Welcome to the 2010 Undergraduate Research Conference for Faculty, Staff, and Administrators

March 26, 2010

Sponsored by Oklahoma State Regents for Higher Education

Located at Presbyterian Health Foundation 655 Research Parkway, Oklahoma City, OK

Organized by Undergraduate Research Conference Committee
Program

2010 Undergraduate Research Conference for Faculty, Staff, and Administrators

March 26, 2010

Sponsored by: Oklahoma State Regents for Higher Education
655 Research Parkway, Oklahoma City

Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30</td>
<td>Registration and Continental Breakfast</td>
<td>Lobby</td>
</tr>
<tr>
<td>9:00</td>
<td>Welcome</td>
<td>Symposium</td>
</tr>
<tr>
<td></td>
<td>Dr. Houston Davis, Vice Chancellor for Academic Affairs, Oklahoma State Regents for Higher Education</td>
<td></td>
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<tr>
<td>9:15</td>
<td>State Data on Undergraduate Research Programs</td>
<td>Symposium</td>
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<tr>
<td></td>
<td>Dr. Linda Mason, Coordinator for Grant Writing Assistance, Oklahoma State Regents for Higher Education</td>
<td></td>
</tr>
<tr>
<td>9:45</td>
<td>Break – visit posters and network</td>
<td>Lobby</td>
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<td></td>
<td>Posters of invited students and faculty, as well as statewide data will be available</td>
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<tr>
<td>10:00</td>
<td>Student Research Panel</td>
<td>Symposium</td>
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<td></td>
<td>Benefits and Challenges of Participating in Research as an undergraduate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Northeastern State University – Sarah Richardson</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Redlands Community College - Cameron Tuthill</td>
<td></td>
</tr>
<tr>
<td></td>
<td>University of Oklahoma – Ashton Robinson</td>
<td></td>
</tr>
</tbody>
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11:00 a.m. Concurrent sessions

| Session 1: Transformative Learning – Radke & Wilson, UCO | Symposium |
| Session 2: Effects of Discrete Trial Training in Special Education – Hoppe, CU | Kairos One |
| Session 3: Evaluation of Redlands UGR Program – Evert & Hengge, RCC | Kairos Two |
| Session 4: Research is a Must in Theatre – Weast, NWOSU | OneNet |
| Session 5: Dead Skunk in the Middle of the Road – McBee, OSU | Kiva |

12:00 Luncheon – Keynote Address

Dr. Alan H Savitzky, Program Director, NSF Division of Biological Infrastructure,
National Science Foundation
1:00 p.m. Concurrent Sessions

Session 6: Faculty Panel
How Undergraduate Research is Incorporated into Programs, Benefits for Faculty, Benefits for Students
Tulsa Community College – Patty Smith
University of Central Oklahoma – Dr. Melissa Powers
Oklahoma State University – Dr. Jeffrey Hadwiger

Session 7: Tulsa Undergraduate Research Challenge Program – Caruso, TU

Session 8: A More Effective Model for REU, Especially for Underrepresented Students - Matand, LU

Session 9: OSU Student-Driven Research – Graalman & O’Neil, OSU

Session 10: Can Publishable Results be Produced? – Hubin, SWOSU

Session 11: Collaborative-Competitive Events for Undergraduate Research – Siddique, Mistree, Saha, Hardré & Bradshaw, OU

2:00 Administrators Panel
Decisions on How to Incorporate Undergraduate Research into the Institution and Benefits to Programs

Dr. Larry Devane, President - Redlands Community College
Dr. Rich Hamerla, Associate Dean, Honors College - University of Oklahoma
Dr. Stephen McKeever, Vice President for Research - Oklahoma State University
Dr. Max Simmons, Dean of Science & Mathematics, Oklahoma City Community College
Dr. Blake Sonobe, Provost - Southwestern Oklahoma State University
Dr. C. J. Vires, Vice President for Research and Development - East Central University

3:00 Adjourn – Thank you for coming
Keynote Speaker

Alan H. Savitzky has served as a rotating Program Director in the Division of Biological Infrastructure, Directorate for Biological Sciences, at the National Science Foundation since September 2008. In that capacity he has shared responsibility for several programs that support undergraduate research, including Research Experiences for Undergraduates (REU Sites) and Undergraduate Research and Mentoring in the Biological Sciences (URM). He has also shared responsibility for Improvements to Biological Research Collections (BRC).

Dr. Savitzky holds an appointment as University Professor of Biological Sciences at Old Dominion University, where he has served on the faculty for 28 years. He won a Smithsonian Predoctoral Fellowship to conduct his dissertation research at the National Museum of Natural History. Before joining Old Dominion, he served as a Lecturer at Cornell University.

Dr. Savitzky is a past President of the Society for the Study of Amphibians and Reptiles (SSAR) and the American Society of Ichthyologists and Herpetologists (ASIH). He currently serves on the Board of Directors of the American Institute of Biological Sciences and is the Treasurer of the World Congress of Herpetology.

Dr. Savitzky’s research concerns the morphology, evolutionary biology, and conservation of snakes. He has directed an 18-year study of the ecology of the state-endangered Canebrake Rattlesnake in Virginia. Currently, in close collaboration with colleagues in the U.S and Japan, he is investigating the chemical ecology of an Asian snake that sequesters toxins from toads consumed as prey and employs those toxins in its own defense.

Welcome

Dr. Houston Davis currently serves as Vice Chancellor for Academic Affairs for the Oklahoma State Regents for Higher Education. Prior to his work at OSRHE, Davis worked as Associate Vice Chancellor for Academic Affairs for the Tennessee Board of Regents, in academic leadership for Austin Peay State University, as a fiscal and academic affairs staff member for the Tennessee Higher Education Commission and as a regional counselor for the University of Memphis.

In addition to these roles, he serves as the Project Director for the National Educational Needs Index project. He received his Ph.D. from Vanderbilt University with earlier degrees from the University of Memphis and Tennessee State University.
Northwestern State University

Sarah Richardson is a senior Organismic Biology major from Edmond, Oklahoma. She first developed an interest in biological research in high school when she attended a summer research program hosted by the University of Central Oklahoma, administered by Dr. William Caire, in June of 1993 entitled “Bats, Rats, and Computers.” The primary focus was to gather field research on plants and animals and analyze the data in the lab on computers. It opened her eyes to the sciences and encouraged her natural curiosity about the world around her.

