BIOLOGY MEETS ENGINEERING SUMMER 2026 OPPORTUNITIES
UNIVERSITY OF AKRON

1. HENRY ASTLEY LAB

Title:

Carnivorous Plants in The Cold

Body:

Carnivorous plants are remarkable species which turn the tables, trapping and digesting animals to gain nutrients, and none are more famous than the Venus Flytrap, which captures insects in rapidly-closing 'jaws'. This rapid motion itself is unusual in plants, and is achieved by 'spring loading' the curved jaws. In addition to providing rapid motion, spring-powered systems have another benefit – they are far less sensitive to temperature than other methods of producing motion. This project will test this prediction in Venus Flytraps, by testing the trap closing speed at different temperatures. The student will gain experience with experimental design, digitizing and analyzing data, and keeping and working with these amazing plants.

Duration:

Six Weeks, 20 hours, but flexible

2. TODD BLACKLEDGE LAB

Title:

Does spider body evolve with web architecture to maximize information transmission?

Body:

This project involves literature research to test the hypothesis that the leg shapes of spider species coevolves with web architecture. We want to test the prediction that as orb webs evolve to become more asymmetric (less round and more oval) there is an advantage for spiders to evolve a greater difference in the lengths of their front legs compared to their middle legs to maximize the pitch of their bodies as insects impact the webs. Most data collection will come from published scientific articles but you'll also have the opportunity to use high speed videography to measure the movement of spiders on their webs during prey impact.

Duration:

Six weeks, 20 hours, but flexible

3. RACHEL OLSON LAB
Title:
Paws in Motion - Analyzing the Biomechanics of Performance Dogs
Body:
The Olson Lab is looking for interested, motivated and dedicated high school student interested to gain research experience examining how dogs move and perform athletic behaviors like running, jumping, and other agility obstacles. The Olson Lab studies how dogs move in space, the resulting forces the dog experiences to determine how we can minimize injury risk in canine athletes. This research experience may involve training in animal handling, collecting data, constructing equipment for data collection, using infrared and visible light video, and analysis of data.
Other Requirements:
Preference for flexibility in workdays, with a 3-day work week preferred (generally Tues-Thur). Must be comfortable handling and interacting with pet dogs.
Duration:
Six weeks, 20 hours, but flexible

4. JORDAN RENNA LAB
Title:
Untangling the Neural Circuitry of the Retina
Body:
The Renna Lab is seeking motivated high school students interested in gaining hands-on research experience in neuroscience. Our lab uses serial block-face electron microscopy (SBEM) and connectomics to study the circuitry of the retina. This layer of neural tissue is responsible for processing visual information prior to its transmission to the brain. The goal of this project is to learn how to identify synaptic structures, reconstruct neurons, and understand how different retinal cell types connect and work together to support vision. Students will assist in analysis of high-resolution electron microscopy images, 3D modeling of neural circuits, and identifying important intracellular structures like mitochondria and synapses. This project will allow students to gain valuable experience working with digital reconstruction software to map and study neural pathways. Please note that this is a fully computer-based research project and is NOT a wet-lab (i.e. mixing chemicals, using a microscope) experience. Students will use a dedicated neuron tracing

computer in our lab for their project and do not need their own laptop/PC. Students should have an interest in biology or neuroscience. No prior experience is required, but enthusiasm for learning about new technology and working with computers is preferred.

Duration:

6 weeks, 21 hours per week.