

### **SC11: Vascular inflammatory diseases**

Training Program: The focus of this course will be to deliver basic knowledge on the specific biology, physiology and pathology of arterial and venous vessels, with particular attention to coronary physiology, microcirculatory function, acute myocardial infarction and atherosclerosis of the aorta and the aortic valve, as well as pulmonary vascular disease. Within interactive lectures basic techniques of endothelial cell biology will be reviewed. This information will be complemented by a practical exposure to current practices of hemodynamic assessments of pulmonary pressures, right and left heart performance, as well as the discussion of basic principles of gas exchange and exercise tests. Students will spend a day in the catheter laboratory, including instructions in heart catheterization, coronary angiography, and functional vascular biology (coronary flow and pressure measurements, optical coherence tomography, intravascular ultrasound and pulmonary vascular reactivity testing).

### **SC12: Skin disorders**

Training Program: The skin is a cyto- and histogenetically diverse organ that is easily accessible. This is the reason why it is often chosen to study diverse aspects of physiology/biology and pathology. Such investigations do not only have an impact on the skin diseases investigated but also help us to better understand and treat systemic diseases or diseases of other organs. In this course, students will obtain an in-depth knowledge on pathogenetically diverse skin disorders (melanoma, HIV-disease, syphilis, allergic eczema, pemphigus vulgaris, psoriasis and acne) and, by doing so, will become acquainted with pathogenetic principles operative in cancer, infectious diseases, allergies, immune-mediated diseases and skin inflammation in general. As a consequence, they will learn to understand the mode of action of established and newly developed forms of therapy.

### **SC13: Rheumatology**

Training Program: The aim of this course is to deliver basic knowledge on the most important rheumatic diseases, including both inflammatory and degenerative joint disease, and diseases of connective tissues with special emphasis on systemic autoimmune disorders. Students will learn about the spectrum of manifestations of rheumatic diseases as well as diagnostic and therapeutic strategies. Understanding current concepts of pathogenetic mechanism will help them to understand how the melding of scientific concepts and technology has led to recent major therapeutic advances in this field. The characteristics of different animal models for rheumatic diseases as well as their relevance for their human counterparts will be discussed. Students will also undergo practical training (including

disease induction, clinical assessment and readout-systems) in murine models of rheumatoid arthritis.

#### **SC14: Allergology**

Training Program: Besides a knowledge regarding state of the art diagnostic and therapeutic strategies this course will communicate the most timely diagnostic methods based on recombinant allergen components for resolving the IgE reactivity profiles of allergic patients down to the molecular level. The course will introduce the biology and clinical significance of allergen molecules for allergy diagnosis and novel forms of allergen-specific immunotherapy.

#### **SC15: Organ Transplantation**

Training Program: In this course students will learn diagnostic and therapeutic management of organ transplant recipients with special emphasis on immunosuppressive drug therapy and its molecular mechanisms. Case studies of kidney and liver transplantations will facilitate analysis and discussion of relevant immunological issues occurring in the clinical setting.