



DEPARTMENT OF ONCOLOGY-PATHOLOGY

K7F5232 Tumor Microenvironment, 1.5 credits (hec)

Tumörens mikromiljö, 1,5 högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus is approved by the The Committee for Doctoral Education on 2023-12-05, and is valid from Spring semester 2024.

Responsible department

Department of Oncology-Pathology, Faculty of Medicine

Prerequisite courses, or equivalent

Basic course in tumor biology and oncology or corresponding knowledge

Purpose & Intended learning outcomes

Purpose

The purpose of the course is to provide:

- A systematic overview on the cellular, structural and chemical composition of the tumor microenvironment (TME)
- A platform for scientific discussions on how differences in the tumor microenvironment can influence tumor progression and therapy response
- Practice in what to consider when selecting a relevant TME model system and how to analyze the tumor microenvironment ex vivo and in vivo
- A context for reflection on advances and challenges with existing and future TME-targeting therapies

Intended learning outcomes

After completion of the course, the students should be able to:

- Describe the main cellular and acellular components of the TME
- Discuss principal mechanisms of TME communication
- Systematically identify and compare properties of different TMEs and their clinical impact
- Critically evaluate different methods and model systems for TME studies and motivate their

use from a context-dependent perspective (level of complexity, ethics, clinical relevance, etc)

Course content

The course content is structured as follows:

- Components of the TME are introduced (cancer-associated fibroblasts, endothelial cells, pericytes, immune cells, ECM and associated factors etc). Processes like angiogenesis and lymphangiogenesis are discussed together with conditions like hypoxia and acidosis.
- TME properties are related to malignant growth, invasion, metastasis, and response to therapy from a clinical perspective. The specific TME of selected tumor types will be further studied in depth according to the participants' interest.
- Model systems and tools for TME studies are presented (organoids, digital image analysis etc.).

Forms of teaching and learning

The course consists of lectures, group work and discussions, literature search, and a hands-on demonstration of digital image analysis using clinical tissue samples. TME characteristics of different tumor types will be explored by problem-based learning (starting from a clinical case). The course is designed to stimulate interactive learning. Digital platforms like Canvas and Zoom will be used and internet connection is therefore needed.

Language of instruction

The course is given in English.

Grading scale

Pass (G) /Fail (U)

Compulsory components & forms of assessment

Compulsory components

All parts of the course are mandatory and require full attendance. Absence must be compensated for by other activities (after discussion with the course organizer).

Forms of assessment

The course assignments consist of:

- (1) Daily Canvas quiz in groups (formative assessment)
- (2) Oral group presentation
- (3) Essay, 1 page (summative assessment)

Course literature

Pre-selected articles for discussions, PubMed-indexed articles of own choice for the group assignment/problem-based learning, QuPath (free open source software)