

BIO-471

Cancer biology I

Lingner Joachim, Oricchio Elisa, Simanis Viesturs

Cursus	Sem.	Type
Life Sciences Engineering	MA1	Opt.
Sciences du vivant	MA1, MA3	Opt.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	During the semester
Workload	150h
Weeks	14
Hours	5 weekly
Courses	3 weekly
Exercises	2 weekly
Number of positions	

Summary

The course covers in detail molecular mechanisms of cancer development with emphasis on cell cycle control, genome stability, oncogenes and tumor suppressor genes.

Content

The 2x5 credit course starts in the fall semester and continues throughout the spring semester as Cancer Biology II. In the fall semester (Cancer Biology I), the following topics are covered:

- Oncogenes and tumor suppressors
- Cell cycle regulation
- Apoptosis and senescence
- Signalling pathways in cancer
- Genome maintenance and segregation
- DNA repair
- Functional genomic screens and targeted cancer therapies

Learning Prerequisites**Recommended courses**

Basic knowledge of molecular biology and genetics.

Learning Outcomes

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

- Expound mechanisms of cell cycle control
- Expound mechanisms of genome maintenance
- Expound principles of tumor development
- Assess / Evaluate published experimental results
- Design experiments to test hypotheses
- Create models to explain data
- Give an example of a tumour suppressor
- Give an example of an oncogene
- Expound cancer signalling pathways

Transversal skills

- Communicate effectively with professionals from other disciplines.
- Evaluate one's own performance in the team, receive and respond appropriately to feedback.
- Give feedback (critique) in an appropriate fashion.
- Access and evaluate appropriate sources of information.
- Make an oral presentation.
- Summarize an article or a technical report.
- Continue to work through difficulties or initial failure to find optimal solutions.
- Take feedback (critique) and respond in an appropriate manner.
- Demonstrate the capacity for critical thinking
- Set objectives and design an action plan to reach those objectives.

Teaching methods

Ex cathedra and exercices

Assessment methods

Continuous control

Supervision

Office hours	No
Assistants	No
Forum	No
Others	Office hours by appointment only.

Resources

Bibliography

Robert A. Weinberg: The Biology of Cancer, 2nd edition 2013, Garland Science, Taylor & Francis Group, LLC

Ressources en bibliothèque

- [The Biology of Cancer / Weinberg](#)

Prerequisite for

Master in life sciences & technology, specialization in molecular medicine.