

# Cycle A: Infection Biology

**Coordinator: Urs Jenal**

## **A1.1: New Trends in Developmental and Molecular Immunology – 13167**

(2 hrs/week; 2 CP; Fall 2019)

## **A1.2: Immune Disorders and Immune Therapy – 16515**

(2 hrs/week; 2 CP; Spring 2019)

### **D. 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)

R. Gosert, M. Heim, **H. Hirsch**, T. Klimkait, D. Pinschewer

This course covers the biological principles of viruses in vertebrates, invertebrates, plants, and in bacteria. 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.

## **A3.1: Antibiotic drug targets and resistance – 14466**

(1 hr/week; 1 CP; Fall 2020)

D. Bumann, C. Dehio, S. Gagneux, **U. Jenal**

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.

## **A3.2: Antibiotic drug targets and resistance (Journal Club) – 39341**

(1 hr/week; 1 CP; Fall 2020)

### **M. Basler**

The Infection Biology Journal Club discusses recent papers of our guest speakers. Subjects covered include organisms, models, methods, biological questions. The aim is to learn new techniques that help us actively participate in seminars and ask interesting questions.

#### **A4.1: Recent Progress in Infection Biology – 39402**

(1 hr/week; 1 CP; Spring 2019)

M. Basler, D. Bumann, **Ch. Dehio**, M. Diard, U. Jenal, J. 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.

#### **A4.2: Recent Progress in Infection Biology (Journal Club) – 39403**

(1 hr/week; 1 CP; Spring 2019)

##### **M. Basler**

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#### **A6.1: Infection Biology – From in vitro models to human patients – 30638**

(1 hrs/week; 1 CP; Fall 2019)

**D. Bumann**, Ch. 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.

#### **A6.2: Infection Biology – From in vitro models to human patients (Journal Club) – 41271**

(1hrs/week; 1 CP; Fall 2019)

##### **M. Basler**

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#### **A7: Molecular Infection Biology – 12384**

(2 hrs/week; 2 CP; Fall 2019)

**H.-P. Beck**, I. Felger, T. Voss

This course on molecular parasitology will broadly cover the molecular basis of parasite-host interactions focusing on protozoan parasites. This will include antigenic variation, parasite invasion strategies, protein transport of intracellular parasites, and evasion mechanisms of parasites. It also will cover host polymorphisms involved in parasitic infections. During the course recent findings will be presented and critically discussed. During the course molecular techniques and research strategies will also briefly be presented.