NEWS & EVENTS

Student Researchers Capture Grants

Two MU students working with Department of Biomedical Sciences researchers have been awarded grants to support their studies.

Jake Young, a senior majoring in biological sciences with a minor in psychological sciences, was one of six recipients of an American Physiological Society (APS) 2016 Undergraduate Research Excellence Fellowships.

The fellowship program awards a $4,000 stipend to full-time undergraduate students allowing them to work for 10 weeks in the laboratory of an established APS member during the summer. In addition, fellows receive a travel grant of $1,300 to allow them to attend and present their research at the following year's APS annual conference, Experimental Biology. Experimental Biology 2017 will be held in Chicago and is expected to attract more than 14,000 attendees.

Young is working in the lab of biomedical sciences Assistant Professor Kevin J. Cummings, PhD. Young said the fellowship will allow him to further pursue his current research project into the regulation of sleep and breathing by neurons in the brainstem that release serotonin.

"We believe that new information in this area will lead to new treatments or prophylactic approaches that will help reduce the worldwide incidence of Sudden Infant Death Syndrome," Young said. "This summer I plan to write and publish a manuscript describing the important role of brainstem serotonin in promoting arousal from sleep in response to increasing carbon dioxide and decreasing oxygen, as occurs when babies stop breathing while asleep," Young said.

UGRE Fellows participate in hands-on research and learn to develop a hypothesis, design and troubleshoot experiments, collect and analyze data, and write and present results. Fellows have some additional opportunities:

- Network with other undergraduates interested in biomedical research.
- Explore the nature of research and the scientific process.
- Investigate career options and what it takes to find career success.
- Pose their career questions to members of the APS Career Opportunities in Physiology Committee.
- Learn about common ethical issues in figure and text preparation.
- Write a mini-manuscript based on previous data.

Kristal Gant, who is part of the MU Post-Baccalaureate

Research Education Program (PREP), which is funded by the National Institute of General Medical Sciences of the National Institutes of Health, was awarded the Larry Ewing Memorial Trainee Travel Fund. The fund is a travel fellowship awarded to trainees to assist in travel costs associated with presenting their research at the Society for the Study of Reproduction meeting. Awardees are selected based on their submitted abstracts. The award honors Larry Ewing, PhD, for his major achievements in male reproductive biology and his instrumental role in establishing and furthering the society.

Gant, who is conducting research under the mentorship of biochemistry Professor R. Michael Roberts, PhD, and biomedical sciences Associate Professor Cheryl S. Rosenfeld, DVM, PhD, will present her findings on how the widely prevalent endocrine disrupting chemicals (EDCs), bisphenol A (BPA) and ethinyl estradiol (estrogen present in birth control pills, EE) affect human placental cells derived from embryonic stem cells at the society's meeting in San Diego, California, in July.

"Literature in the reproductive toxicology field indicates BPA has been implicated in various pregnancy complications, reproductive diseases, and placental deficiencies, but the current data are controversial and inconclusive," Gant said. "The placenta serves as a protective barrier to the developing fetus and as an endocrine organ throughout pregnancy. However, its normal function can be compromised by the presence of EDCs in maternal blood circulation. EDCs may subsequently cause a deficiency in the normal differentiation and function of trophoblast cells, which are in direct contact with maternal uterine cells.

"My work seeks to determine whether BPA target these trophoblast cells and affect their ability to produce and to secrete hormones essential for pregnancy. As part of these studies, I have learned to convert human stem cells into trophoblast cells. After exposure to environmentally relevant concentrations of BPA or EE, I assess whether these chemicals affect the cells' ability to produce hCG and progesterone, two hormones essential for maintaining pregnancy in humans. I am also in the process of determining whether these EDCs alter key gene expression by these placental cells."

Gant earned a bachelor of science in biology with a minor in chemistry from Elizabeth City State University of Elizabeth City, North Carolina, in 2014. MU PREP provides opportunities for members of groups underrepresented in the biomedical sciences who hold a bachelor's degree to obtain individualized professional development and academic/professional preparation before entering a PhD program. Gant will continue her education at the University of Wisconsin-Madison to pursue a doctorate in endocrinology and reproductive physiology.

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