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Image created with a confocal  
microscope in the Hughes laboratory,  
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# The Developing Fruit Fly Brain

Semi-Finalist

My research in the Hughes lab focuses on investigating the role of Moesin during nervous system development. Moesin is involved in maintaining cell integrity by linking membrane-associated proteins to the underlying actin cytoskeleton. We use fruit flies to study Moesin function as only one member of the protein family exists in flies and many genetic tools are available in this simple model organism.

Immunofluorescence microscopy is a commonly used technique which allows us to visualize the location and expression patterns of various proteins in cells or tissues. The image shown here is a developing fruit fly brain that has been fluorescently labelled for proteins expressed in neural progenitors (green) and neurons (cyan), and at the cell membranes (red). In addition, a nuclear stain was used to visualize all cells of the brain (blue). If different proteins are expressed at the same location, this overlap is depicted as a different colour (yellow). By manipulating Moesin protein levels in a brain-specific manner, we can investigate whether proteins expressed in the brain are altered and how the neural progenitors or neurons are affected using this powerful technique. This research provides further insight into the importance of Moesin during nervous system development.