

Summer/Fall 2017
Volume 2, Issue 1



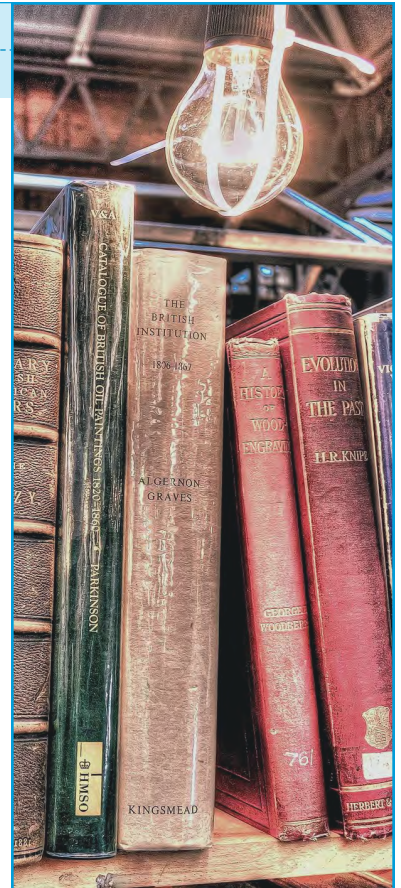
The Investigators

Tulsa Community College
GKFF Undergraduate Research Newsletter

TCC Hosts CCURI Methods Workshop

CCURI Methods Workshop May 22-24, 2017

TCC was able to host the Community College Undergraduate Research Initiative (CCURI) Lab Methods Workshop in May. Diana Spencer serves as co-PI on the national grant. Forty-two individuals participated in the workshop with participants from Queensborough Community College to Portland Community College. Participants investigated Soil Microbiology (I & II), DNA Barcoding of Insects (I&II), Genome Solver (I & II), CRISPR-Cas 9 Gene Editing (I & II), and Freshwater Sponges. Diana and colleague Virginia Balke (also co-PI) led the course in soil microbial ecology and molecular evolution using culture-dependent and culture-independent technologies. It was great fun to share the space with community college faculty from across the nation.



INSIDE THIS ISSUE

SUMMER 2017

CCURI Methods Workshop	1
CUR Flagstaff	2
Tulsa Community College Student Summer 2017 Research	3
TCC Honors Scholars Present ..	5

Fall 2017

Tulsa Research Day and Oklahoma Academy of Science	6
Introducing Experimental Research Design	7
TCC Foundation Encourages Research	7
Oklahoma INBRE supports student research travel	7
SEArCHH & ASPIRE	8
Research Externship Applications Workshop (REACH)	9
Bioinformatics Research Tools	9
Future News	10



Summer 2017 Research News



CUR Flagstaff June 27-July 1, 2017

During the Council on Undergraduate Research Undergraduate Research Collaborations Conference at Northern Arizona University in Flagstaff, Arizona, Diana was able to present **Effective Research Collaborations in the First Two Years of College: Four Case Studies** with colleagues, Virginia Balke (Pennsylvania), John VanNiel (New York) and Ashley Hagler (North Carolina). The focus of the talk was the high impact practice of providing students with early and active involvement in systematic investigation and building leadership capacity through professional development and maximizing resources through collaborations. Multiple types of collaborations were described. Diana was able to attend numerous workshops during the convention. Also, Diana served as CUR Biology Councilor during the business meeting assisting members in determining governance and strategic goals.

Summer 2017 Research News

Tulsa Community College Student Summer 2017 Research

Eleven students completed the **Applied Bioscience Research Class** during the summer of 2017. They were able to investigate the cloning and sequencing of genes found in the natural area behind the Southeast Campus. Some of the students only had one biology class before being recommended by their professor to apply for the research class. The students were able to present at the end of the summer at the joint meeting of the Tulsa Area Bioscience Educators and Researchers Consortium (TABERC), Oklahoma Society of Physiologists (OSP), and the Tulsa Chapter of the Society for Neuroscience (T-SfN) at the A.R. & MaryLouise Tandy Building at OSU/CHS on July 28, 2017. TABERC scholars also presented a slide show to the approximately fifty person audience. The summer poster was titled ***Optimization of the GAPC Gene Phylogeny in Oklahoma Plains Flora*** and authors included T.J. Brawdy, K. Casey, A. Eberhard, S. Eveland, B. Forrester, R. Hazlitt, L. Longden, A.B. Mbetsi, L. Ostmo, N. Thompson, J. Waltman with mentor D.S. Spencer.

