Cycle H: Molecular Medicine

Coordinator: Radek Skoda

**H1: Molecular Medicine I – 22831**
(2 hrs/week; 2 CP)

**H2: Molecular Medicine II – 12424**
(2 hrs/week; 2 CP)

Ch. Handschin, M. Heim, **R. Skoda**

The purpose of this lecture series is to introduce biologists to the mechanisms that cause human diseases. Emphasis will be on the genetic and environmental factors that lead to diseases, and how this knowledge can be used to develop diagnostic and therapeutic procedures. The series will start with a lecture on the human genome and its impact on molecular medicine, followed by lectures on infectious diseases (e.g. AIDS, Malaria), and disorders of the immune system (e.g. rheumatoid arthritis). Other lectures will concentrate on organ systems such as blood, cardiovascular system, gastro-intestinal and respiratory system and more general topics such as cancer, psychiatric disease and aging.

**H3: Molecular Control of Vertebrate Development and Organogenesis - 14459**
(2 hrs/week; 2 CP)

J. Lopez-Rios, V. Taylor, **R. Zeller**, A. Zuniga

This course will introduce the participants to the basic principles, genetic tools and vertebrate model systems used to study developmental processes. The main part of the lecture is dedicated to introducing and discussing the development of organs and central nervous system (organogenesis). Particular emphasis will be given to the current knowledge of the gene regulatory networks, signaling interactions and transcriptional regulation of organogenesis. In addition, the participants will learn about the insights the analysis of vertebrate development provides into the molecular changes underlying evolution of vertebrates (Evo-Devo). Also, the relevance of development control mechanisms for tissue engineering, stem cells and human congenital malformations will be highlighted. This course will cover both basics and cutting edge novel findings relevant to a good understanding of the molecular mechanisms governing embryonic development and organogenesis in vertebrates.
**H5: Translational Cancer Research – 12420**
(2 hrs/week; 2 CP)


The aim of the course is to give students in the life science area broad knowledge in the cancer research. The lecturers discuss all aspects of cancer research, ranging from molecular results gleaned from basic research, encompassing the pathology of cancer and finally discussing new and ‘old’cancer therapeutics. The lecturers range from those conducting basic research in the cancer area, to scientists developing novel anti-cancer therapeutics in the pharmaceutical industry, to clinicians who work daily with cancer patients. The course is carried out in two cycles, each in the spring semester, and is aimed at advanced students in the life sciences.