

Faculty of Medicine in Rijeka

**Curriculum
2023/2024**

For course

**Cell Growth and Cell Cycle Regulation in Physiological
and Pathological Conditions**

Study program:	Medical Studies in English (R) (elective) University integrated undergraduate and graduate study
Department:	Department of Molecular Medicine and Biotechnology
Course coordinator:	prof. dr. sc. Volarević Siniša, dr. med.
Year of study:	3
ECTS:	1.5
Incentive ECTS:	0 (0.00%)
Foreign language:	Possibility of teaching in a foreign language

Course information:

Cancer pathogenesis involves the dysregulation of several cellular processes, including cell growth and division. The course aims to explain the differences in cell growth and cell cycle regulation between normal and cancerous cells to the students. Students will also be informed about the implications of this knowledge for developing novel diagnostic and prognostic biomarkers for cancer and personalized anti-cancer treatments.

List of assigned reading:

Lodish H., Berk A., Zipursky S.L., Matsudaira P., Baltimore D., Darnell J.E. (1999) Molecular Cell Biology. 4th edition, W H Freeman & Co (Poglavlja 20 i 24)

List of optional reading:

1. Alberts B., Bray D., Lewis J., Raff M., Roberts K., Watson J.D. (1994) Molecular Biology of the Cell. 3rd edition, Garland Publishing, Inc., New York & London (Poglavlja 15 i 17)
2. Veliki broj originalnih i preglednih članaka

Curriculum:

Seminars list (with titles and explanation):

A short review of the hallmarks of cancer

Cell growth and division.

Definition of cell growth and cell division.

Cell growth and cell division.

PI3K-TOR signal pathway (1. part)

PI3K-TOR signal pathway (1. part)

PI3K-TOR signal pathway (2. part)

PI3K-TOR signal pathway (2. part)

Signaling pathways involved in cell growth and cell cycle regulation (1. part)

Signaling pathways involved in cell growth and cell cycle regulation (1. part)

Signaling pathways involved in cell growth and cell cycle regulation (2. part)

Signaling pathways involved in cell growth and cell cycle regulation (2. part)

Molecular mechanisms of cell growth

Molecular mechanisms of cell growth .

Regulators of cell cycle (1. part)

Regulators of cell cycle (1 part).

Regulators of cell cycle (2 part)

Regulators of cell cycle (2 part).

Cell cycle checkpoints

Cell cycle checkpoints

Abnormalities of cell growth and cell cycle in cancer

Abnormalities of cell growth and cell cycle in cancer.

Cell growth and cell cycle dysregulation may reveal therapeutic liabilities in cancer

Cell growth and cell cycle dysregulation may reveal therapeutic liabilities in cancer.

Student obligations:

Student course attendance, course preparation (assigned reading), and exam are obligatory.

Exam (exam taking, description of the written/oral/practical part of the exam, point distribution, grading criteria):

Evaluation would be performed according to the actual Rules on studies of the University of Rijeka (approved by the Senat) and the Faculty of Medicine (approved by the Faculty council). In this system, the overall students' outcome is made up of 70% of their achievement during the course itself and 30% of their success in the final exam. The oral presentation of a particular segment of the course content is an obligatory part of the final exam.

Other notes (related to the course) important for students:

Course content:

1. A short review of the hallmarks of cancer
2. Definition of cell growth and cell division
3. Growth factor receptors
4. Signaling pathways involved in cell growth and cell cycle regulation
5. Molecular mechanisms of cell growth
6. Regulators of cell cycle
7. Cell cycle checkpoints
8. Abnormalities of cell growth and cell cycle in cancer
9. Cell growth and cell cycle dysregulation may reveal therapeutic liabilities in cancer

COURSE HOURS 2023/2024

Cell Growth and Cell Cycle Regulation in Physiological and Pathological Conditions

