SCI3220 - Bacteriophage Genomics Research Project Laboratory

Credits: 4 SCI

Hours: 2-2-4

Required Requisites

Prerequisite(s): SCI1210

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Course Description

The process of discovery in biology must be experienced, not simply read about in a textbook, in order for one to fully appreciate what it takes to do science and how it feels to discover something not previously known. Bacteriophages (viruses of bacteria) are particularly interesting and relevant subjects for study because they constitute the majority of all biological entities. An estimated 10^31 tailed phages inhabit the planet earth! Knowledge of phages and their host bacteria is important from a public health perspective and phages present an opportunity for study of bioengineering organisms. This hands-on course provides a guided primary research experience in the isolation, purification, characterization, and sequence annotation of bacteriophages of M. smegmatis.

Purified viruses, named by their discoverers, will be investigated by a variety of means including Transmission Electron Microscopy (TEM) and DNA sequencing of their entire genomes. Students in this course will gain experience with the fields of genomics and bioinformatics from the analysis of new phage genomes. Putative new genes will be identified and compared with those from similar organisms in order to better understand the extent of diversity and evolution of mycobacteriophages.

Weekly journal club discussions including visits by seminar speakers enhance understanding of phage biology and genomics.

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