UCONN | COLLEGE OF AGRICULTURE, HEALTH AND NATURAL RESOURCES

PVS 5503
Molecular Approaches to Disease Diagnosis and Prevention

Spring 2022

Aim and objectives of the course:

This course examines current and newly developed molecular diagnostic methods applied to the detection of infectious agents and diseases that affect both humans and animals. The class is aimed at discussing principles of molecular diagnostic techniques applied to the detection of diseases. The class will review relevant literature that relates to diagnostics of diseases as well as molecular techniques applied for monitoring evolution of patients and therapies.

Objectives: to improve the knowledge of diagnostic techniques used for detecting diseases and for monitoring disease evolution in infected hosts.

Audience: This course is intended for those who want to increase their knowledge on methods for detecting causes of disease and for monitoring evolution of diseases in affected hosts.

Course material: lectures and discussion of research articles published in peer-reviewed journals related to the topic being covered during the week. Selected scientific articles will be presented by students and discussed as a group as described in this syllabus. The article will be provided a week in advance.

Contents of PVS 5503 Spring 2022

Week 1 1/17-1/21	Wed. 01/19/2022	Introductory Class: Overview 1
	Fri. 01/21/2022	Introductory Class: Overview 2
Week 2 1/24-1/28	Wed. 01/26/2022	Samples-Quality Management-LIMS in a diagnostic laboratory.
	Fri. 01/28/2022	Sample testing, commonly used method in a clinical microbiology laboratory
Week 3 01/31-2/04	Wed. 02/02/2022	Detection of cancer: images and molecular markers
	Fri. 02/04/2022	Detecting pathogens and pollutants in the environment: sampling.
Week 4 2/07-2/11	Wed. 02/09/2022	Principles of nucleic acids amplification 1
	Fri. 02/11/2022	Principles of nucleic acids amplification 2

Week 5 2/14-2/18	Wed. 02/16/2022	Real time PCR
	Fri. 02/18/2022	Real time PCR
Week 6 2/21-2/25	Wed. 02/23/2022	Real time PCR quantification
	Fri. 02/25/2022	Papers 1- Instructor presentation
Week 7 02/28-03/04	Wed. 03/02/2022	Digital PCR
	Fri. 03/04/2022	Papers 2, 3 and 4
Week 8 03/07-03/11	Wed. 03/09/2022	DNA Sequencing
	Fri. 03/11/2022	Midterm exam
03/14-03/18	**Spring Break**	
Week 9 03/21-03/25	Wed. 03/23/2022	Gene Expression
	Fri. 03/25/2022	Papers 5, 6, and 7
Week 10 03/28-04/01	Wed. 03/30/2022	Gene Expression
	Fri. 04/01/2022	Papers 8, 9, and 10
Week 11 04/04-04/08	Wed. 04/06/2022	Mass Spec/ID/Proteomics
	Fri. 04/08/2022	Papers 11,12, and 13
Week 12 04/11 to 04/15	Wed. 04/13/2022	Detection of Antibodies
	Fri. 04/15/2022	Papers 14, 15, and 16

Week 13 04/18-04/22	Wed. 04/20/2022	Prions
	Fri. 04/22/2022	Papers 17, 18 and 19
Week 14 04/25-04/29	Wed. 04/27/2022	Prions
	Fri. 4/29/2022	Review session of the class (Last day of classes)
Week 15 05/02-05/09	Final Exams Week	