



Sveučilište u Rijeci  
University of Rijeka



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Syllabus:  
**BEHAVIORAL GENETICS**

**Academic year:** 2020/2021

**Program:** Master program: Medicinal chemistry, Drug research and development, Biotechnology in medicine and Biotechnology for the life Sciences

**Course number:** EBIL 140

**ECTS points:** 3

**Language:** English

**Contact hours:** 30 L + 10 S

**Prerequisite:** Cellular and molecular biology, The basics of molecular medicine

**Course coordinator and contact:**

Associate Professor Rozi Andretić Waldowski

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**Individual consultations:** Course coordinator is available at any time upon previously agreed date and time.

**Lecturers:**

Assoc. Prof. Rozi Andretić Waldowski: 28 L + 10 S

Asst. Prof. Nicholas Bradshaw: 2 L

**Required reading:**

- Chaterine Baker „Behavioral Genetics“, AAAS 2004, e-book  
<http://www.fulviofrisone.com/attachments/article/417/behavioral%20genetics.pdf>
- Assigned research papers



### Recommened reading:

- Behavioral Genetics: R.Plomin, J.C.DeFries, G.E.McClearn and M.Rutter, W.H.Freeman and Company, New York, 3rd Ed.

### Course description:

Lectures will be combined with student's presentations of research papers that contain methodologies used in behavioral genetics and which significantly contributed in the understanding of different behavioral traits. The emphasis of this course will be on human studies, with the mention of the relevant animal studies done in mice and fruit flies. The goal of this class is for students to learn about the complex interaction between the nature and nurture and how it molds human behavior.

During the introduction to the course it will be presented what is behavioral genetics, its history and controversial topics through history. That will be followed by description of methodologies used in behavioral genetics and types of approaches in the studies of human and animal behavior. It will be presented how genetic predispositions influences the environment and how does the environment influences the genes, with a special emphasis on epigenetics. In the second part of the course different psychiatric illnesses will be discussed and the role that gene - environment interaction plays in their development.

Lectures will be combined with student's presentations of research papers that will contain examples of the use of different types of genetic analysis of behavior and how they contribute to the understanding of psychiatric illnesses.

### Study outcomes:

In this course students should:

1. Gain general knowledge about complex role that genetic makeup and environment has on expression of human behavior.
2. Gain general knowledge about central concepts in genetics such as: inheritance, simple and complex traits and genetic material.
3. Gain general knowledge about methodology used in the field of behavioral genetics and types of studies in animal and human research.
4. Apply acquired knowledge to discuss research papers about human traits such as general cognitive ability and different psychopathologies.

Students will acquire basic knowledge:

- about basic concepts of behavioral genetics
- ability to explain the complexities of gene-environment interactions that determine different human phenotypes
- understand different techniques and approaches that are used in behavioral genetics
- understand ethical, moral and social consequences of different interpretations of published scientific research that describes genetic and environmental influence on human behavior

Students will acquire general skills such as:



- analytical thinking about different approaches that are used to analyze complex behavior
- logical thinking in creating an overview and analysis of the literature related to a specific topic, and writing of a structured seminar or poster
- communication skills in presenting and discussing the research paper among peers

### **Course content:**

#### **Lectures:**

- L1. Studies of behavioral genetics and its history (2 hours)
- L2. Methodologies used in behavioral genetics (3 hours)
- L3. Gene-environment interaction (3 hours)
- L4. Epigenetics (2 hours)
- L5. General cognitive abilities (2 hours)
- L6. Cognitive disabilities (2 hours)
- L7. Schizophrenia (2 hours)
- L8. Psychopathologies (2 hours)
- L9. Addictions (2 hours)

#### **Seminars:**

- S1. General cognitive abilities (2 sata)
- S2. Cognitive disabilities (2 sata)
- S3. Psychopathologies (2 sata)
- S4. Psychopathologies (2 sata)
- S5. Addictions (2 sata)

### **Requirements, scoring and grading:**

#### **Student activities:**

Students will actively participate in discussions during lectures and seminars, and based on their assigned reading, debate advantages and disadvantages of different approaches and findings about the gene-environment interactions in the development of mental illnesses. The topics of discussions, i.e. research papers will be assigned at the beginning of the course or alternatively students will be able to pick their own topic. The debates will take place between groups of students where they will defend their interpretations of scientific findings by using the knowledge they acquired during lectures. For this activity students can acquire maximally 35 points. At the beginning of the 2nd week there will be a midterm where students can acquire maximally 35 points. The maximum number of points at the final exam on the last day of the course is 30 points.

#### **Exam dates:**

- 1st exam date will be on 18.02.2021.
- 2nd exam date will be on 05.03.2021.
- 3rd exam date will be in June decided after consultation with students.
- 4th exam date will be in September decided after consultation with students.

### **Grading (according to Pravilnik o studijima Sveučilišta u Rijeci):**



The maximum number of points that a student can acquire for activities during lecture, seminars and midterm is 70% of the final grade. On the final exam they can acquire the maximum of 30% of the final grade. If at the end of the course a student has acquired:

- from 0 do 34,9% they can not sign up for the final exam
- more than 35% they can sign up for the final exam

According to the total number of points that a student acquires during classes and final exam they will be graded as follows:

Percent of knowledge and competencies	ECTS grade	National grade
90% do 100%	A	Excellent (5)
75% do 89,9%	B	Very good (4)
60% do 74,9%	C	Good (3)
50% do 59,9%	D	Sufficient (2)
0% do 49,9%	F	Fail (1)

Final grade is the sum of points achieved during classes and on the final exam and the passing grades are: excellent(5), very good (4), good (3) and sufficient (2).

### Lecture time table\*:

The following time table and its content can be modified due to the epidemiological situation.

Date	Group	Time	Place	Type	Lecturer
01.02.2021.	all	09:00 – 10:45	On-line	P1	Assoc.prof. Rozi Andretić W.
02.02.2021.	all	09:00-11:45	On-line	P2	Assoc.prof. Rozi Andretić W.
03.02.2021.	all	09:00-11:45	On-line	P3	Assoc.prof. Rozi Andretić W.
04.02.2021.	all	09:00 – 10:45	On-line	P4	Assoc.prof. Rozi Andretić W.
05.02.2021.	all	09:00 – 10:45	On-line	P5, S1	Assoc.prof. Rozi Andretić W.
08.02.2021.	all	09:00 – 12:30	At home On-line	Midterm P6, S2	Assoc.prof. Rozi Andretić W.
09.02.2021.	all	09:00 – 12:30	On-line	P7  S3	Assistant prof. Nicholas Bradshaw Assoc.prof. Rozi Andretić



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10.02.2021.	all	09:00 – 12:30	On-line	P8, S4	Assoc.prof. Rozi Andretić W.
11.02.2021.	all	09:00 – 12:30	On-line	P9, S5	Assoc.prof. Rozi Andretić W.
12.02.2021.			At home	Final exam	Assoc.prof. Rozi Andretić W.

**Additional information:**

Ethical code:

Students are expected to behave according to the ethical code as defined in the documents of the University of Rijeka: *Etički kodeks Sveučilišta u Rijeci* and *Etički kodeks za studente*.

Satisfaction questionnaire:

In the interest of improving this course we politely ask all students to complete the questionnaire about their satisfaction with the course and with teacher's performance. The questionnaire is anonymous, and the results are important for analysing the quality of the program and all teaching staff at the Department of biotechnology.