As an undergraduate she had the opportunity to work with Dr. Amy Smith on her summer research, studying the endangered species American Burying Beetle (nicrophorus americanus). She considers Dr. Smith as mentor, professor, and friend.

She is a member of Rho Theta Sigma Honor Society, Treasurer for the Pre-Professional Health Club, and also a member of the Chemistry Club. She has been married for 11 years to Shane Richardson and is a mother to six year old Seamus. Upon graduation she intends to pursue a career in Osteopathic Medicine specifically rural family practice.

University of Oklahoma

Ashton Robinson is a Graduate Research Assistant in the School of Meteorology at the University of Oklahoma. He is currently pursuing a doctorate, focusing on mesoscale processes related to severe convection and issues related to operational forecasting.

His interest in severe convection dates back to his early childhood years. When Ashton was 3 years old, he and his mother lived in a mobile home that was shifted off its foundation by strong winds, possibly a tornado. He developed a fear of thunderstorms that evolved into his passion for the study of meteorology and the will to advance the field.

With the help and guidance of Jackson State University, an internship in Norman, OK, and the National Oceanic and Atmospheric Administration’s (NOAA’s) National Weather Service, he is involved at the Weather Forecast Office in Jackson, MS and at the Storm Prediction Center in Norman.

His career goal includes a blend of research and operational meteorology with NOAA. He is particularly interested in researching various types of severe convection to improve detection and predictability of these phenomena, to contribute to the field by helping to advance forecaster abilities to make decisions and develop new techniques to compensate for the difficulties of forecasting.

Redlands Community College

Cameron Tuthill of Chickasha, is a freshman animal science major at Redlands Community College. Cameron has a real passion for agriculture and enjoys working with livestock. Cameron is a Center of Excellence Scholar and determined student. Cameron’s plan for the future is to either become a veterinarian or a Ph.D. animal scientist.
Meet the 11:00 a.m. Presenters

**Session 1: Promoting Transformation: Supporting Student and Faculty Collaborations in Research, Creative, and Scholarly Activities at UCO - Symposium**

**Gregory M. Wilson**, Ph.D., right, Executive Director, Office of Research & Grants, Academic Affairs, University of Central Oklahoma, and **William J. Radke**, Ph.D., Provost & Vice President, Academic Affairs, University of Central Oklahoma, Edmond, OK.

The University of Central Oklahoma (UCO) adopted concepts of transformative learning into the university’s academic mission, vision, and long-term goals in the fall of 2006. At UCO, we define transformative learning as a holistic process that places students at the center of their own active and reflective learning experiences.

During the past several years UCO has developed and implemented a wide range of innovative programs that support campus-wide research, creative, and scholarly activities. This presentation will examine the challenges, benefits, and feasibility of implementing these programs which are having significant impacts on student learning and success across all academic disciplines.

**Dr. Greg Wilson** is the Executive Director of the Office of Research & Grants at the University of Central Oklahoma. He earned a B.A. in Biology from Central College (Central University of Iowa), an M.S. in Biology from Fort Hays State University, and a Ph.D. in Zoology from Oklahoma State University.

Dr. Wilson is a tenured Associate Professor in the Department of Biology. Recent research projects include investigating host/parasite interactions of bats and bat flies and how climatic fluctuations which occurred during and following the Pleistocene impact the contemporary population genetic structure of several species of mammals in Oklahoma and adjacent states. Dr. Wilson has 11 publications in peer-reviewed journals.

Dr. Wilson has given over 90 presentations, the majority of which are co-authored with students at regional, national, and international conferences. His students have presented their research at the Oklahoma State Capitol and at the annual Posters on the Hill event in Washington, D.C.

In 2005, Dr. Wilson received the Vanderford Faculty Award in Support of Undergraduate Research, Creative, and Scholarly Activity and in 2007 he received the Hauptman Fellowship Award for engaging students in research. From 2004-2007, he served as a Faculty Mentor for the Summer Bridge component of the NSF-funded SURE-STEP Program.

**Dr. William J. Radke** has served as Assistant Dean of the former Office of Sponsored Research and Grants, Assistant Dean of the Jackson College of Graduate Studies and Research, Associate Vice President of Academic Affairs and most recently as Provost and Vice President of Academic Affairs at the University of Central Oklahoma.

He has been a faculty member in the Department of Biology at UCO since 1975. In addition to his administrative assignment he is currently involved in UCO’s American Democracy Project, Continuous
Quality Improvement Team, undergraduate research effort, and leadership initiatives.

Since joining the administration in 2000, Dr. Radke has continued an active research program in his area of expertise, avian biology. He has numerous refereed publications in the field of vertebrate biology including several laboratory manuals. Dr. Radke holds a B.S. and M.S. in biology from Minnesota State University and a Ph.D. in zoology from the University of Arizona.

Session 2: An Evaluation of Redlands Undergraduate Research Initiatives - Kairos 2

Amanda Evert, (right) Division Director of Agricultural and Equine Sciences; Cynthia Hengge, (below) Center of Excellence Adjunct Instructor, Redlands Community College, El Reno, OK

Research is teaching at Redlands! Undergraduate research enhances and expands teaching and learning excellence beyond the classroom and prepares graduates to contribute to their academic discipline. Goals include: 1) Prepare students to transfer to four-year degree programs with a strong understanding of, and experience in, research. 2) Prepare workforce-ready graduates who are knowledgeable consumers of research and are experienced analytical thinkers, with a strong background in experimental design. Initial evaluations of the research initiatives have shown remarkable success in students’ college experience satisfaction, improvement in retention, and continued success at the university level.

Amanda Evert is the Division Director for Agricultural and Equine Sciences at Redlands Community College in El Reno, Okla. At Redlands, Evert serves as the agricultural communications specialist and the site coordinator for the B.A.S. degree offered through Missouri State University. Each year Evert serves as a mentor for undergraduate applied research projects. She also teaches courses for RCC and MSU, including agriculture computers, leadership, and communications.

Cynthia Hengge is an Adjunct Professor in the Agricultural and Equine Science Department at Redlands Community College. She teaches Introduction to Computers for Agriculture and Methods of Scientific Research Writing to freshman. She is also an active undergraduate researcher mentor working to facilitate a positive research experience between student and professor/researchers. Her current scope of mentor projects includes agronomy, animal nutrition, animal behavior, and animal reproduction. Believing that best way to teach research is to model it, she is currently writing an article on undergraduate research at the freshman level.

