Cancer-Immunity-Personalized therapies

Code:
M_BCIPT19

Type:
Optional

Period:
Semester 1

Credits:
24.0

Language of instruction:
English

Faculty:
VUmc School of Medical Sciences

Coördinators:
Mrs. prof. dr. R.E. Mebius and mr. dr. J.T. Marcus

Examinator:
Mrs. prof. dr. R.E. Mebius and mr. dr. J.T. Marcus

Mode of delivery:
Face-to-face

Learning activities and teaching methods:
Lectures, practicals, working groups

Level:
300

Target audience
Bachelor’s students of VUmc School of Medical Sciences and external (and international) students with a (bio)medical background.

Course content
This minor addresses various immune-related processes that play a crucial role in almost every disease. It is often the balance within the immune system that determines the outcome of disease, ranging from tissue destruction or the development of cancer to complete cure. To illustrate this point, we will touch upon immunological reactions that are out of balance, resulting in chronic inflammatory diseases. On the other hand, lack of immunity due to specific molecular deficiencies can result in cancer. The latest achievements in the field of cancer treatment by immune therapy will be highlighted. Also, this minor will give insight in the ongoing battle between a host and its pathogens.

To reach these aims, the minor addresses the latest diagnostic techniques in order to understand the underlying pathophysiology: these techniques include genome-wide DNA and RNA sequencing, metabolomics and microbiome analysis.
The minor is completed with the new role of Medical Imaging and Nanomedicine in the context of personalized therapy. Patients are different in their genetic DNA profile, immune system, microbiome and metabolism, so if possible, treatment should be optimized by accounting for these personal characteristics. You will learn advanced imaging techniques such as Nuclear Medicine and MRI, which are used to assess if your patient is responding to the given therapy.

All these aspects will be covered by (pre)clinical and scientific experts in their own field.

**Learning outcomes**
1. Genetic, vascular and immune (dys) functioning in health and disease
2. Interaction between host and pathogen
3. Diagnosing cancer and other immune mediated diseases in early phases
4. Using the immune system to treat cancer
5. The role of imaging in diagnosis, targeted treatment, and monitoring of patients

**Assessment methods and criteria** (min. 5 independent exams)
Writing assignment, research proposal writing, oral presentation, debate, two central exams.

**Recommended or required reading and other learning resources/tools**
This minor is supported by a corresponding CANVAS course, which contains all of the required information of this minor including an overview of the required articles and assignments. The CANVAS course will also be used to post announcements relevant to the minor. You will automatically have access to the CANVAS course.

**Prerequisites**
Knowledge on Immunology, Pathology and Microbiology is recommended.