The Hebrew University of Jerusalem

Syllabus

Signal transduction pathways and their role in cancer - 96230

Last update 13-08-2018

HU Credits: *2*

Degree/Cycle: *1st degree (Bachelor)*

Responsible Department: *Medicine*

Academic year: *0*

Semester: *1st Semester*

Teaching Languages: *Hebrew*

Campus: *Ein Karem*

Course/Module Coordinator: *Prof. Shulamit Katzav-Shapira*

Coordinator Email: *shulamitk@ekmd.huji.ac.il*

Coordinator Office Hours: *No specific office hours, available thought each day*

Teaching Staff:
Prof Shulamit Katzav

Course/Module description:
Lectures by Prof. Katzav with possible lectures by the students, depending on the number of participants

Course/Module aims:
Cancer is one of the main causes for death in the western society. The genetic basis of cancer has tremendously advanced in the recent years, thus leading to the identification of oncogenes. Most of the identified oncogenes code for aberrant proteins that are involved in signal transduction pathways. The course will focus on the understanding of signal transduction pathways in normal cells and how these pathways go awry in cancer.

Learning outcomes - On successful completion of this module, students should be able to:
Students will gain a comprehensive understanding on the molecular mechanisms of signal transduction and cancer

Attendance requirements(%):
Mandatory (80%)

Teaching arrangement and method of instruction:

Course/Module Content:
• Structure/function of GPCR receptors and their involvement in cancer
• Structure/function of tyrosine kinase growth factor receptors. Focus on the EGFR family of receptors.
• Studies that highlighted the importance of tyrosine phosphorylation
• Cascades that are triggered by growth factors
• Mutations/molecular aberrations that convert signal transducers to oncogenes
• Protein-protein interactions
• The ras family of proteins and activation of MAPK and PI3K cascades
• Successes (kinase inhibitors) and failures (ras inhibitors) in the battle against cancer
• Oncogene Addiction

Required Reading:

- *Robert A. Weinberg, 2013, The Biology of Cancer – Garland Science. 2nd edition*
- *The Emperor of all Maladies, A Biography of Cancer, Siddhartha Mukherjee*

Additional Reading Material:

Course/Module evaluation:

End of year written/oral examination 0 %
Presentation 0 %
Participation in Tutorials 10 %
Project work 90 %
Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information: