SUTER SCIENCE SEMINARS 2022-23

Characterization of Sensory Driven Intrinsic Iris Constriction in Mammals

Marquis Walker, PhD
Assistant Professor of Biology
James Madison University
Harrisonburg, VA

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4 p.m. • Science Center, room 106

In our eye the iris is the essential retinal protective muscular tissue that controls the amount of light entering the eye for vision. The functional activity of the Iris enables us to clearly resolve images under the changing light intensities that we experience during a normal day. Iris muscle activity is driven by neurological input from the retina in response to changes in ambient light. This involuntary behavior called pupillary light reflex controls intensity-dependent constriction of the iris. In most vertebrates, the iris tissue has also been shown to have an intrinsic light response. The cellular mechanisms underlying this intrinsic light response are not well understood. Using gene expression analysis, protein localization, and a series of behavior and tests, we have begun to elucidate the molecular components of this light response pathway in the iris tissue.

Dr. Marquis Walker is an assistant professor in the Biology Department of James Madison University. He received his bachelors degree from Morgan State University and earned his doctorate from University of Maryland Baltimore County. His doctoral thesis examined the light-dependent activation of a novel mammalian photoreceptor pigment, Melanopsin. He continued to study intracellular signaling in mammalian photoreceptors during his postdoctoral research at Johns Hopkins University School of Medicine. The central focus of his research lab at JMU is visual neuroscience. We investigate the cellular mechanisms that underlie mammalian photoreceptor function and light-dependent behaviors. We hope to better understand how these mechanisms are affected in cases of retinal degenerative diseases.

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Suter Science Center
1194 Park Rd.
Harrisonburg VA 22802
540-432-4400