

High-Throughput Analysis of *Drosophila* Feeding Behavior

Drosophila as Models of Genetic Conditions, Energetics and Neurobiology

The fruit fly is one of the most powerful model systems in which to dissect neural mechanisms of complex behavior such as feeding, allowing researchers to study mechanisms of feeding preference and behavior using genetic and pharmacological means. Detailed analysis of food intake facilitates discovery in fields as diverse as aging, metabolism, and neurobiology.¹

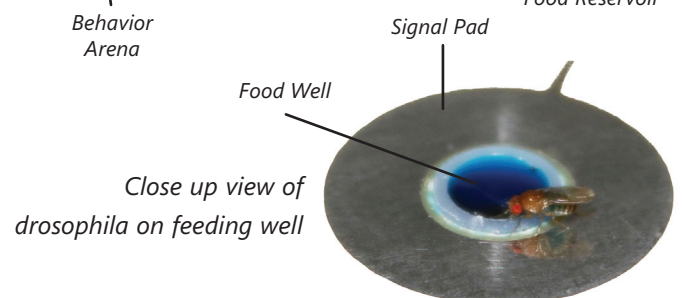
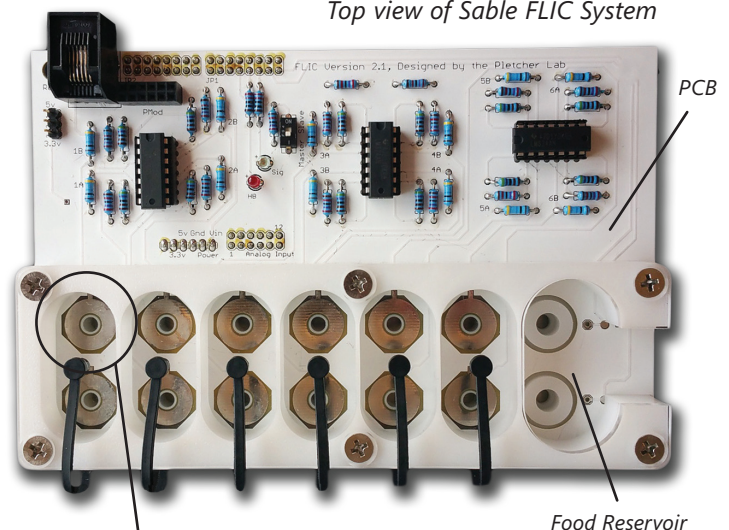
FLIC System Quantifies Feeding Behavior

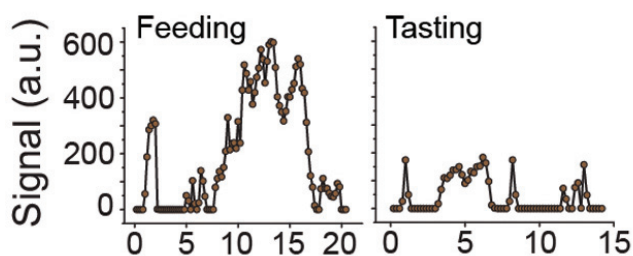
The FLIC system provides a precise and continuous quantification of the number and duration of interactions a fly has with food. It complements conventional methods of analysis, such as the CAFE assay and tracer dye approaches, by allowing comprehensive long-term studies of new and subtle aspects of feeding behavior. Features include:



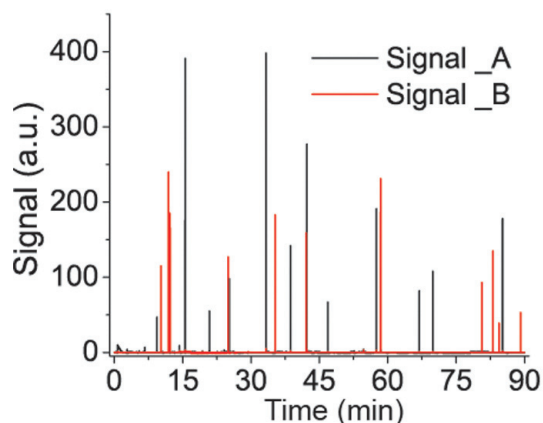
- Single fly measurement
- Ability to distinguish between tasting and feeding activity
- High sensitivity – captures nearly every interaction between fly and food
- Automated, real-time monitoring of feeding or food choice behavior
- High-throughput feeding assay
- Interfaces to Expedata software package for data collection and reporting
- Preference assay is based on quantitative measure and independent from experimenter's bias
- Food is easily accessible from bottom of the chamber, unlike capillary-feeding assays)
- No experimenter's interference; foods are introduced without disturbing flies
- Easy to set up

Top view of Sable FLIC System

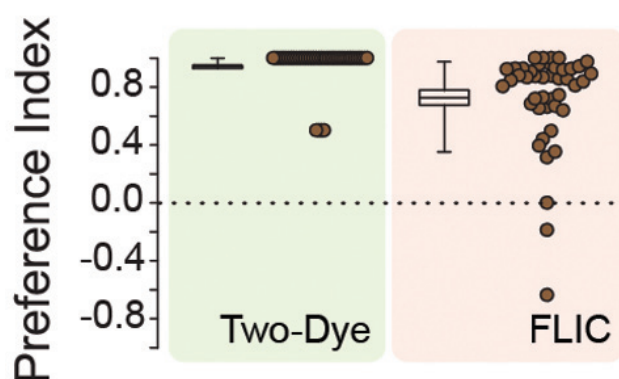




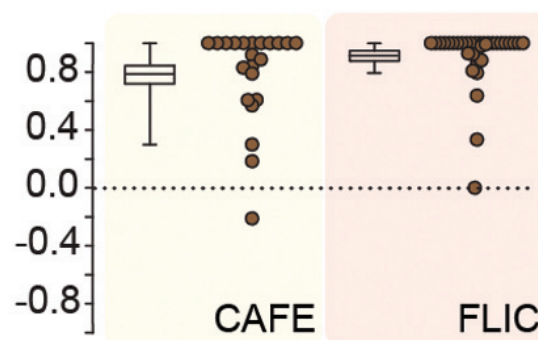
FLIC System analog signals demonstrate distinct behavioral characteristics of feeding (left) and tasting (right).¹



Representative signals from each of two feeding wells within a single feeding arena taken from a 90 min subset of a 24-hour feeding measurement.¹



Flies exhibited strong preference in favor of 10% sucrose over 100 mM denatonium when measured using both two-dye and FLIC assays (Box charts represent mean, standard error of mean, and 10–90% quantile whiskers).¹



Flies demonstrated strong preference toward 10% sucrose over 1% sucrose when measured using both the CAFE and FLIC assays (Box charts represent mean, standard error of mean, and 10–90% quantile whiskers).¹

1. Ro J, Harvanek ZM, Pletcher SD (2014) FLIC: High-Throughput, Continuous Analysis of Feeding Behaviors in *Drosophila*. PLoS ONE 9(6): e101107. doi:10.

