

BIO-603(BP)

**Practical - Barth Lab**

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Cursus	Sem.	Type
Molecular Life Sciences		Obl.

Language of teaching	English
Credits	1
Session	
Exam	Oral
Workload	30h
<b>Hours</b>	<b>24</b>
Lecture	6
Practical work	18
<b>Number of positions</b>	<b>4</b>

**Frequency**

Every year

**Remark**

3-day Block course, every year in January. To register, contact EDMS Administration

**Summary**

This course will convey the concepts and experimental techniques for studying the signal transduction mediated by receptors across biological membranes.

**Content**

The course will introduce the concepts and technical approaches for studying signal transduction pathways mediated by receptors across biological membranes.

On the conceptual side, we will cover the molecular and mechanistic underpinnings of:

receptor ligand sensing and binding selectivity  
 receptor allostery and signal transmission  
 receptor coupling to intracellular signaling proteins  
 intracellular signaling cascades and associated protein networks.

On the practical side, the following techniques will be introduced:

mammalian cell culture, transfections  
 quantitative measurements of receptor and downstream signaling pathway activations using specific reporters of secondary messenger production and gene expression  
 Fluorescence, Bioluminescence measurements using plate readers and microscopy.

**Note**

Please note that you are not allowed to inscribe in your own group!

Note that 3 practical courses are mandatory for all EDMS students and that they have the priority; each course has between 2 to 4 possible slots.

**Therefore, please do not register by yourself to this course, this will be done by the EDMS program administrator!**

**Keywords**

cell signaling; bioluminescence, fluorescence, biosensors

**Learning Outcomes**

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

- measure and understand the signaling properties of a membrane receptor

### **Assessment methods**

Oral