19-21 November 2018, h 14:30-17.30

Short course

Nanobodies or camelid antibody fragments: properties and applications

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Lecture 1,
1. What are Nanobodies? This part will explain how Nanobodies were discovered and give an overview of the unique properties of Nanobodies compared to those of conventional antibody fragments such as Fab, and ScFv.
2. How Nanobodies are generated and characterized? This lecture will introduce the different steps involved to generate and select Nanobodies against a given antigen.
3. Therapeutic, diagnostic and biotechnological applications of Nanobodies. We will focus on the possibilities to use Nanobodies as: in vivo imaging agents, leads to derive peptide-based drugs, modular building blocks for manifold constructs, etc... Examples of the use of Nanobodies for research on cancer and degenerative diseases will also be addressed.

Lecture 2,
1. Protein folding and stability. This part will essentially focus on the procedures used to practically investigate protein folding and protein stability. It will also introduce the different strategies available to engineer proteins with increased stability and functionalities. Studies on Nanobodies will be particularly discussed.

Lecture 3,
1. Advanced concepts on protein structure/function. This lecture will essentially focus on functional amyloid fibrils (both natural and artificial) and on proteins that need to (partially) unfold to be functional. We will discuss a series of case studies.
2. Evaluation test: 0.5 h

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Seminar

Role of Chemokines in Cancer

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Lecture 1:

What are chemokines? A little bit of nomenclature. Structure of chemokines and chemokine receptors. Role of chemokines in cell proliferation, cell survival with particular attention on their function in cell migration. Detailed description of the cutting edge methodological approaches to study these important molecules.

Lecture 2:

Role of chemokines in cancer, role in metastasis and in the tumor ability to evade the immunological surveillance. Modulation of chemokine activity as potential anticancer therapeutic strategy. The very delicate issue of chemokines modulation.

Evaluation test: 0.5 h