Session 3: Effects of Discrete Trial Training in Special Education - Kairos 1

Sue E. Hoppe, Ph.D., Assistant Professor; Marco Columbus, Ph.D., (below left) Assistant Professor, Department of Education, Kyle Cunningham (Student, below), Cameron University, Lawton, OK

The program incorporates under-graduate research in special education disciplines. The research is conducted during a course in Behavior Management. Students enrolled in the course volunteer to do action research using an applied behavioral analysis format with children who are diagnosed with autism.
They meet two days a week for one hour and work with the children. At the conclusion of the semester, students write a functional behavioral analysis and a behavior intervention plan that was implemented. They analyze the data and discuss results.

The undergraduate students who participate in this project indicate that it greatly benefits their learning. This project was implemented in fall semesters from Fall 08 at Cameron University.

**Dr. Marco Columbus**, no biography.

**Dr. Sue Hoppe** received a Doctorate in special education from the University of Oklahoma in 2003 and began teaching at the university level (undergraduate and graduate classes in special education). Her current research is on autism, funded by Cameron University’s Intramural grant funding, on the Effects of Discrete Trial Interventions on Communication Skills for Children with Autism. Dr. Hoppe has 22 years of teaching experience (two in regular education and 20 in special education) in public schools in areas of Specific Learning Disabilities, Multiple Disabilities, Mental Retardation, Other Health Impaired, and Autism.

**Kyle R. Cunningham** is a special education teacher in Lawton Public Schools, and a 2009 Cameron University graduate with a B. S. in Elementary Education (cum laude, with an endorsement in special education. He retired from the U.S. Army after 20 years of service, and attended CU, pursuing a degree in elementary education.

In his classes in special education, Kyle provided in-home Applied Behavioral Analysis (ABA) tutoring for children with Autism Spectrum Disorder. In the process of being trained in ABA and gaining experience working with children, he participated in the development and conduct of active research to discover the effectiveness of the use of ABA therapy in public school classrooms. He is currently teaching in a self-contained class for students with Autism in Lawton Public Schools.

**Session 4: Dead Skunk in the Middle of the Road, or Incorporating Research into Zool 4174 Mammalogy - Kiva**

Karen McBee, Ph.D., Professor & Curator of Vertebrates, Department of Zoology and Collection of Vertebrates, Oklahoma State University, Stillwater, OK

ZOO 4174 covers ecology and biogeography of mammals. To incorporate ‘hands-on’ research experience, I began the “Great Payne County Road-Kill Survey.” One class is devoted to hypothesis development, design, and controls. Teams of 4 students meet with me to discuss specific hypotheses and methods. Once approved, teams begin 4 weeks of data collection over mapped routes recording mammals killed by vehicles. Another class covers statistics and manuscript preparation. Teams analyze data, ‘submit’ a manuscript, receive ‘editor’s comments’, and turn in a revised manuscript for final grade. Students gain experience in writing as they become acquainted with data collection and analysis and the process of publishing scientific literature.

**Karen McBee** grew up on a farm in central Texas and learned to respect the land from her parents, which grew into a desire to be a teacher/researcher in environmental biology. She
received the Ph.D. degree in Wildlife and Fisheries Sciences from Texas A&M University, completed postdoctoral training in the Section of Mammals at Carnegie Museum of Natural History, and joined the faculty of the Department of Zoology at OSU in 1987.

McBee has taught vertebrate morphology, mammalogy, and team-taught the biology of birds and mammals. Her research interests are focused on how human alteration of the environment affects populations of animals. She and her students have worked on bats, rats, mice, frogs, and turtles at sites impacted by pesticides, petrochemical refinery wastes, coal mining, and lead and zinc mining. Currently McBee is Professor of Zoology and Curator of Vertebrates for the OSU Collection of Vertebrates.

Session 5: Research Is a Must in Theatre - OneNet

Kimberly Weast, M.F.A., Associate Professor of Theatre, Northwestern Oklahoma State University, Alva, Oklahoma

Undergraduate theatre students/artists obviously research playwrights and literature. However, far more research is done than a non-theatre professional imagines. This presentation will look at how research by undergraduates, in all areas of theatre, is a fundamental element in training a student/artist to become a theatre professional. A theatre professional must address the four functions of art as one presents an ephemeral art form. Through research a student/artist is able to appropriately affect the functions of therapy, artifact, political and social commentary and entertainment.

Kimberly K. Weast is an Associate Professor of Theatre and Managing/Technical Director of Herod Hall Auditorium at NWOSU. Weast earned her Bachelor of Science degree from Southwestern Oklahoma State University in Weatherford, Masters in Communication Arts in Theatrical Performance and Television Production from Southwestern Theological Seminary in Ft. Worth, Texas, and a Masters of Fine Arts in Theatrical Directing from Lindenwood University in St. Charles, Missouri.

Originally from Weatherford, Weast has over 20 years of experience as an instructor in communication and theatre-related courses. Prior to joining the Northwestern faculty, she held the position of Chair of the Communication Arts Department at Hannibal LaGrange College in Hannibal, Missouri, and was head of the Mass Communication program at Dallas Baptist University in Dallas, Texas. She presently serves as the Oklahoma Chair of the Kennedy Center American College Theatre Festival. The recipient of many honors, Weast has received acknowledgement for her service and dedication as a university professor, and for her exceptional ability as an artistic performer.

In 2007 she was named the Oklahoma Speech Theatre Communication Association’s Collegiate Theatre Educator of the year. She received NWOSU’s John Sheffield Teacher of the Year Award in 2008 and most recently is a recipient of a 2009 Oklahoma Higher Education Excellence in Teaching Award.
Meet the 1:00 Presenters

Session 6: Faculty Panel - Symposium
How Undergraduate Research is incorporated into Programs-Benefits for Faculty, Benefits for Students

Oklahoma State University
Jeffrey Hadwiger received his Ph.D. in Biology in 1989 from the University of California, Santa Barbara. His research includes molecular mechanisms of signal transduction in eukaryotic cell movements and differentiation, receptor and G-protein function and specificity.

