BIO-450

Molecular endocrinology

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Summary

We will define the concept of homeostasis and principles of hormone action and the molecular mechanisms underlying them. Interactions with the environment and pertinent public health issues will be analyzed.

Content

Study the molecular mechanisms of hormone action. After a basic primer in general endocrinology, examine the various mechanisms of steroid and peptide hormone action, as well as the cross talk between the pathways and their role in cellular signaling. Study the role of hormones in development. Then, focus on how these pathways are involved in human diseases such as diabetes, obesity and endocrine-related cancer and discuss mechanisms of endocrine disruption.

Keywords

endocrine system, endocrine disruptors, physiology, reproduction, sex differentiation, estrogen receptor, homeostasis, diabetes, hormone dependent cancers

Learning Prerequisites

Required courses

None

Learning Outcomes

By the end of the course, the student must be able to:

• Explain principles of endocrine regulation.
• Interpret data in published papers.
• Design a research project.
• Present a research project orally.
• Defend a research project.
• Synthesize published data to produce a project.

Transversal skills

• Summarize an article or a technical report.
• Make an oral presentation.
• Write a literature review which assesses the state of the art.
• Manage priorities.
• Take feedback (critique) and respond in an appropriate manner.
• Use a work methodology appropriate to the task.
• Continue to work through difficulties or initial failure to find optimal solutions.
• Use both general and domain specific IT resources and tools

Teaching methods
Ex-cathedra lectures, journal clubs, oral presentation of the proposal, practical session

Expected student activities
Presentation and critical analysis of papers.
Oral presentation of research proposal.

Assessment methods
Oral presentation and written report: quality of slides, clarity and content of presentation, ability to answer questions and structure and logic of the report
Continuous control: two written exams during the semester.

Supervision
Assistants No
Others Two hours of "exercises" per week. This will be used as appropriate through the course (discussion with teacher(s), preparation time etc).

Resources
Bibliography
No prerequisite.

Notes/Handbook
When possible, copies of the slides will be provided.