SUTER SCIENCE SEMINARS 2018-19

Aging Genes and Electrochemistry in the Drosophila Brain

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All things get old, and despite its universality, the molecular causes for the aging process have yet to be understood. Experiments performed in model systems have shown that a selective set of 'aging' genes, acting in only small, distinct sets of cells, are capable of controlling the aging process for the entire animal. In the fruit fly Drosophila melanogaster, genetic inactivation of the mitochondrial electron transport chain shows longevity-specific results. Mitochondrial changes specifically in glutamatergic and motor neurons are capable of extending fly life span, but inactivation in other neurons abbreviates life span. Research exploring the role of the mitochondria in aging has revealed similar roles in more complex organisms, like mice and fish.

Jeffrey Copeland, PhD, is an Associate Professor of Biology and is the director of the Pre-Professional Health Sciences program at Eastern Mennonite University. Using the little fruit fly as a model system, he works to uncover the genes and neurons impacting the aging process and neurodegenerative diseases, like amyotrophic lateral sclerosis. Jeff also studies the role of RNF11 in dopamine release, fly behavior, and Parkinson's disease. Jeff earned his Ph.D. in biology from the California Institute of Technology and completed his post-doctoral training in aging and mitochondrial biology at the University of California, Los Angeles. While not at work, Jeff can be found constructing elaborate structures for his Lego Star Wars Minifigures.

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