University of Central Oklahoma
Melissa Powers, Ph.D., is an Assistant Professor in the Department of Kinesiology & Health Studies at the University of Central Oklahoma. Since arriving at UCO in the Fall of 2007, Dr. Powers has mentored 8 undergraduate research assistants and more than 150 undergraduate students enrolled in the Research & Evaluation course.

In this course, students complete an independent research project and present their findings at a local or state research symposium. In 2009, for her support of undergraduate research, creative, and scholarly activity, she received the UCO Faculty Award.

Tulsa Community College
Patty B. Smith, Ph.D., received a B. S. in biology (1987) and M. S. in conservation biology (1991) from Angelo State University in San Angelo, Texas. While working for the Oklahoma Biological Survey from 1989 - 1997, she studied plant taxonomy and ecology in the Ph.D. graduate program of the Department of Botany and Microbiology at the University of Oklahoma.

She has taught at the college-level for nineteen years, including six years at Tulsa Community College (TCC). Research interests are conservation biology, primarily the study of endangered and threatened species and ecoregions. She teaches an undergraduate research course in conservation biology, in which students participate in a long-term survey of the biodiversity of the native Cross Timbers on TCC West Campus.

This semester, she is teaching an undergraduate research course in plant conservation. This course emphasizes native and crop plants propagation; this includes design and development of Native American and butterfly gardens on TCC West Campus.
Session 7: Tulsa Undergraduate Research Challenge Program - Kairos One
John Caruso, Ph.D., Associate Professor, Athletic Training, University of Tulsa, Tulsa, OK

This presentation will be based on experiences as a research mentor for undergraduate students. Much of the talk will be focused on The University of Tulsa and the TURC (Tulsa Undergraduate Research Challenge) program. The presentation will feature the achievements earned by students and the academic program (Exercise and Sport Sciences Program), and how these successes benefit not only the student researchers, but also the wider community.

Dr. John Caruso is Associate Professor of Health Sciences at the University of Tulsa. He earned his Ph.D. in Exercise Physiology from the University of Miami in 1994 and completed a post doctoral assignment in Exercise Countermeasures at the Johnson Space Center in Houston in 1996. He teaches Exercise Physiology and Motor Control.

He received the 2006 Tulsa Undergraduate Research Challenge (TURC) Outstanding Mentor Award in 2006, the TUBA Mayo Research Excellence Award in 2005, and is a TURC and National Merit Scholar Mentor. His research includes the impact of resistive exercise training on the relationship between anthropometry and jump-based power indices, anthropometry as a predictor of high-speed performance and blood lactate values from high-speed exercise.

Session 8: OSU Student Driven Research - Kiva
Robert Graalman, Director, Scholar Development and Recognition, and Tim O'Neil, graduate student, Oklahoma State University, Stillwater, OK

Oklahoma State University supports student-driven research in all fields of study through a unique constellation of funding opportunities from matriculation to graduation. OSU grants scholarships to promising freshmen in any discipline to extend their education beyond the classroom by engaging in research under the guidance of experienced faculty mentors and offers considerable grants to undergraduates to conduct projects of their own design.

Students who distinguish themselves with research have been successful in many prestigious scholarship competitions—including, Rhodes, Marshall, Goldwater, etc. Research experience has also proved invaluable in helping students improve their likelihood of success in the workforce and graduate school.

Bob Graalman has worked at OSU since 1981, following receiving his BA and MA at OSU in 1970 and 1972. He received his PhD. in English literature from the University of Tulsa in 1978, focusing on the work of British poets who fought in World War 1, particularly Robert Graves, and his first teaching assignment was at Illinois State in 1978. After several years in the OSU A&S Dean’s Office, in 1988 Bob was selected to be OSU’s first merit-based scholarships director, a position he held until the Office of Scholar Development and Recognition was established later.

The Scholar Development Office is responsible for identifying and assisting students who want to increase their chances of winning major national and international scholarships, plus become better prospects for graduate schools and employment. Therefore, some curricular opportunities, research programs, and overseas travel (Cambridge and Oxford) are key elements of Bob’s activities.
Since the university’s focus on these programs took place, OSU has had 11 Truman Scholars and been named a Truman Honor College (2000), as well as producing numerous Goldwater Scholars and OSU’s first Rhodes, Marshalls, Gates/Cambridges, Mitchells, Pickerings, and Udalls—over 50 winners now from OSU. Bob was instrumental in founding the National Association of Fellowships Advisors, served two terms as president, and he writes and travels often to promote that organization’s ideals and describe OSU’s programs, which are imitated widely now around the country.

Bob teaches an “Honors Introduction to Literature” class every fall and “Windows to the World” in the spring, a debate/writing skills seminar based on current events.

Tim O’Neil is a graduate student in Early American Literature at Oklahoma State University, currently serving as the director of The Freshman Research Scholars Program in the Office of Scholar Development and Recognition—a program that provides research experiences for approximately sixty incoming freshmen each year. Having graduated from OSU in 2007 with degrees in English, History and Political Science, Tim became the state's first recipient of the Jacob K. Javits Fellowship. He is currently preparing a critical edition of Cotton Mather's letters to The Royal Society--collectively known as Curiosa Americana.

Session 9: Can Publishable Research Results be Produced in Effective Undergraduate Chemistry Labs? - OneNet

Tim Hubin, Ph.D., Associate Professor, Dept. of Chemistry and Physics, Southwestern Oklahoma State University, Weatherford, OK

The Inorganic Chemistry Lab at SWOSU follows a project format. Goals of the course are: (1) to provide rich laboratory experiences in the techniques of Inorganic Chemistry; (2) to produce publishable quality novel research results. Students carry out a multi-step macrocyclic ligand synthesis, and prepare and characterize a novel transition metal complex of their ligand.

Students prepare a paper in a journal format describing their results and give a poster session during the last day of lab. One published article in a peer-reviewed journal, and several more manuscripts in progress, have resulted from the research/lab experience accomplished by these students.

Tim Hubin teaches the Freshman Chemistry sequence, Organic Chemistry occasionally, Senior Seminar in Chemistry, and three Inorganic Chemistry courses, including the Inorganic Chemistry Lab that is the subject of his talk. Tim has redesigned the SWOSU Inorganic Chemistry Lab into a successful project-based mini-research experience where each student synthesizes and studies a unique compound beginning from common, simple starting materials.

