

# MOLECULAR MICROBIOLOGY AND IMM (MMI)

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## **MMI 0102 - Neuropathogenesis of Viral Infections**

**Credit(s): 7 Credits**

Molecular biology of gene expression in the central nervous system during acute viral infection.

## **MMI 0105 - Research Laboratory Orientation**

**Credit(s): 3-6 Credits** (Repeatable for credit)

Students will read primary and review literature to prepare themselves for a summer research experience into the molecular virology of Hepatitis B and antiviral drug discovery. Students will become proficient in the Tavis lab's laboratory safety and operating procedures. Students will be trained in basic laboratory skills.

## **MMI 0401 - The Molecular Cause of Aging**

**Credit(s): 2-12 Credits**

As we get older, mutations accumulate in mitochondrial DNA. By age 60 it is not unusual for 1 out of every 100 mito DNA molecules to be mutant in neurons and muscle cells. However, since each cell may have hundreds of thousands of mitochondrial DNA's, it is controversial whether a few mutations in this pool of DNA actually are pathogenic. We have developed a transgenic mouse model, which demonstrates that a few bad apples indeed do spoil the barrel. In this model, mito DNA mutations only accumulate rapidly after birth so that by 4-5 weeks of age these mice have mito mutations at levels commonly found in aged humans. The mutations only accumulate in mitochondrial DNA and only in the heart. The mice develop profound dilated cardiomyopathy at 4-5 weeks of age. We think that the molecular basis for the pathogenesis of low levels of mito DNA mutations rests with a hitherto unrecognized mechanism: namely, mutations induce mitochondrial pore disease in response to increasing levels of malfolded proteins.

## **MMI 0903 - Molecular Microbiology and Immunology Research**

**Credit(s): 1-12 Credits** (Repeatable for credit)