TRMD 6240 Molecular Biology Methods for Public Health

Professor: Mark Wiser, PhD

Credits: 2

Semester(s) Offered: Fall

Course Description:

Molecular methods and genomics are being applied to public health issues with increasing frequency. Molecular epidemiology is now regarded as an integral component of many epidemiological and outbreak studies. Therefore, it will be increasingly necessary for public health practitioners to have a basic understanding of molecular methods. A major focus of the course will be a description of methods that are commonly used in molecular epidemiology. Such methods include: serology, immunoblotting, RFLP, and PCR. Specific examples and applications, such as pathogen typing, antigenic variation and drug resistance, will also be discussed. Other topics include: 1) genomics and the analysis of DNA and protein sequence data in databases, 2) recombinant DNA including transgenic organisms and gene therapy, and 3) molecular phylogenetics as it applies to public health. After taking the course students will have a good fundamental background in molecular methods as they are applied to public health and be familiar with the terminology of molecular biology, thus giving students a better access to the scientific literature.
Learning Objectives:

- Define terms routinely used in molecular biology and applications in public health
- Describe the strengths and weaknesses of various techniques used in molecular epidemiology
- Explain the basic principles of techniques routinely used in molecular epidemiology
- Give examples of how molecular methods can be applied to public health research or practice
- Analyze molecular data published in scientific papers and appraise its relative merit