

Med School Watercooler

NEWS FROM FREDERICK P. WHIDDON COLLEGE OF MEDICINE
AT THE UNIVERSITY OF SOUTH ALABAMA

Thursday, January 12, 2023

USA scientist awarded grant to reduce risks to astronauts' health



Marie Migaud, Ph.D., professor of pharmacology, and Faisal Hayat, Ph.D., a senior research associate, will test means to reduce cellular and tissue damage in space travelers.

Astronauts are exposed to numerous conditions that are detrimental to their health, not only while in space but potentially long after they return to earth. With a grant totaling \$918,940 from the Translational Research Institute for Space Health (TRISH), scientists at the Frederick P. Whiddon College of Medicine at the University of South Alabama will test means to reduce oxidative damage to cells and tissues, and better protect the health and well-being of astronauts.

Marie Migaud, Ph.D., a professor of pharmacology at the Whiddon College of Medicine and a researcher at the USA Health Mitchell Cancer Institute, is principal investigator of the project, which will begin in October and will be funded over a two-year period. The award is part of the NASA-funded institute's Biomedical Research Advances for Space Health solicitation, which invests in emerging science with the potential to reduce risks to human health and performance during deep-space exploration.

Astronauts embarking on Artemis missions to the moon and Mars will be exposed to conditions such as ionizing radiation, microgravity and metabolic stressors that have been shown to cause cellular and tissue damage throughout the body. Migaud's study will test ways to mitigate the risks to astronauts' health.

"We have identified some chemicals generated inside cells under conditions that promote oxidative damage in cells and tissues," Migaud said. "We propose that these chemicals are interfering with how cells ward off the effects of oxidative damage, and plan to test means that reduce the formation of these toxins, with

the intent to improve how cells protect themselves in space and to help better protect space travelers.”

Migaud said the chemicals generated under stress become more abundant as we age. “Therefore, this research could be relevant to the process of aging and how we become less resilient to health stressors, including how we respond to medicines,” she said.

Co-investigators on the project are Natalie Gassman, Ph.D., at the University of Alabama at Birmingham; Janice Pluth, Ph.D., at the University of Nevada, Las Vegas; and Bryce Nickels, Ph.D., at Rutgers University. Faisal Hayat, Ph.D., a senior research associate in Migaud’s laboratory, developed the chemistry that enables the proposed study, and he will be essential to the project.

TRISH is a partner of NASA’s Human Research Program and is funded through a cooperative agreement with NASA to Baylor College of Medicine and includes consortium partners, the California Institute of Technology and the Massachusetts Institute of Technology.

Wednesday, January 11, 2023

Meet a Med Student: Andrew Washington

Andrew Washington

Age: 25

Class of: 2024

Hometown: Arab, Alabama

Undergraduate institution and degree

earned: University of Alabama in Huntsville, Bachelor of Science, Biological Science



What do you enjoy most about being a medical student at the Whiddon College of Medicine?

I enjoy the overall atmosphere here at South. Most everyone in my class has been very friendly and helpful. The staff and clinical instructors are very invested in my learning and have made me feel comfortable as I progress through clerkship rotations now as a third year. I also enjoy the accessibility to hands-on learning with the patients that we serve here in at USA Health.

Are you involved in any research, organizations or other initiatives at the College of Medicine?

I was the president of CMMSA during my second year and was able to be a part of a survey/service project last summer in which we explored some of the reasons that people were hesitant to be vaccinated against COVID and attempted to help answer their questions. I have not been a part of any formal research yet, but hope to join a project next semester.

What are your interests and hobbies?

I have a beautiful wife and lovely 9-month-old daughter that I spend most of my time with. We love going to the beach, walking at our local park, traveling to see family, thrift shopping, and trying to cook new recipes at home. Additionally, I enjoy reading, listening to Christian rap music, watching Auburn basketball, and drinking black coffee early in the morning.

What is something unique about you?

When I was in undergrad, my wife and I fostered a little boy for a little under a year. We still keep in touch to this day.



