

NEUROBIOLOGY OF STRESS: FROM C. ELEGANS TO ZEBRAFISH TO MICE

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Description:

In the past decades, several new species have come into use in stress research. These include, apart from the classical mouse model, the roundworm *Caenorhabditis elegans* and the Zebrafish (*Brachydanio rerio*). By conducting research on stress and anxiety in different species, we work toward the development of improved translational models for affective disorders. Physiological hormonal data can be compared with genetic and behavioral data in correlating the effects of stress on different aspects of biology across species.

Using inbred and knockout mice, zebrafish and C Elegans, we study the effects of stress on behavior and the genetic correlates of phenotypic modifications. Methods employed in our research will include DNA and RNA extraction, genotyping, cortisol extraction and assays, as well as phenotypic behavioral quantification using video tracking systems. The student will be involved in the recording data as well as their analysis and the organization and presentation of results.

Objectives:

During the 10-week period, participants will gain experience with:

- Formulating and testing scientific hypotheses;
- Methods of molecular analysis;
- Neurophenotyping of behavior and the effects of drugs
- Computer analysis of data, scientific report writing and presentation of results

Prerequisites: Completion of sophomore year, GPA of 3.00 or higher, introductory chemistry laboratory, aptitude and motivation for advanced study in fish, mouse, and roundworm biology, as well as neuroscience and biological psychiatry.