Tim maintains an active bio-inorganic research program focused primarily on transition metal complexes as CXCR4 antagonists. At SWOSU, he has received multiple externally funded grants totaling over $600,000 that have been carried out by 21 different undergraduate researchers so far. Five of these students have already been co-authors on the six published manuscripts Tim has authored since his arrival at SWOSU in 2005, with the rest likely to follow suit. Tim and wife Becki reside in Weatherford with sons David (10) and Daniel (8).
Session 10: A Langston University model for a more effective undergraduate research experience, especially for underrepresented students -  

**Kanyand Matand**, Ph.D., Associate Professor, School of Agriculture and Applied Sciences, Langston University, Langston Traditionally, students with GPA > 3.0 have generally been selected with priority for undergraduate research internships. However, at Langston University (LU) Biotechnology Program, many GPA < 3.0 students also apply for it. This inspired us since last summer to apply the current and most effective training strategy, especially for low GPA students. 

*Unprecedentedly*, the first low GPA trainee has completed two independent research experiments whose data are currently included in two article manuscripts he is co-authoring, in less than 10 months. Three other students recruited last fall have also completed first individual experiments, and will present their results at the upcoming LU spring research symposium. 

**Kanyand Matand** currently serves as Associate Professor, Founding Director and Faculty, Center for Biotechnology Research and Education, Departments of Research and Extension and Biology, Schools of Agriculture and Applied Science and Arts and Sciences for Langston University, in Langston, OK. He joined Langston University in 1999 as a visiting professor and loved it so much he stayed. He immediately began to conduct research and bring undergraduate students into his laboratory. 

He has conducted at least 8 exemplary research projects with undergraduate students. He has received over $6 million in funding for his research and Langston University Programs. Matand developed the LU Biotech Program as a Langston University program of excellence. He earned an MS in Plant Science from Tuskegee University in Alabama in 1992 and his Ph.D. in Plant Science from Alabama A&M University, Normal, Alabama in 1999. He has contributed three book chapters and nine peer reviewed journals of his scientific research.

Session 11: Collaborative-Competitive Events as a Medium for Undergraduate Research -  

**Zahed Siddique**, (left) Ph.D., Associate Professor; **Farrokh Mistree**, (below left) Ph.D., Aerospace and Mechanical Engineering Director and L.A. Comp Chair; **Mrinal Saha**, (below right) Ph.D., Assistant Professor, School of AME; **Patricia Hardré**, Ph.D., Program Area Coordinator and Associate Professor, Educational Psychology; **Amy Bradshaw**, Ph.D., Program Area Coordinator and Associate Professor, Educational Psychology; University of Oklahoma, Norman, OK. 

The University of Oklahoma’s Formula SAE (Society of Automotive Engineers) Racing team is highly ranked in the US and world. 

Collaborative Competitive events motivate students to engage in undergraduate research out of class. Formula SAE provides students with self-directed undergraduate research and design, while working in a collaborative environment. We are in the early stages of designing, implementing and testing a four course curriculum around the SAE race car that fosters meaningful experiential learning, innovation, and the attainment of career-sustaining skills as a result of authentic research experiences. In this presentation we will highlight some of the salient features of our plan.
**Dr. Zahed Siddique** is currently working as an Associate Professor at the School of Aerospace and Mechanical Engineering of University of Oklahoma. His research interests include product family design, collaborative design, engineering education, and reverse engineering. Dr. Siddique has published over 90 peer reviewed publications in journals and conferences. He is the faculty advisor of the Sooner Racing Team (Formula SAE) of OU. He received the Ralph R. Teetor Educational Award from Society of Automotive Engineers in 2008 and Regents Award for Superior Teaching (2008). Dr. Siddique received his Ph.D. in Mechanical Engineering from Georgia Institute of Technology.

**Farrokh Mistree** holds the L. A. Comp Chair and is the Director of the School of Aerospace and Mechanical Engineering at the University of Oklahoma in Norman, Oklahoma.

Farrokh’s current education focus is on creating and implementing, in partnership with industry, a curriculum for educating Strategic Engineers – those who have developed the competencies to create value through the realization of complex engineered systems for changing markets in a collaborative, globally distributed environment. It is in this context that he enjoys experimenting with ways in which design can be learned and taught. Farrokh is a Fellow of ASME and an Associate Fellow of AIAA. Email farrokh.mistree@ou.edu

http://www.srl.gatech.edu/Members/fmistree

**Dr. Mrinal Saha** is an Assistant Professor in the School of Aerospace and Mechanical Engineering at OU. His research interests are in the areas of processing, characterization, and modeling of advanced composites, sandwich structures, thin films, advanced cellular materials, synthesis and applications of nanomaterials for hybrid multifunctional materials and structures. He has published over 25 peer-reviewed journals and over 60 conference papers. He served as a vice chair of the ASME IMECE technical committee on Composites and Heterogeneous Materials and currently serving as a chair-elect. Dr. Saha is the faculty advisor of the Sooner Human Powered Vehicle Challenge (Sooner HPV) team at the University of Oklahoma. Dr. Saha has won numerous awards including Faculty Performance Award for Research (2005).

**Dr. Patricia L. Hardré** earned her doctorate in Instructional Design & Technology, at the University of Iowa. She has been on the faculty in Educational Psychology at the University of Oklahoma since 2002. She also serves as Associate Dean of Research and Graduate Programs. Her research areas include: motivation, design of learning environments, online and hybrid instructional opportunities, and the professional development of faculty and teaching assistants.

**Amy C. Bradshaw** is an Associate Professor of Instructional Psychology & Technology at the University of Oklahoma. Her scholarly interests include visual communication, problem solving, social and cultural implications of technologies, and educational philosophy.
projects explore the overlaps (and gaps) between mental imagery, higher order thinking, and complex problem solving.

She has served as President of the International Division of the Association for Educational Communications & Technology (AECT) and as President of the International Visual Literacy Association (IVLA). She was the International Division conference planner for AECT 2005, and conference chair and planner for IVLA 2006.

She currently serves on the Executive Committee of the Southwest Center for Human Relations Studies, as a member of the OU Faculty Senate Executive Committee, and as the IPT Program Area Coordinator.
Dr. Larry Devane is President of Redlands Community College. He was recently selected by the National Governors Association (NGA) to participate in an NGA Experts Roundtable on Community College-Industry partnerships. NGA is the collective voice of nation’s governors and one of Washington, D.C.’s, most respected public policy organizations.

