

SOUTHERN ILLINOIS UNIVERSITY EDWARDSVILLE



Madelaine Deardeuff

SIUE Marketing & Communications

Office: (618) 650-3600

mgerard@siue.edu

February 8, 2018

Fruit Fly Brain Surgery: SIUE's Liebl Discusses Passion for Neuroscience, Neurodevelopmental Disease Research

On this week's episode of Segue, Southern Illinois University Edwardsville's radio show that discusses the lives and work of the people on campus and beyond, co-host Greg Budzban, PhD, College of Arts and Sciences (CAS) dean, interviews Faith Liebl, PhD, associate professor in the

Department of Biological Sciences.

This episode will air at 9 a.m. on Sunday, Feb. 10, on WSIE 88.7 FM The Sound and siue.edu/wsie.

"Dr. Liebl is doing fascinating work on gene expression and brain science, and as with all of my guests, I like to ask how they arrived on campus, and also how they came to their particular field of study," Budzban says. "Why did you choose brain science?"

"My interest in neuroscience began as an undergraduate. When I first began college, like many students, I came in studying something entirely different—I was a journalism major!" Liebl says.

"It was my first introduction to psychology class that got me interested in the brain. We spent a lot of time on physiological psychology. My undergraduate major was psychology with an emphasis in physiological psychology."

Liebl went on to a master's in physiological psychology from SIU Carbondale. Her research concentrated on how humans learn and remember information. While using animal brain models, she always found herself wondering why some animals were learning and other animals were not on a molecular level.

"Because of the questions I was asking, I needed to transition [my research] more toward what is happening inside brain cells as opposed to what's happening inside the organism," she continues. "I left Carbondale and went to the University of Illinois at Chicago and entered their neurobiology program."

At UIC, she began studying the cellular and molecular biology of the brain cells and how the proteins within the cells change as a result of learning and memory, and how gene expression changed because of learning and memory. Her post-doctoral research was conducted at the University of Illinois at Urbana-Champaign.

"Upon looking for jobs, I was interested in finding a position that would allow me to teach and do research, with a hope to do those two things equally," she says. "I love doing those things, and I enjoyed interacting with and training students in a laboratory setting. I got teaching experience at a community college."

Liebl joined the SIUE faculty in 2007 and rose to associate professor status. In her 12 years at the University, she is happy to say she has the perfect balance of a teacher-scholar lifestyle and “would not have it any other way.”

“That balance is what many of our faculty members are looking for,” Budzban says. “You’re interacting in a transformative way with a lot of our students, in laboratories and in the classroom, and you get to conduct critical research. Thank you for doing that!”

Liebl chose to study the *Drosophila melanogaster*, the fruit fly, as her model organism for study as opposed to rodents like those that she used during her master’s program.

“When I first began the rotation at my PhD program that used fruit flies, I thought, ‘what can you possibly learn from them?’” she recalls. “The larval development is well characterized, and they have great synapse (connection between two brain cells) that shows the same connections that our central nervous system neurons do.

“They are fantastic model organisms to study what is happening at the synapse, as well as many genetic tools available for fruit flies since they have been used for genetics research for over 100 years.”

“Since *Drosophila* have been so common in the lab, it’s a well-known machine! We know all the pieces and parts,” Budzban says.

The fruit fly also has a short lifespan, which also helps to speed up the cellular and molecular biologists’ research process. They can also have large sample sizes, even more than researchers will ever need.

“You just won a National Institute of Health grant to study brain disease and disorder, particularly how gene expression affects the brain,” Budzban exclaims. “Congratulations!”

Liebl’s NIH grant will go toward trying to understand how changes in gene expression can ultimately lead to neurodevelopmental disorders.

“The unfortunate fact is that a number of individuals are going to be born with neurodevelopmental disorders,” she says. “Autism Spectrum Disorder is a type of neurodevelopmental disorder that people are most familiar with. In those individuals, the brain is developing differently than if they did not have that condition. In the case of autism, we do not understand the genetic aspects very well.

“If we can mimic the condition at a synapse in fruit flies, we can understand how the cells of affected humans function,” she says. “If we can better understand how they function, maybe we can better understand how to restore their function, at least partly, so some of these individuals can have improved function over time.

“The area that this grant is trying to address is how do changes in gene expression produce these neurodevelopmental characteristics in individuals,” she concludes.

To hear Liebl and Budzban’s entire conversation, tune in to Segue at 9 a.m. on Sunday, Feb. 10 on WSIE 88.7 FM The Sound or siue.edu/wsie.