

Cell Polarity and Localization in *Drosophila* is Highly Affected by Diet

Joao Victor Peres* and Laura Serbus

This project focuses on how cells are organized and how that is subjected to nutritional signaling pathways. Localizing molecular cues to the right parts of the cell specifies body plan, which requires the cytoskeleton and the microtubule motor proteins. It is hypothesized that cytoskeleton organization is nutrition sensitive. Moreover, the premise is that flies fed with yeast will have an enhanced development of the microtubule motor protein kinesin, and flies fed with sucrose will have a suppress development of kinesin.

In the methods flies are fed suppressed different nutrition conditions, and fluorescent markers are used to monitor polarity. The next step is to take pictures of the oocytes with a confocal microscopy. For the analysis part, a software is used to determine the distribution of the dots. This project is significant because we are able to determine the changes that happen in the cell if we start to modify the cytoskeleton organization. The innovative part is that we finally have a method to measure how well cargos get localized based on nutrition.

The project will impact the field in a way that people won't need to use inefficient methods to determine cell localization and polarity. By appropriating our current, well-established quantitation methods we will be able to overcome several limitations and inaccuracies with existing methods in the area. Furthermore, with bright and defined puncta dots from our microscopy pictures, nutritional effects on cell polarity and location can be accurately resolved.