He has served as a community college consultant at the recommendation of the American Association of Community Colleges in the USA, Europe, and West Africa. He also continues to serve on the AACC National Homeland Security Task Force and the International Education Committee.

Phi Theta Kappa (PTK), the international two-year college academic honor society has recognized Devane for his multi-years of service to Phi Theta Kappa Oklahoma/Arkansas region as a Distinguished Presidential Ambassador. Further, PTK has awarded Devane the Shirley B. Gordon Award of Distinction. Devane is the current President of the Council of North Central Two-Year Colleges, CNCTYC, encompassing nineteen states of the Higher Learning Commission.

He has served as President of Redlands since 1990 and in 2001 was honored by the Redlands Board of Regents with the naming of a campus building, the “Larry F. Devane Multi-Media Lifelong Learning Center.”

Prior to Redlands Community College, Dr. Devane was President of Highland Community College in Highland, Kansas. He attended Coffeyville Community College, earned his bachelor and master degrees from Emporia State University and his Ph. D. degree in adult and occupational education from Kansas State University in 1975.

Dr. Rich Hamerla, Associate Dean, Honors College, University of Oklahoma Dr. Richard Hamerla is the Associate Dean of the Honors College and a Reach For Excellence Associate Professor at the University of Oklahoma.

He holds a Ph.D. from Case Western Reserve University and degrees from the University of Akron and Kent State University. Dr. Hamerla has worked on topics dealing with the history of American chemistry and physics in the late nineteenth and early twentieth centuries, scientific apparatus, science during the Cold War, and the history of biological weapons.

Dr. Stephen McKeever, Vice President for Research - Oklahoma State University Stephen McKeever is currently the Vice President for Research and Technology Transfer at Oklahoma State University and a Regents Professor in the department of physics. He joined the OSU physics faculty in 1983 and attained the rank of associate professor in 1986 and Full professor in 1990. He is currently the Executive Director of the OSU Multispectral Lab in Ponca City. His research involves radiation sensor development. Current special interests include space radiation dosimetry (with experiments aboard Shuttle, Soyuz, and ISS) to monitor radiation doses to astronauts on long-duration space flights, such as a manned mission to Mars.

Other interests include the development of techniques for environmental, medical and personal radiation dosimetry. He has authored or co-authored over 180 scientific publications and 5 books, and has 6 US patents. He is a Fellow of the American Physical Society, a Fellow of the Institute of Physics, a Member of the Health Physics Society and a Risø National Laboratory Fellow. He has served on several scientific committees of the National Council on Radiation Protection and Measurements (NCRP), and has also served co-editor-in-chief of the journal Radiation Measurements.

Dr. Max Simmons, Dean of Science & Math, Oklahoma City Community College, attended the New Mexico Institute of Mining and Technology and the University of Oklahoma. He has a B.S. in Astrophysics, a M.S. in Physics, and a Ph.D. in Educational Psychology. He served as a Professor of Physics and Astronomy at Oklahoma City Community College for nine years. For six years during that time he served as Department Chair of Physical Sciences. For the last seven years he has served as Dean of Science and Mathematics at OCCC. Research interests include the mechanics of short period binary star systems; Type I supernovae; and the mediators of stereotype threat effects on women in mathematical fields. He has contributed to, or been the PI or co-PI on grants from NSF, DOL and the OSRHE.

Dr. Blake Sonobe, Provost - Southwestern Oklahoma State University, has served for the past five years as the Senior Vice President and Provost at Southwestern Oklahoma State University. Prior to this position, he served as a faculty member and chair of the Department of Chemistry at SWOSU and as a faculty member in the Department of Chemistry at the United States Air Force Academy.

He received his B.S. in Chemistry from the United States Air Force Academy, an M.S. in Nuclear Chemistry from Texas A&M University and a PhD in Physical Organic Chemistry. His research interests have been in the area of photofragmentation mechanisms and reaction dynamics.
Dr. C. J. Vires, Vice President for Research and Development, East Central University in Ada earned a Ph.D. in Adult Learning and Higher Education from the University of Oklahoma in 2009. He also holds a Master of Education and Bachelor of Music Education from East Central University. Dr. Vires served as a public school band director for seven years and as a central office administrator for five years.

In 1999, he returned to his Alma Mater (ECU) as the Director of the Grants Research Information Center where he was promoted to his current position in November 2009. During his tenure at ECU, external funding has grown to nearly $12 million annually and often exceeds funding from state appropriations. He has successfully written grant proposals totaling more than $60 million.
Undergraduate Research Conference Committee

The committee is composed of volunteers from all three tiers of higher education in Oklahoma, community colleges, regional universities, and comprehensive universities. Members are:

**Founder and Chair - Linda Mason, Ed.D.** is Coordinator of Grants and External Funding Assistance for the Oklahoma State Regents for Higher Education (OSRHE). Dr. Mason provides grant development assistance to all Oklahoma higher education institutions. She holds an Ed.D. in Curriculum and Instruction, 1974, an M.S. in Education, 1972, from Oklahoma State University, and a B.A. in Education, 1968, from the University of Arkansas at Little Rock. Her professional background includes elementary teacher, university professor, department head, and dean.

Her professional experience includes faculty positions at Oklahoma State University, Oral Roberts University, University of Tulsa, University of Oklahoma, University of Central Oklahoma, and St. Gregory’s University, with adjunct responsibilities at several others. She has written, assisted in writing and directed projects for many state and federal grants, including Oklahoma State Regents, US Department of Education, US Department of Labor, US Department of Agriculture, National Endowment for the Humanities, National Endowment for the Arts, National Science Foundation, and many private foundations. Mason is a native Oklahoman from Coweta and lives in Edmond with her husband. They have three grown children and two granddaughters.

**Anita Blankenship, M.Ed., CRA** is Director for the Office of Sponsored Programs and Continuing Education at Southwestern Oklahoma State University (SWOSU), and has been involved in grants and contracts administration since May, 2000. She provides grants and contracts assistance in all matters related to pre-award including but not limited to grant development, submission, budgeting, contracting, subawards, and compliance.

