Cycle A: Infection Biology
Coordinator: Urs Jenal

A1.1: New Trends in Developmental and Molecular Immunology – 13167
(2 hrs/week; 2 CP; Fall 2020)

Daniela Finke
In the present lecture series various immune cell subsets and immune pathways which regulate health and disease will be discussed. During the first hour one Immunologist from Basel, from Switzerland or from abroad (e.g. Oxford, Utrecht, Tübingen) will give an overview on published knowledge about cutting-edge research in Immunology. In the second hour the lecturer will present and discuss his/her own state-of-the-art research and give insights into latest results.

A1.2: Immune Disorders and Immune Therapy – 16515
(2 hrs/week; 2 CP; Spring 2021)

Daniela Finke
In the present lecture series various diseases caused by abnormalities within the immune system will be discussed. During the first hour of each lecture an overview of the clinical aspects of such a disease will be given while during the second hour the immunological basis of this will be discussed in the form of a journal club.

A2: Molecular Virology – 12412
(2 hrs/week; 2 CP; Fall 2020)

Hans Hirsch
This course covers the biological principles of viruses in vertebrates, invertebrates, plants, bacteria. State-of-the-art lectures will focus on virion and genome organization; molecular mechanisms of the replication cycle; technical tools for studies in virology; virus-host interaction including innate immune responses and oncogenic transformation; molecular aspects of transmission and epidemiology; virus evolution and mechanisms of molecular pathology; translational exploitation in biotechnology and therapy. Each topic in this 2-day workshop will be accompanied by student journal clubs, the papers of which will be distributed in the week after the Introductory lecture.

A3: Antibiotic drug targets and resistance – 14466
(1 hr/week; 1 CP; Fall 2020)

Urs Jenal, Dirk Bumann, Christoph Dehio, Sebastien Gagneux
This course will give an introduction to antimicrobials, their most prominent cellular targets and action mechanisms. Mechanisms of antibiotic resistance will be discussed as well as their impact on the fight against the clinically most relevant infections. Finally, the course will give some insights into the efforts to identify promising chemotherapeutical targets and develop novel antimicrobials.
A4: Recent Progress in Infection Biology – 39402
(1 hr/week; 1 CP; Spring 2021)

Christoph Dehio, Marek Basler, Dirk Bumann, Médéric Diard, Urs Jenal, Jean Pieters
This course will cover various topics of cutting-edge research in infection biology. We have invited internationally renowned guest speakers who will present and discuss their recent findings.

A5: Infection Biology – From in vitro models to human patients – 30638
(1 hrs/week; 1 CP; Fall 2021)

Dirk Bumann, Christoph Dehio
This introductory course to Systems Biology of Infection will focus on data and knowledge-based modeling and model-driven analysis of microbial infection processes. We will discuss recent advances in understanding the interaction of the host with bacterial and viral pathogens by integrative analysis of genome-wide and spatio-temporal data sets using computational approaches that can employ this data to generate models of host-pathogen interaction. We will further discuss how such systems-level approaches may facilitate the identification of diagnostic biomarkers and potential drug targets for novel anti-infectives and possibly allow exploring novel strategies for personalized therapy.

A6: Molecular Infection Biology – 12384
(2 hrs/week; 2 CP; Fall 2020)

Till Voss, Sebastien Gagneux, Pascal Mäser, Nicolas Brancucci
This course on molecular infection biology will focus on molecular aspects of host-pathogen interactions, pathogen virulence, immune evasion strategies, pathogen transmission or drug resistance mechanisms of several eukaryotic and prokaryotic pathogens that cause important poverty-related infectious diseases such as malaria, sleeping sickness and tuberculosis.