSCA and the logistical support of the Office of International Education and Exchange, both critical to Erica's and Heather's successful field work. Congratulations to them both, and their mentor, Dr. Richard Pace.

STEP^{MT}

Stepping Up Undergraduate Research

“STEPping Up Undergraduate Research at MTSU” (STEP^{MT}) is a program, funded by the National Science Foundation, designed to encourage and promote undergraduate research in science, technology, engineering, and math at MTSU. The STEP^{MT} summer program was a big success this year with lots of research going on. There were five summer teams made up of professors, undergraduates, high school students and high school teachers. The teams tackled different research problems in Biology, Chemistry, Engineering Technology, and Physics and found unique ways to solve them. There were also several students from the Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP) program participating as well.

STEP^{MT} supports numerous research opportunities throughout the academic year as well as the summer. During the fall and spring, students can apply for individual research awards in the amount of \$500 or \$1000 to conduct a research project. **The Fall 2007 Academic Year Undergraduate Research Application deadline is September 26.** Students also have the opportunity to attend the various STEP^{MT} events where they will have the chance to find out how to get involved in research and to connect with other students doing research on campus. During the spring, students can apply to participate on a Summer Research Team or to participate in the STEP-IN program which places students in internships in local businesses. For more information please visit: www.mtsu.edu/~stepmt.



Protease Involvement in Rheumatoid Arthritis

Lead: Dr. Rebecca Seipelt
Team: Nick Saites, Tamara Augustine, Kevin Akor, Chris Garner, Brandon Ladd.

“Matrix metalloproteases are a family of proteases implicated in various autoimmune diseases such as rheumatoid arthritis and cancer. Our team studied the localization of many of these proteases in human thyroid and breast tissues.”

Sequencing and Analysis of the Switchgrass Chloroplast Genome

Lead: Dr. Bruce Cahoon
Team: Jessica Webb, Ryan Purcell, Jaslynn Slack, Kimberly Hinton, June Kim.

“Our team cloned and sequenced portions of the switchgrass chloroplast genome. After 7 weeks, 43 clones were successfully prepared which cover an estimated 90,000 bases of DNA. Of these, ~60,000 bases were sequenced, which we estimated covers about half the genome.”



Aerospace Friction Stir Welding

Lead: Dr. Ahad Nasab
Team: Johnny Guidry, Virgil Donaldson, Joey Brown, Matthew Lance.

“Our team worked on an innovative joining process called Friction Stir Welding. The focus of the research was to determine the operating parameters of such welds regarding torque, feedrate, tool rpm, and tool tip design as supported by metallurgical analysis.”

Investigation of Granular Material Segregation in a Horizontal Rotating Tube from an Energy Perspective

Lead: Dr. Walter Boles
Team: Eugene Siebert, Tyrus Underwood, Jeff Martin, Matthew Clayton.

“We discovered an energy phenomenon involved in the segregation of granular materials in a rotating tube. Using black beans and rice as the granular material, a small, detectable, and consistent decrease in rotating torque was measured that correlated well with visual observations of the segregation process.”



Can We Land and Stop an Airplane on a Frictionless Surface and Generate Electricity?

Lead: Dr. Daniel Erenso
Team: Charysse Archer, Daniel Solus, Laterio Jackson, Brandi Malone, Norrishia Chesterfield.

“We demonstrated that electrical energy can be generated from a moving vehicle using magnets, toy trucks, and a solenoid. Analysis of data from commercial aircraft landing at Nashville International Airport revealed that enough energy to supply nearly 30 households is being lost on a monthly basis.”

Horse Science

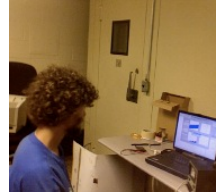


Emily McDonald, senior URSCA assistant to Dr. Patrick Kayser, is

Feeling Hormonal?

drawing a vial of blood from one of the horses being used in the study, "The Efficacy of Transdermal Progesterone Application in Horses." His blood will be tested in the lab to determine if a rise in his serum progesterone levels occurred from administration of progesterone via a transdermal patch. Blood samples were taken daily from the subjects during this particular study.

Physics



Quiet Please!

URSCA Scholar Joshua Parker, a Recording Industry and Physics senior, is working on his project, "Testing and Developing a New Method of Impulse Response." The program he is running is one that he helped write, along with other senior Physics majors. The room in front of him is a quiet room, completely isolated from the noise outside, allowing Josh to collect a "clean" sound as a reference for the upcoming acoustics measurements he will be making. Joshua is working alongside Dr. Robertson from the Physics department, and is also conducting this research for his Honors Thesis.

Recreation

Student Studies Significance of Empathy Between Two Career Choices

Are some people better suited for a job in business versus a career related to health care? Perhaps. Recreation major Sierra Douglas took 8 weeks during the summer to examine differences in emotional empathy characteristics between students majoring in 3 pre-professional therapies and students majoring in 3 fields of business. A researcher-derived demographic questionnaire and the 30-item Balanced Emotional Empathy Scale (BEES, 1996) were used to collect data from students majoring in Occupational Therapy, Physical Therapy, Recreational Therapy, Accounting, Business, and Computer Information Systems. The results indicate there is a significant difference in the empathy levels of students in preprofessional therapies versus fields of business. Sierra's work supports other research studies that have documented that pre-professionals planning to work closely with persons with disabling conditions are more effective and able to build rapport if they have a certain level of empathy. Look for a report of Sierra's work to be published in a future issue of the *McNair Research Review*.



Spring and Summer Travels Take Music Students Near and Far

This summer senior voice major Dione Johnson performed the role of Papagena from Mozart's *The Magic Flute* with the AIMS orchestra under the direction of Edoardo Muller in Graz, Austria. Her creative work was supported by URSCA and the McNair Scholars Program. She was chosen among numerous sopranos to perform this role in the Stefaniensaal of the Graz Congress Building.



MTSU guitar performance major and URSCA Scholar, Silviu Ciulei won the \$500 Second Prize at the 12th Annual Appalachian State Guitar Competition last April 15th in Boone, NC. This year's competition was exceptionally competitive and included guitarists from across the US representing universities and conservatories in Los Angeles, Chicago, Baltimore, Hartford, and Dallas. Also competing were international students representing Slovakia, Bosnia, Israel and Ecuador. (First Prize was won by a graduate student from Cal State Northridge). Silviu won other prizes in two major competitions last spring.

URSCA awardee and junior clarinet major Jazmin Baxter joined her mentor Carol Nies to travel to Italy this summer to perform with the Rome Festival Orchestra.



"This year's competition was exceptionally competitive and included guitarists from across the US"