Anita holds a M.Ed. in Educational Administration, 1995, from Southwestern Oklahoma State University, and a M.S. in Business, 1971, from University of Central Oklahoma. Blankenship is a Certified Research Administrator (CRA) from the Research Administrators Certification Council. She is a native Oklahoman from Woodward.

**Gerry Cherry, M.A., CRA** is the Grant Facilitator at the University of Central Oklahoma for the College of Education and Professional Studies. She earned a Master of Arts in English-Creative Writing in 2001 and became a Certified Research Administrator (CRA) in 2006 She holds an Oklahoma Teaching Certificate in secondary education. An Oklahoma native from Dewey, Ms. Cherry has enjoyed careers as a school teacher, a savings and loan officer, an oil lease broker (landman), a journalist/photographer, and a research administrator. She has written or collaborated on successful proposals to the National Science Foundation, the U.S. Department of Education...
TRiO and Title III grants, among others, and is a facilitator for federal grant proposal reviews. She is involved in writing, evaluating, and reviewing grants, and has been a consultant to the University of North Texas in Denton, TX and Chemeketa Community College in Salem, OR.

Penny Coggins, Ph.D. is the Vice President for Grants Development and Applied Research at Redlands Community College (RCC). Dr. Coggins has been involved in writing, evaluating and managing Title III, TRIO and Title V grants for over 25 years. She worked for 10 years at Rogers State College as Director of the University Preparatory Academy and Developmental Studies.

In 1999, Penny left Rogers State to spend four years as a consultant to colleges and universities throughout the United States, providing assistance with program development, program evaluation, grant development and grant writing. She served for three years as Director of the Title V Hispanic Serving Institutions grant at Rio Grande College in Del Rio, TX.

She is actively involved in supporting undergraduate research at community colleges. In the past three years, Penny has led efforts at Redlands resulting in more than $6,000,000 in grant funding, and has been instrumental in facilitating statewide plans for undergraduate research at community colleges in Oklahoma. Redlands is one of several community colleges throughout the United States that are partners with the Council for Undergraduate Research in a NSF planning grant to encourage community college research.

Bryan Coppedge, Ph.D., has been the Associate Dean of the Science and Mathematics Division at Tulsa Community College – West Campus since 2000. He received his Ph.D. in Zoology from OSU, M.S. in Entomology from the University of Arkansas, and B.S. in Biology from Northeastern State University. His areas of teaching include biology, zoology, ecology, environmental science, statistics, and scientific principles and ethics. His research interests are in prairie and avian ecology, land use and landscape management issues, and wildlife and habitat conservation. He has authored numerous articles and book chapters on these topics. His interests also include the promotion of science in the public arena and the pedagogy of science and mathematics education.

Susan Foster, CRA, is the Director of Research Administration, specializing in post-award management, for Northeastern State University in Tahlequah. In 1986, Susan earned a Bachelor of Science degree from Northeastern State University in Accounting with a minor in Mathematics and Business. She also holds the title of Certified Research Administrator (CRA) and is a State of Oklahoma Licensed Teacher in Mathematics. She is currently enrolled in the graduate MBA program at NSU.

In addition to specializing in grant finance and management, Susan, for the past (18) years, has been a State of Oklahoma Licensed Wildlife Rehabilitator. She has rehabilitated wildlife of all species. She and her husband own and operate Elephant Rock Nature Park. The park is a 120 acre nature reserve and offers amenities such as lodging, rafting, hiking trails and wildlife photography. It is located in Tahlequah,
Oklahoma on scenic Highway 10. In addition to her job and wildlife rehabilitation, Susan has one daughter, four boys, one granddaughter and a husband to manage. Susan’s motto in life is... get in, sit down and when necessary scream like a girl!

**Daphne LaDue** is Director and principal investigator (PI), National Weather Center Research Experiences for Undergraduates (REU) Program; a research associate, Center for Analysis and Prediction of Storms, and a doctoral candidate, adult & higher education, University of Oklahoma. She has been PI and director of the Real-World REU program at the National Weather Center since 2001. The National Science Foundation awarded her a 2-Year extension for special creativity to fund years 2004 and 2005.

Prior to directing REU, she established a research record assisting on projects as diverse as radiative transfer of ozone in the mesosphere and investigation of the utility of satellite data in severe storm identification and tracking.

LaDue is a doctoral candidate in Adult and Higher Education at the University of Oklahoma. Through her coursework she found many ways to enhance her REU program, including improved mentor training, addition of critical thinking and metacognitive research skill development, and helping participants explore how to apply their meteorological knowledge in entrepreneurial ways. LaDue has also begun applying social science research skills to the practice of meteorology with a paper forthcoming in the Bulletin of the American Meteorological Society on the critical strengths and limitations of current radar systems for National Weather Service forecasters and TV broadcasters in the southern plains.

**Kathryn (Kathi) Schoonover** is the Director of Research and Sponsored Programs at Northeastern State University (NSU) with her office located at the Tahlequah campus. Kathi has been in this position since March 2009.

She has several years experience in grant writing as a principal investigator for Tulsa Community College, Nursing Division and Allied Health Services, with one grant winning state recognition through Blue Cross and Blue Shield. She also served as grant administrator for a federally funded program for low income housing residents where she developed programs that encouraged and enhanced resident self-sufficiency.

**C. J. Vires**, Ph.D is the Associate Vice President for Research and Advancement at East Central University in Ada, Oklahoma. See picture and biography under Administration Panel.

**Vivian Williamson Whitney**, Ed.D. serves as Director for the Institute of Environmental Sciences Education and Research at East Central University.

Dr. Whitney earned an Ed.D in Higher Education Administration and Supervision from University of Houston, M.A. in African American Studies/Modern European Studies from Southern Methodist University and B. S. in General Studies/Human Growth and Development Emphasis from The University of Texas at Dallas. She
has served on seven (7) NSF review panels and one Department of Education FIPSE panel. Whitney's experience as an outside program evaluator includes programs funded by NASA, NSF and The Annenberg Foundation. She previously served as a member of the National Faculty for Yale University’s School Development Program, a K-12 reform initiative led by James P. Comer, MD. She has taught courses at University of St. Thomas, Houston Community College and Texas Southern University in Houston.

She has administrative experience in the Dallas Public Schools and with San Jacinto College, Houston, TX, as Director Community Education/Business Development. Whitney has over thirty years of experience in research, group facilitation and professional development activities.

