

## **Module: Emerging Viral Infections - Discovery and Intervention Strategies**

**Module coordinators: Albert Osterhaus, Guus Rimmelzwaan**

### **Module outline:**

This module will address fundamental aspects of viral zoonotic pathogens, such as discovery of novel viruses and assessment of their zoonotic potential, genetic analysis and phylogeny, host restriction factors and virus adaptation to novel host species, pathogenesis, intervention strategies and the use of a molecular toolbox to investigate viral determinants of virulence and transmissibility. Some important well characterized viral pathogens will be discussed in depth to illuminate different prophylactic and therapeutic intervention strategies.

### **Topics:**

- (i) Virus discovery: NGS, sequence analysis, phylogeny
- (ii) Molecular toolbox: Reverse genetics to produce molecular clones of –ve and +ve RNA viruses, generation and use of pseudotyped viruses
- (iii) Host restriction/adaptation: receptor usage and replication
- (iv) Viral pathogenesis: virus tropism, tissue damage caused by virus replication and host response
- (v) Development of prophylactic intervention strategies
- (vi) Development of therapeutic intervention strategies

This module will involve lectures, tutorials, self-study and both the writing of a mini review on a known specific zoonotic virus and presentation of this review as a team effort. In addition, the students will have the opportunity to partake in a two-day practical course on virus discovery.

### **Learning: 5 ECTS**

Lectures: 46h

Tutorials: 8h

Practical work: 16h

Independent work: 80h

### **Assessment:**

100% Written exam

Ungraded course work: Oral presentation  
Review of a research paper