

# **Designing a high throughput system to analyze *Drosophila* locomotion and spontaneous flight activity.**

Nagori Ravi, Mead Andrew, Vigoreaux Jim

The fruit fly *Drosophila melanogaster* is a widely used model organism for the study of genetics, ageing, and many aspects of human health and disease. Exercise influences organismal health and curtails ageing related decline in metabolic and physiologic performance. We use *Drosophila* to understand how exercise and nutritional supplementation can extend the health-span of an organism. Laboratory reared *Drosophila* has been raised in captivity, in small enclosed vials, for thousands of generations raising the possibility that the lab strain has adapted metabolically and physiologically to life in a bottle. The purpose of this study is to test the hypotheses that lab reared *Drosophila* differs markedly from wild caught counterparts in spontaneous physical activity and in their metabolic response to exercise. For this purpose, we are designing a novel environmental chamber that uses cameras and automated software to record and analyze the spontaneous and stimulated flying pattern of hundreds of flies. Here, we show the preliminary design of the chamber and present evidence that spontaneous locomotion of dozens of flies can be accurately documented.