Seminars (Place and time or group)
11.01.2024
A short review of the hallmarks of cancer: <ul style="list-style-type: none">• P04 (16:15 - 18:30) ^[154]<ul style="list-style-type: none">◦ CGCCR
prof. dr. sc. Volarević Siniša, dr. med. ^[154]
17.01.2024
Definition of cell growth and cell division.: <ul style="list-style-type: none">• P02 (14:30 - 15:45) ^[154]<ul style="list-style-type: none">◦ CGCCR
prof. dr. sc. Volarević Siniša, dr. med. ^[154]
18.01.2024
PI3K-TOR signal pathway (1. part): <ul style="list-style-type: none">• P04 (16:15 - 19:15) ^[154]<ul style="list-style-type: none">◦ CGCCR PI3K-TOR signal pathway (2. part): <ul style="list-style-type: none">• P04 (16:15 - 19:15) ^[154]<ul style="list-style-type: none">◦ CGCCR
prof. dr. sc. Volarević Siniša, dr. med. ^[154]
23.01.2024
Signaling pathways involved in cell growth and cell cycle regulation (1. part): <ul style="list-style-type: none">• Department of Molecular Medicine and Biotechnology - library (12:00 - 19:16) ^[154]<ul style="list-style-type: none">◦ CGCCR Signaling pathways involved in cell growth and cell cycle regulation (2. part): <ul style="list-style-type: none">• Department of Molecular Medicine and Biotechnology - library (12:00 - 19:16) ^[154]<ul style="list-style-type: none">◦ CGCCR Molecular mechanisms of cell growth: <ul style="list-style-type: none">• Department of Molecular Medicine and Biotechnology - library (12:00 - 19:16) ^[154]<ul style="list-style-type: none">◦ CGCCR Regulators of cell cycle (1. part): <ul style="list-style-type: none">• Department of Molecular Medicine and Biotechnology - library (12:00 - 19:16) ^[154]<ul style="list-style-type: none">◦ CGCCR Regulators of cell cycle (2 part): <ul style="list-style-type: none">• Department of Molecular Medicine and Biotechnology - library (12:00 - 19:16) ^[154]<ul style="list-style-type: none">◦ CGCCR
prof. dr. sc. Volarević Siniša, dr. med. ^[154]
24.01.2024
Cell cycle checkpoints: <ul style="list-style-type: none">• v (14:30 - 15:45) ^[154]<ul style="list-style-type: none">◦ CGCCR
prof. dr. sc. Volarević Siniša, dr. med. ^[154]
25.01.2024

Abnormalities of cell growth and cell cycle in cancer:

- P04 (16:15 - 18:30) ^[154]
 - CGCCR

Cell growth and cell cycle dysregulation may reveal therapeutic liabilities in cancer:

- P04 (16:15 - 18:30) ^[154]
 - CGCCR

prof. dr. sc. Volarević Siniša, dr. med. ^[154]

List of lectures, seminars and practicals:

SEMINARS (TOPIC)	Number of hours	Location
A short review of the hallmarks of cancer	3	P04
Definition of cell growth and cell division.	2	P02
PI3K-TOR signal pathway (1. part)	2	P04
PI3K-TOR signal pathway (2. part)	2	P04
Signaling pathways involved in cell growth and cell cycle regulation (1. part)	2	Department of Molecular Medicine and Biotechnology - library
Signaling pathways involved in cell growth and cell cycle regulation (2. part)	2	Department of Molecular Medicine and Biotechnology - library
Molecular mechanisms of cell growth	2	Department of Molecular Medicine and Biotechnology - library
Regulators of cell cycle (1. part)	2	Department of Molecular Medicine and Biotechnology - library
Regulators of cell cycle (2 part)	2	Department of Molecular Medicine and Biotechnology - library
Cell cycle checkpoints	2	v
Abnormalities of cell growth and cell cycle in cancer	2	P04
Cell growth and cell cycle dysregulation may reveal therapeutic liabilities in cancer	2	P04

EXAM DATES (final exam):