Also other research work was presented at the same joint meeting by **Summer TABERC Scholars and OK-INBRE SMarT Scholars**. TABERC Scholars applied for positions in the spring, and they were awarded paid internships for approximately twenty hour work weeks through the eight weeks. TABERC Summer Scholar presentations included:

- ***Modulation of NGF Expression in TNBS-Induced Colitis in Rat Colony*** by student intern Christy Eslinger with mentors K.E. Miller and S. Das at OSU/CHS.
- ***GFAP-Immunolabeling in the Hindbrains of Ovariectomized Rats: Effects of Estrogen Treatment and Sodium Deficient Diet*** by student intern Stephanie D. Sandoval with mentors S.L. Core and K.S. Curtis at OSU/CHS.
- ***Effects of BFNA on Inflammatory Expression in Mouse Microglia*** by student Faiz Safdar, with mentors F.Barksdale, D.Buck, K.McCracken, and R.L. Davis at OSU/CHS.

Summer 2017 Research News

Tulsa Community College Student Summer 2017 Research Cont.

Also during the summer of 2017, two students were able to participate in the OK INBRE Summer Mentoring and Research Training (SMaRT) program. Diana Spencer applied for funds to research soil microbes with application materials including information on students Ashley Kennedy and Brian Forrester. The students and Diana worked through the summer with approximately twenty hours each week attributed to the study. The **Summer SMART Scholars Presentation, *The Rhizospheric Bacterial Diversity between Soil Samples Taken from Three World Biomes Using 16S rRNA Gene*** was presented by students Ashley Kennedy and Brian Forrester.

On Friday, July 14, TCC Oklahoma INBRE student researchers presented their research at **the INBRE Summer Research Program** poster session and luncheon at the OU/HSC Bird Library Foyer in Oklahoma City. In a student transfer scholarship competition, Anna Platt was one of two students awarded \$2000 to assist her future studies at OSU! Also, four awards were given to students in the four year competition, and Brandon Curry, a recent TCC graduate and present NSU/BA Molecular Biology student won an honorable mention. The students worked full time all summer on their research in the labs of various researchers in the region. We are grateful for the mentorship provided by the numerous researchers! The following are the posters presented by TCC students in Oklahoma City.

- ♦ **Angiotensin Induced Increase in Blood Pressure in Mice: Are Females Protected?**

Presented by: Anna Platt in the lab of A. Rousch at OSU/CHS

- ♦ **Fecal Microbiome Analyses n Prairie Voles**

Presented by: Michael Hinton in the lab with Gerwald A. Kohler at OSU/CHS

- ♦ **Analyzing Ethanol Inhibition of Protein Synthesis via Luciferase Activity**

Presented by: Jacob Beckham in the lab of R. Sheaff at TU

- ♦ **Intensity Matters: Perineuronal Nets Remodeling in Naloxone-Precipitated Morphine Withdrawal on Female Adolescent Rats**

Presented by: Ashley Zongker with Dr. D. Vazquez-Sanroman at OSU/CHS

TCC Honors Scholars Present



Honors Research Retreat and Oklahoma EPSCoR Research Day at the Capitol Competition

On Friday, October 20, 2017, the Honors Research Retreat that is sponsored by the Honors Program presented a one-day workshop focused on types of primary research, research opportunities, research questions and ethics. The activities were presented in the TCC Center4Creativity in Tulsa, Oklahoma. Diana led a student panel of students made of alumni and present students in the sciences and humanities. Communications occurred with the panelists before the presentation, and the responses of the panelists inspired faculty and student participants alike.

Also, after the retreat, students who had shared their research posters with the participants during the retreat, competed for the one TCC position at the Oklahoma EPSCoR Research Day at the Capitol. Ashley Brown, Christy Eslinger, Ashley Kennedy, and Michael Hilton presented their posters to two judges. A science researcher from OMRF, Duane Goins, and the Metro Provost, Greg Stone, served as judges. Congratulations to Christy Eslinger who was selected to share her poster in March at the state capitol!

