האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

VIRULENCE AND PATHOGENESIS OF MICRO-ORGANISMS - 71904

Last update 24-03-2021

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Animal Sciences

Academic year: 0

Semester: 2nd Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Daniel Barkan

Coordinator Email: daniel.barkan@mail.huji.ac.il

Coordinator Office Hours: by appointment

Teaching Staff:
Dr. Daniel Barkan

Course/Module description:
During the first hour of the lesson there will be a review of an infectious disease and it's causative agent. During the second hour there will be a presentation (through scientific papers mostly) of a pathogenesis mechanism of that pathogen, and the way it contributes to the disease presentation.

Course/Module aims:
The objective of the course is to strengthen the knowledge of the students in genetic and biochemical aspect of pathogenesis factors, to discuss these mechanisms, and to broaden their understanding of the host pathogen interaction.

Learning outcomes - On successful completion of this module, students should be able to:
At the end of the course the students will be able to: understand the host-pathogen interaction, which are the mechanisms pathogens use to evade host defence, what is the genetic basis of these mechanisms and ways to counter them. The students will be able to design experiments to measure and identify pathogenesis factors, and critically read experiments which shed light on these mechanisms.

Attendance requirements(%):
90%

Teaching arrangement and method of instruction: lectures

Course/Module Content:
The general topics of the course will be:
1. Micro-organisms and Infectious diseases: a historical perspective.
2. Antibiotics and the development of resistance. Staphylococcus aureus as an example for stepwise development of antibiotic resistance.
3. Virulence factors. How to measure virulence. How can virulence factors be identified?
4. Host susceptibility to infection – the case for TB, herpes and others.
5. Evading the immune system. Avoiding antibodies and complement, surviving phagocytosis by PMN and Macrophages and more.
6. Bacterial toxins and disease. The case for DT, cholera, shiga, pertussis,

botulinum, anthrax, TSST-1 and many more…
7. Secretion systems – what are they good for?
8. The Plague – disease and molecular pathogenesis.
9. Mycobacterium tuberculosis – the white death and other mycobacteria.
10. Clostridial disease, and C. difficile in particular: more infectious, more resistant, and more toxic.
11. HIV and it's virulence pathways: the road to AIDS.
12. Micro-organisms and carcinogenesis; Micro-organisms and autoimmunity. Molecular mechanisms.
13. Diagnostics – from old times to modern times.

Required Reading:
papers related to the topics in class.

Additional Reading Material:
None

Course/Module evaluation:
End of year written/oral examination 100 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:
none