

Medicinski fakultet u Rijeci

**IZVEDBENI NASTAVNI PLAN  
2023/2024**

Za kolegij

**Nutrition, Metabolism, Aging, and Aging-related  
Diseases**

Studij:	<b>Medical Studies in English (R)</b> (izborni) Sveučilišni integrirani prijediplomski i diplomski studij
Katedra:	<b>Zavod za molekularnu medicinu i biotehnologiju</b>
Nositelj kolegija:	<b>prof. dr. sc. Volarević Siniša, dr. med.</b>
Godina studija:	<b>4</b>
ECTS:	<b>1.5</b>
Stimulativni ECTS:	<b>0 (0.00%)</b>
Strani jezik:	<b>Mogućnost izvođenja na stranom jeziku</b>

## **Podaci o kolegiju:**

The course aims to introduce the students to the current understanding of the link between metabolism, cancer, and accelerated aging at the molecular level. Particular emphasis will be put on the role of unhealthy habits regarding eating and nutrition on cancer pathogenesis and accelerated aging. Students will also be informed about the implications of this knowledge for the prevention and treatment of aging-related diseases, particularly cancer and neurodegenerative disorders.

## **Popis obvezne ispitne literature:**

Lodish H, Berk A, Zipursky SL, Matsudaira P, Baltimore D, Darnell JE. (1999) Molecular Cell Biology. 4th edition, W H Freeman & Co.

## **Popis dopunske literature:**

Deleyto-Seldas N and Efeyan A. The mTOR-autophagy axis and the control of metabolism. *Front Cell Dev Biol*, 9:655731 (2021)

Vander Heiden MG et al. Understanding the Warburg effect: the metabolic requirements of cell proliferation. *Science*, 324:1029-1033 (2009)

de Cabo, and Mattson MP. Effects of Intermittent fasting on health, aging, and disease. *N Engl J Med*. 381:2541-2551 (2019)

Longo VD and Anderson RM. Nutrition, longevity, and disease: from molecular mechanisms to interventions. *Cell*. 185:1455-1470 (2022)

## **Nastavni plan:**

### **Predavanja popis (s naslovima i pojašnjenjem):**

#### **Metabolic reprogramming in cancer**

Metabolic reprogramming in cancer

### **Seminari popis (s naslovima i pojašnjenjem):**

#### **Dysregulation of energy metabolism in cancer**

Dysregulation of energy metabolism in cancer.

#### **The key role of the insulin receptor-PI3K-mTORC1 signaling pathway in cancer and aging**

The key role of the insulin receptor-PI3K-mTORC1 signaling pathway in cancer and aging.

#### **Dysregulated protein synthesis drives cancer pathogenesis and accelerates aging**

Dysregulated protein synthesis drives cancer pathogenesis and accelerates aging.

#### **Unhealthy habits regarding eating and nutrition, metabolism, aging, and cancer**

Unhealthy habits regarding eating and nutrition, metabolism, aging, and cancer.

#### **Healthy habits regarding eating and nutrition in cancer prevention and treatment**

Healthy habits regarding eating and nutrition in cancer prevention and treatment.

#### **Healthy habits regarding eating and nutrition in slowing down the aging process**

Healthy habits regarding eating and nutrition in slowing down the aging process

## **Obveze studenata:**

Class attendance 70%.

## **Ispit (način polaganja ispita, opis pisanog/usmenog/praktičnog dijela ispita, način bodovanja, kriterij ocjenjivanja):**

Class attendance 70%.

## **Ostale napomene (vezane uz kolegij) važne za studente:**

1. Metabolic reprogramming in cancer
2. Dysregulation of energy metabolism in cancer
3. The key role of the insulin receptor-PI3K-mTORC1 signaling pathway in cancer and aging
4. Dysregulated protein synthesis drives cancer pathogenesis and accelerates aging
5. Unhealthy habits regarding eating and nutrition, metabolism, aging, and cancer
6. Healthy habits regarding eating and nutrition in cancer prevention and treatment
7. Healthy habits regarding eating and nutrition in slowing down the aging process

## SATNICA IZVOĐENJA NASTAVE 2023/2024

Nutrition, Metabolism, Aging, and Aging-related Diseases

<b>Predavanja</b> (mjesto i vrijeme / grupa)	<b>Seminari</b> (mjesto i vrijeme / grupa)
<b>06.03.2024</b>	
Metabolic reprogramming in cancer: <ul style="list-style-type: none"><li>• P04 (14:30 - 18:30) <sup>[154]</sup><ul style="list-style-type: none"><li>◦ NMAAAD</li></ul></li></ul>	
prof. dr. sc. Volarević Siniša, dr. med. <sup>[154]</sup>	
<b>07.03.2024</b>	
	Dysregulation of energy metabolism in cancer: <ul style="list-style-type: none"><li>• P07 (15:00 - 19:15) <sup>[154]</sup><ul style="list-style-type: none"><li>◦ NMAAAD</li></ul></li></ul>
prof. dr. sc. Volarević Siniša, dr. med. <sup>[154]</sup>	
<b>13.03.2024</b>	
	The key role of the insulin receptor-PI3K-mTORC1 signaling pathway in cancer and aging: <ul style="list-style-type: none"><li>• P07 (15:00 - 19:15) <sup>[154]</sup><ul style="list-style-type: none"><li>◦ NMAAAD</li></ul></li></ul> Dysregulated protein synthesis drives cancer pathogenesis and accelerates aging: <ul style="list-style-type: none"><li>• P07 (15:00 - 19:15) <sup>[154]</sup><ul style="list-style-type: none"><li>◦ NMAAAD</li></ul></li></ul>
prof. dr. sc. Volarević Siniša, dr. med. <sup>[154]</sup>	
<b>14.03.2024</b>	
	Unhealthy habits regarding eating and nutrition, metabolism, aging, and cancer: <ul style="list-style-type: none"><li>• P04 (16:00 - 20:00) <sup>[154]</sup><ul style="list-style-type: none"><li>◦ NMAAAD</li></ul></li></ul> Healthy habits regarding eating and nutrition in cancer prevention and treatment: <ul style="list-style-type: none"><li>• P04 (16:00 - 20:00) <sup>[154]</sup><ul style="list-style-type: none"><li>◦ NMAAAD</li></ul></li></ul>
prof. dr. sc. Volarević Siniša, dr. med. <sup>[154]</sup>	
<b>15.03.2024</b>	
	Healthy habits regarding eating and nutrition in slowing down the aging process: <ul style="list-style-type: none"><li>• P04 (13:00 - 17:00) <sup>[154]</sup><ul style="list-style-type: none"><li>◦ NMAAAD</li></ul></li></ul>
prof. dr. sc. Volarević Siniša, dr. med. <sup>[154]</sup>	

### Popis predavanja, seminara i vježbi:

<b>PREDAVANJA (TEMA)</b>	<b>Broj sati</b>	<b>Mjesto održavanja</b>
Metabolic reprogramming in cancer	5	P04
<b>SEMINARI (TEMA)</b>	<b>Broj sati</b>	<b>Mjesto održavanja</b>
Dysregulation of energy metabolism in cancer	4	P07

The key role of the insulin receptor-PI3K-mTORC1 signaling pathway in cancer and aging	2	P07
Dysregulated protein synthesis drives cancer pathogenesis and accelerates aging	3	P07
Unhealthy habits regarding eating and nutrition, metabolism, aging, and cancer	3	P04
Healthy habits regarding eating and nutrition in cancer prevention and treatment	4	P04
Healthy habits regarding eating and nutrition in slowing down the aging process	4	P04

**ISPITNI TERMINI (završni ispit):**

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