Fall 2017 Research News

Tulsa Research Day and Oklahoma Academy of Science

During the Oklahoma Academy of Science Fall Technical Meeting on Friday, November 3, 2017 at Rogers State University in Claremore, Ashley Kennedy and Brian Forrester presented their research on soil microbes called: ***The Bacterial Diversity Found in the Rhizosphere Soil Samples Taken From Ecological Niches Using 16S rRNA Genes.***

The Tulsa Research Partners presented the Tulsa Research Day 2017 on November 10 at the OU Schusterman Learning Center in Tulsa, Oklahoma. More than 14 students from TCC presented their work with five separate posters presented. We are honored to have this free opportunity in the Tulsa area!

During the Community College Undergraduate Research Initiative Fall 2017 Colloquium at Austin Community College on November 30 to December 1, 2017, Drs. Dusti Sloan and Diana Spencer accompanied students Ashley Brown and Lisa Longden with research posters to present. As a co-PI on the NSF CCURI grant, Diana Spencer was able to monitor some oral presentations and present with Dr. Virginia Balke the talk ***Taking the Next Step: Skills, Tips, and Tricks to Internships, Transfer and Beyond*** to the students participating in the conference.

Ashley and Lisa represented two embedded research projects from the Cell Culture course and the Molecular Biology and Techniques course. The posters presented were ***Viability Assay & Potential Effects of E-Juice on CHO-K1 Cells*** by A. Brown, K. Casey, A. Eberhard, C. Eslinger, S. Grace, A. Hughes, D. Johnson, A. Kennedy, S. Laughlin, C. Longden, K. Smith with mentor D. Sloan and ***Utilizing Cytochrome C Oxidase I (COI) For Microgenomic Identification of Osteichthyes Obtained from Rural and Urban Ponds in the Oklahoma Central Plains*** by A. Brown, A. Eberhard, C. Eslinger, M. Gates, M. Hilton, D. Johnson, A. Kennedy, A. Platt, S. Sandoval with mentor D. Spencer. Ashley Brown was able to accept the Abstract Honorable Mention Award representing her classmates on the COI poster. The competition included more than 40 abstracts from across the nation.

Fall 2017 Research News



Introducing Experimental Research Design

Faculty, if your students are beginning to embark on a research project, Dr. Diana Spencer is available to present a 30-minute introduction to Experimental Research Design. Basic principles of research design will be discussed while the types of research questions and possible research designs will be introduced. Decision trees will be shared and links for deeper study will be available. This presentation occurred for the first time in the fall of 2017 and the reviews were favorable!

TCC Foundation Encourages Research!



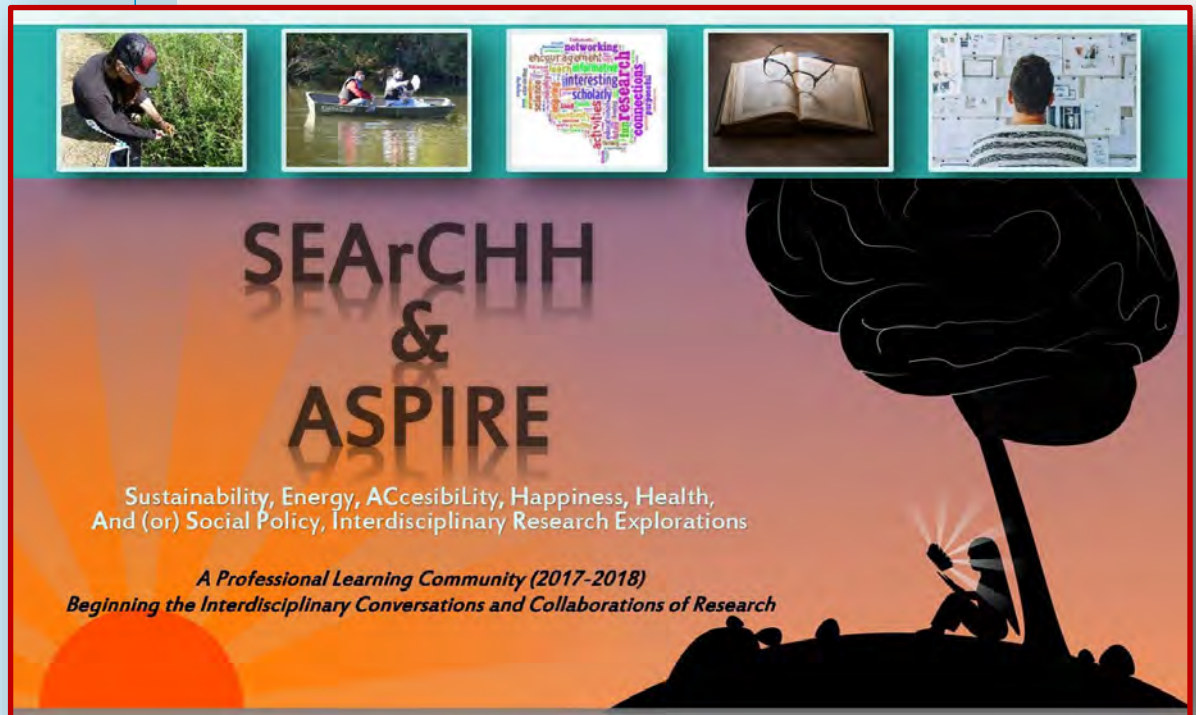
We received word this summer that the TCC Foundation is going to fund projects specifically designed for growth in research! The Foundation agreed to fund two students from TCC who are selected for the TABERC internships. The funds offset costs of the internships and provide a path for students to research in established regional labs with financial compensation for approximately 20 hours each week of the summer. Dr. Dusti Sloan received foundation funding for several student internships in biotechnology related areas through work with faculty researchers at OSU/CHS! Also the Foundation has funded travel for faculty to the 2018 National Council on Undergraduate Research (NCUR) to be held at the University of Central Oklahoma from Wednesday, April 4, 2018 to Saturday, April 7, 2018 in Edmond, Oklahoma. Plans are being made to have the largest group of faculty to attend as possible! We look forward to growing our research community and learning through this national organization!



