GMS6040 Host Pathogen Interactions, 1 credit hour

Course Director: Jeannine Brady, Professor, Dept of Oral Biology UFCD

This is a **reading intensive** paper based discussion course and will highlight examples involving bacteria, viruses and parasites in the context of a host.  Prerequisites include basic microbiology and immunology. Depending on the interest of the group an overview of the general topics we may cover include:

The damage framework of microbial virulence

Interference with humoral immunity

Interference with cell-mediated immunity

Protective versus non-protective immunity

Interference with or hijacking of cytokine/chemokine networks

Interference with apoptosis

Microbial exploitation of autophagy pathways

Superantigens

Pathogenic vs. functional amyloid

Interference with antigen presentation

Adhesion and invasion

Bacterial secretion mechanisms

Microbial exploitation of pattern recognition receptors

Strategies for intracellular survival of bacteria

Induction of host-mediated tissue damage

Interference with host cell intracellular trafficking

Association of infectious agents with psychiatric disorders

Human microbiome in health and dysbiosis

Microbial contributions to food allergies- arthropod vectors

Earlier sessions will be led by me or other faculty, and later sessions will be led by doctoral students enrolled in the course who will select the discussion papers and assign the homework questions.  Grades will be based on short answer written homework questions related to the assigned readings (usually 1-2 basic research papers per class period with accompanying reviews as appropriate), and class preparedness and participation.  Students are expected to achieve a thorough understanding of assigned discussion papers. Doctoral students will also be expected to lead the discussion of a research paper and an overview of the chosen topic including assigning and grading the homework for the class period when their selected topic and papers are discussed.

It would beneficial for each student to have a basic immunology textbook and a basic medical microbiology textbook at your disposal for reference and general background information.

GMS6040 2016 Topics

Nov. 1 Damage Framework, “pathogens” and “virulence factors”

 Funsies- *Toxoplasma gondii*- fear in rats

Nov. 3 Protective vs non-protective immunity- *Streptococcus pneumonia*/IgA protease

Nov. 8 Interference with cell-mediated immunity- Herpes simplex virus and TAP

Nov. 10 Superantigens, Streptococcal M protein

Nov. 15 Interference with the complement cascade, *P. gingivalis* as a keystone pathogen

Nov. 17 Bacterial attachment and invasion, *Listeria monocytogenes*

Nov. 22 Exploitation of autophagy, *Legionella pneumophila*

Nov. 29 Host-mediated tissue damage- Hepatitis C

Dec. 1 Modulation of cytokine responses- *Yersinia* spp. and *Leshmania* spp.

Dec. 6 Microbiome in health and disease- *Bacteroides fragilis-*Inflammatory bowel disease