

DEPARTMENT OF BIOLOGY  
ARTS & SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: 02/25/2022

PROJECT TITLE: Behavioral Analysis of Color Vision in Jumping Spiders

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**Project Description**

This project will investigate color vision in jumping spiders. These complex and visual creatures were the inspiration for the visual system of the Mars rovers. Despite being very small, jumping spiders use their eight eyes to see the world as well as a cat. They hunt like cats as well, by stalking and pouncing on their prey. Jumping spiders also use bright colors and intricate patterns for courtship displays. Curious and cognitively complex, these tiny animals are excellent for asking questions about how animals perceive, process, and use information. We will use trackball and video playback experiments to ask jumping spiders how well they can distinguish different colors of light. Video stimuli will be displayed in front of spiders standing on a patterned ball supported on a stream of air. As objects move across the screen the spider will try to follow, thereby rotating the ball they hold. The movement of this ball is then recorded and plotted to describe the virtual path the spider would've executed. Experiments will include taking light measurements, programming computer simulations, handling live animals, and interpreting data. Findings from this project will inform a large body of research on color vision in invertebrates and the ecology of invertebrate signaling.