

Màj 09/06/2022

UE 2.1. Current concepts in Biology and Health Sciences

6 ECTS

Teaching unit shared by the following tracks:

- Cellular, Integrative and Translational Neurosciences
- Diabetes and cardiovascular diseases
- Fundamental and clinical oncology, towards precision medicine
- Immunity, Inflammation et Infection

EC3: Membrane receptors and associated signaling pathways

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The day addresses experimental strategies for studying receptors and their signaling pathways with applications for receptors with protein kinase activity, receptors coupled to G proteins and lipoprotein receptors. It is not a question of being exhaustive but of showing with the help of examples how these receptors are studied and how the different signaling pathways can be linked. Basic knowledge of these different receptors is assumed to be acquired. Even if the pathophysiological context is important, it is above all a question of analyzing the various signaling pathways and experimental methodologies. This day should logically be coupled with EC4 on nuclear receptors, in particular for the link between the different signaling pathways. EC5 on intracellular traffic can also be an interesting follow-up.

Organization of the day

After an hour of introductory course on experimental strategies, the day is exclusively organized on the presentation of articles by the students. It ends with a talk by a researcher who explains his experimental approach.

Articles should be read before the day by all students. An oral presentation of each article will be made by one (or two) student(s) according to the following scheme: 15 min of oral presentation and 15 min of questions / debate). The number of students per jury / debate will not exceed 3 students per article presented. A presentation in English of the articles is strongly encouraged. The articles are in principle available by internet on the bibliographic databases accessible from your various research laboratories (Science Direct, Biblio Inserm, etc.).

8h45 Presentation of the day.

9h00 Introduction: Experimental strategy to study receptors and their signaling pathways.

10h30 Understanding of the activation and signaling of receptors with tyrosine kinase activity in the implementation of targeted therapies.

11h30 G protein-coupled receptors: structure, signaling pathways and pathophysiological functions.

14h30 Lipoprotein receptors: at the crossroads of lipoprotein metabolism, carbohydrate-lipid homeostasis and vascular inflammation.

16h00 Conference: presentation of an experimental approach on the study of signaling pathways and pathophysiological functions of a membrane receptor.

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