MAJOR RESEARCH INTERESTS

Work from my lab over the past several years has focused on understanding biological functions of microRNAs. Our approach combines conventional genetic analysis, to understand the biological process affected by the microRNA, with development of computational and biochemical tools to identify the target genes that microRNAs regulate. microRNA genes are numerous and they are involved in diverse biological processes. These include control of tissue growth, cell death, metabolism, cell fate decisions, developmental timing etc. Recent work has shown that many microRNAs are expressed in the brain and we have identified specific microRNA mutants with behavioural and neurodegenerative defects. Understanding the molecular and cellular basis for these defects will be a major focus of research in the next few years. We have also undertaken a long-term project to systematically mutate all fly microRNA genes in the hope of learning more about their functions in the brain.

A second area of research in the lab involves metabolic controls. Nutrient sensing by the Insulin and TOR pathways regulates the balance between growth and metabolism. Perturbations in these pathways are known to be important causes of metabolic diseases, including metabolic syndrome, diabetes, and cancer. We make use of the fly as a genetically tractable model to study regulation of these processes and pathways.

RECENT PUBLICATIONS