Oklahoma INBRE supports student research travel

Drs. Diana Spencer and Dusti Sloan applied for and received student travel funds through Oklahoma INBRE. Two students will be selected to attend the NCUR conference in Edmond, Oklahoma in April!

Fall 2017 Research News



SEArCHH & ASPIRE

The Sustainability, Energy, Accessibility, Happiness, Health, and Social Policy Interdisciplinary Research Explorations group (SEArCHH and ASPIRE) meetings continued with progress and growth through the fall of 2017. Meetings were held on September 7, October 6, November 10, and December 1, 2017 with time allotted in each meeting for idea sharing and studying recent published tools in undergraduate research. Copies of minutes of the meetings can be found at the Engaged Learning Website. Much progress was made and the first interdisciplinary abstract was uploaded for potential participation in the NCUR 2018 meeting. Biology and biotechnology faculty worked with their students regarding detection of genetically modified organism products in their diets while another biology class compared mood to eating habits and an English composition class compared eating habits to Satisfaction With Life Scores (SWLS) among their peers. We are keeping our fingers crossed for acceptance!

Fall 2017 Research News

RESEARCH EXTERNSHIP APPLICATIONS WORKSHOP



Diana Spencer and Janice Airhart along with students Ashley Brown, Christy Eslinger, Ashley Kennedy, and Stephanie Sandoval presented a workshop on externships on the Southeast Campus on October 11, 2017 and the Metro Campus on October 16, 2017. Approximately 15 participants attended the workshops. The slides used during the presentations are found on the Engaged Learning Web Site. Students from fields as diverse as business to nursing to biotechnology attended.



Bioinformatics Research Tools

During the week of November 13, 2017, we worked with five faculty members and eight sections of classes including Biology for Majors, Biology for Non-Majors, and Introduction to Biotechnology classes. We were able to collect data on 104 participants. Students completed the scale of “1 Strongly Disagree/ Very Negative” to “6 Strongly Agree/ Very Positive” on eleven digital biology freeware programs/activities using raw data collected in the field during a faculty biology workshop. In every instance, the results were significant. We were able to present the activities within 2 hours! Mr. Edgar Scott from OUHSC and OK INBRE was able to present 2 of the 8 sections. The innovative work using 21st Century analysis tools in the first two years of post-secondary science courses is a success story!

Future News:

A couple of grant collaborations are in the works that will hopefully produce some research funding for students. Also, the main focus this spring is organizing faculty attendance at NCUR in Edmond, Oklahoma during April 2017.



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This newsletter is compiled by Diana Spencer, GKFF Endowed Chair of Research and enhanced by the office of Engaged Learning. If you have information that you would like to see posted in the next newsletter, please contact Diana at Diana.Spencer@tulsacc.edu.

Please visit the following sites for more information on research at TCC.

- ♦ TCC Bioscience Web Site: www.tccbioscience.org
- ♦ Research and Scholarly Activities Committee Homepage:
<http://guides.library.tulsacc.edu/researchandscholarlyactivities>