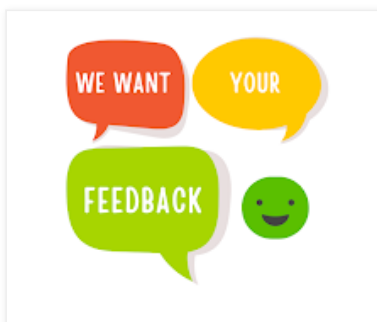
Tuesday, January 10, 2023

Clinical faculty invited to complete wellness survey

What does wellness mean to you? This is a chance for all physicians, residents and fellows to express exactly what you are looking for in wellness, not only for yourself but also your colleagues.

The goal is to learn what can be done to keep you at your best, which in turn creates a system that supports your patients, your practice and above all, you.

Please [complete the survey](#) by Jan. 31.



Whiddon College of Medicine mourns passing of Professor Emerita June E. Ayling, Ph.D.

We are sad to report the death last week of June E. Ayling, Ph.D., professor emerita of pharmacology at the Frederick P. Whiddon College of Medicine. Her groundbreaking experiments have improved the health and even saved the lives of many people.

Ayling was born in Hampshire, England, initially intending to become a veterinarian. At age 20, however, she boarded a cargo ship as a passenger to Australia. There, she worked for the Commonwealth Scientific and Industrial Research Organisation (CSIRO), an Australian government agency responsible for scientific research. After hitchhiking and hiking through Tasmania and New Zealand, she continued her travels, stopping next in San Francisco. She was bitten by the biochemistry bug while working for Ernest Kun, M.D., in the pharmacology department of the University of California, San Francisco. She earned her bachelor's degree in genetics at the University of California, Berkeley. In 1966, she obtained her doctorate in biochemistry at UC Berkeley under Esmond Snell, Ph.D., the preeminent



investigator of vitamin B6 mechanism, and who also first isolated and named the vitamin folic acid. Her postdoctoral work was with Feodor Lynen, Nobel-Prize-winning biochemist at the Max Planck Institute in Munich, Germany.

Ayling started her teaching career in 1969 in the biological chemistry department in the UCLA School of Medicine. She initiated a lifelong string of experiments on the pteridine cofactors tetrahydrobiopterin and tetrahydrofolate, which are central to neurotransmitter production and one-carbon metabolism. She moved as associate professor to teach biochemistry in the Life Sciences Division of University of Texas at San Antonio. Finally, in 1981 she was recruited to the pharmacology department at the University of South Alabama by Charles Baugh, Ph.D., who himself was a widely recognized folate biochemist.

During many of her years at USA, Ayling ran one of the highest funded laboratories in the College of Medicine. Over her career she has advised and mentored more than 60 postdoctoral, graduate, undergraduate and medical students. Her 76 publications are all in top journals in the fields of biochemistry, nutrition, chemistry and general sciences including The Proceedings of the National Academy of Sciences (PNAS).

Key findings of her work include the first recognition that synthetic folic acid, which does not occur significantly in fresh natural foods, is not the optimal folate to meet human needs. Instead, the natural folates, such as 5-methyl-tetrahydrofolate (5-MTHF), have superior properties. This has led to improved treatments for the reduction of stroke risk and certain forms of depression. 5-MTHF is now used in place of folic acid in most leading prenatal vitamins. 5-MTHF also shows promise in reducing the risk of folate-related birth defects (e.g. spina bifida and heart defects) even when administered after conception. Ayling's lab has also revealed that folate may play an important role, perhaps second only to pigmentation, in protecting DNA in skin from damage by ultraviolet light (a major cause of skin cancer). This may lead to new types of sunscreens.

She filed more than 13 U.S. patents in addition to a large number of foreign patents, the vast majority being granted. The licensing revenues from these considerably benefitted the College of Medicine and enabled the start of the USA Technology Transfer Office.

Those who knew her will remember both her independence and her desire to promote the common good within the University of South Alabama.