**Gregory Wilson**, Ph.D., is the Executive Director of the Office of Research & Grants at UCO. See picture and biography under 11 a.m. Presenters.
UNDERGRADUATE RESEARCH RESOURCES

- CUR Monographs –
  
  - Broadening Participation in Undergraduate Research: Fostering Excellence and Enhancing the Impact. Edited by: Mary K. Boyd and Jodi L. Wesemann

  - Developing and Sustaining a Research-Supportive Curriculum: A Compendium of Successful Practices. Edited by: Kerry K. Karukstis and Timothy E. Elgren

  - Undergraduate Research at Community Colleges - http://www.cur.org/urcc/ Publication is available in full-text online by clicking the above link. Edited by: Brent D. Cejda and Nancy Hensel (Dr. Penny Coggins, Redlands Community College, contributed to this monograph.)

  - How to Mentor Undergraduate Researchers. By Carolyn Ash Merkel, California Institute of Technology and Shendra M. Baker, Harvey Mudd College

  - How To Develop and Administer Institutional Undergraduate Research Programs

  - How To Get Started in Research

  - Reinvigorating the Undergraduate Experience: Successful Models Supported by NSF's AIRE/RAIRE Program. Edited by Linda Kauffman and Janet Stocks, Carnegie Mellon University


- Student Assessment of Their Learning Gains SALG / URSSA - Undergraduate Research Student Self-Assessment http://www.colorado.edu/eer/research/undergradfaqs.html – SALG helps faculty assess learning in science courses. A specific version "URSSA--Second Version" of the SALG can be used to assess undergraduate student research experiences. Both instruments were developed at the University of Colorado for programs and departments to use in assessing the student outcomes of undergraduate research (UR). URSSA focuses on what students learn from their UR experience, rather than whether they liked it. If you have questions or comments about URSSA and its use, please contact Anne-Barrie Hunter at abhunter@colorado.edu.

- Understanding Science, http://undsci.berkeley.edu/ a free website resource sponsored by the National Science Foundation, University of California Museum of Paleontology of the University of California at Berkeley, in collaboration with a diverse group of scientists and teachers, and was funded by the National Science Foundation

- NSF REU Director, Victor A. Santiago, vsantiag@nsf.gov - 703-292-4673, reu.coord@nsf.gov

- NSF REU Office of Cyberinfrastructure of REU, Program Director, Dr. Robert Pennington, 703-292-7025, rpenning@nsf.gov
Index to Proceedings

Alphabetical List of Presentation Abstracts

A Langston University Model for More Effective Undergraduate Research Experience, Especially for Students of the Underrepresented Community, Matand, Kanyand…………..14
Can Publishable Research Results be Produced in Effective Undergraduate Chemistry Labs? Hubin, Tim……………………………………………………………………………..13
Collaborative-Competitive Events as a Medium for Undergraduate Research, Siddique, Zahed; Mistree, Farrokh; Saha, Mrinal; Hardré, Patricia; & Bradshaw, Amy…………14
Dead Skunk in the Middle of the Road or Incorporating Research into ZOOL 4174 Mammalogy, McBee, Karen…………………………………………………………………………9
Effects of Discrete Trial Training, Hoppe, Sue, Columbus, Marko & Cunningham, Kyle ……8
Evaluation of Redlands Undergraduate Research, Evert, Amanda & Hengge, Cynthia……8
OSU Student-Driven Research, Graalman, Robert & O’Neil, Tim………………………….….12
Promoting Transformation: Supporting Student and Faculty Collaborations in Research, Creative, and Scholarly Activities, Radke, William J. & Wilson, Gregory M…………………7
Research is a Must in Theatre, Weast, Kimberly…………………………………………...…..10
Tulsa Undergraduate Research Challenge Program Caruso, John……………………………12

Alphabetical List of Presentation Authors

Bradshaw, Amy, University of Oklahoma, p. 15
Caruso, John, University of Tulsa, p. 12
Columbus, Marko, Cameron University, p. 9
Cunningham, Kyle, Cameron University, p. 9
Evert, Amanda, Redlands Community College, p. 8
Graalman, Robert, Oklahoma State University, p. 12
Hardré, Patricia, University of Oklahoma, p. 15
Hengge, Cynthia, Redlands Community College, p.8
Hoppe, Sue, Cameron University, p. 8
Hubin, Tim, Southwestern Oklahoma State University, p. 13
Matand, Kanyand, Langston University, p. 14
McBee, Karen, Oklahoma State University, p. 9
Mistree, Farrokh, University of Oklahoma, p. 15
O’Neil, Tim, Oklahoma State University, p. 13
Radke, William J., University of Central Oklahoma, p. 7
Saha, Mrinal, University of Oklahoma, p. 15
Siddique, Zahed, University of Oklahoma, p. 14
Weast, Kimberly, Northwestern Oklahoma State University, p. 10
Wilson, Greg, University of Central Oklahoma, p. 7

Keynote Speaker

Alan H. Savitzky, Program Director, Division of Biological Infrastructure, National Science Foundation…………………………………………………………………5

Panel Discussions

Administrators Panel
Devane, Larry, President - Redlands Community College……………………………………….17
Hamerla, Rich, Associate Dean, Honors College - University of Oklahoma……………………17
McKeever, Stephen, Vice President for Research - Oklahoma State University………………18
Simmons, Max , Dean of Math and Science - Oklahoma City Community College.........18
Sonobe, Blake, Provost - Southwestern Oklahoma State University…………………………18
Vires, C. J., Vice President for Research and Development - East Central University……19
Faculty Panel
Hadwiger, Jeff, Oklahoma State University.................................................................11
Powers, Melissa, University of Central Oklahoma......................................................11
Smith, Patty B., Tulsa Community College.............................................................11

Student Researchers Panel
Richardson, Sarah, Northeastern State University.....................................................6
Robinson, Ashton, University of Oklahoma.............................................................6
Tuthill, Cameron, Redlands Community College.....................................................6

Research Resources .................................................................................................24

State Data on Undergraduate Research Programs
Linda Mason, Coordinator for Grant Writing Assistance, OSRHE............................20

UG Research Conference Committee .......................................................................20

Welcome
Houston Davis, Vice Chancellor for Academic Affairs..........................................5