BIO-450

Molecular endocrinology

Brisken Cathrin

Cursus	Sem.	Type
Life Sciences Engineering	MA1, MA3	Opt.
Minor in life sciences engineering	H	Opt.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	During the semester
Workload	120h
Weeks	14
Hours	**4 weekly**
Lecture	2 weekly
Exercises	2 weekly
Number of positions	

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 and preventative strategies will be discussed.

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 and transgenerational disease predisposition.

Keywords

endocrine system, endocrine disruptors, physiology, reproduction, sex differentation, 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.
- Propose different experimental approaches.
- 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.
- 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 club: oral presentation and written report, practical session

Expected student activities

Presentation and critical analysis of papers.
Group project: movie for lay public.

Assessment methods

Continuous exams: 80%
Group project (movie) 20%

Supervision

Assistants	Yes
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

copies of the slides are provided.
Suggested readings.

Websites

- http://useful links are shared

Moodle Link

- https://go.epfl.ch/BIO-450