



## DEPARTMENT OF CLINICAL NEUROSCIENCE

### **K8F5252, Psychoneuroimmunology, 4.5 credits (hec)**

Psykoneuroimmunologi, 4,5 högskolepoäng

*Third-cycle level / Forskarnivå*

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#### **Approval**

This syllabus was approved by the The Committee for Doctoral Education on 2023-12-07, and was last revised on 2025-02-19. The revised course syllabus is valid from autumn semester 2025.

#### ***Responsible department***

Department of Clinical Neuroscience, Faculty of Medicine

#### **Prerequisite courses, or equivalent**

No prerequisite courses, or equivalent, demanded for this course.

#### **Purpose & Intended learning outcomes**

##### **Purpose**

Psychoneuroimmunology is the study of the functional and bidirectional relationships between the nervous system, the endocrine system, the immune system and behavior. The main purpose of the course is to provide the student with an overview of present knowledge in this field and to offer an opportunity to apply a crossdisciplinary mechanistic perspective across physiological and pathological conditions. The students are given good opportunities to network and to interact with leading national and international researchers in a quickly developing area. We also wish this course to be an opportunity to interact with other PhD students with overlapping research interests.

##### **Intended learning outcomes**

At the end of the course, the doctoral student will be able to:

- 1) Describe and explain the essential concepts in psychoneuroimmunology, and the basic mechanisms by which the nervous, the endocrine, and the immune system communicate to affect behavior.
- 2) Critically discuss how these concepts and mechanisms are relevant for health.
- 3) Critically reflect on the literature in the field of psychoneuroimmunology.

4) Identify knowledge gaps, and design an adequate research plan for a study in psychoneuroimmunology.

## Course content

An overview of the essential concepts and the research in the different areas of psychoneuroimmunology will be provided. The adaptive and pathological consequences of immune activation on brain functions and behavior, including fatigue, pain, mood regulation, social behavior, and neuropsychiatric symptoms, as well as how the immune system is modulated by brain inputs, such as during stress, will be described. In addition, the course will give an opportunity to understand how behaviors can be proactively activated to improve overall defense against microbes. Models/tasks used in psychoneuroimmunology research will also be the subject of a seminar.

## Forms of teaching and learning

Teaching and learning activities will include lectures by recognized experts in psychoneuroimmunology, journals clubs, group work to prepare the written and oral presentation of the mock research project, self study of the recommended literature and time for preparation for the written and oral presentation, tutoring sessions, peer-feedback, and final examination seminar. A meet-the-PNI-expert will also be organized and students will have the opportunity to meet with the teachers of the course in small groups.

### *Language of instruction*

The course is given in English

## Grading scale

Pass (G) /Fail (U)

## Compulsory components & forms of assessment

### Compulsory components

- Participation in the Journal Club, Group works, and peer-feedback.
- Written and oral examination.
- Participation in the examination seminar.

In case of absence from the scheduled examination seminar, another occasion for examination can be arranged as agreed upon with the course leader. Other missing compulsory components can be compensated in case of justified absence (e.g. sickness).

### Forms of assessment

The examinations will consist in a written (2-3 pages) and oral presentation of a mock research

project that is well motivated in background of the current state of knowledge/lack of knowledge in psychoneuroimmunology. Each student need to show that all intended learning outcomes have been reached in order to pass the course.

## **Course literature**

Recommended literature:

Dantzer R. Neuroimmune Interactions: From the Brain to the Immune System and Vice Versa. *Physiol Rev.* 2018 Jan 1;98(1):477-504. doi: 10.1152/physrev.00039.2016.

Other relevant scientific publications will be provided during the course.