



**Day1- Monday 7 May 2018**

## OPENING REMARKS AND COURSE INTRODUCTION

08.30 - 09.00

**Hassan Zaraket** (Faculty of Medicine, American University of Beirut, Lebanon) & **John Wood** (National Institute for Biological Standards and Control, Hertfordshire, UK - retired)

*Welcome and Introduction to the School and isirv*

**Mohammad Sayegh** (Dean, Faculty of Medicine, American University of Beirut, Lebanon)

*Welcome to the American University of Beirut*

**Ghazi Zaatari** (Chairman, Department of Experimental Pathology, Immunology, and Microbiology, Faculty of Medicine, American University of Beirut, Lebanon)

*Introduction of Department of Experimental Pathology, Immunology, and Microbiology*

## EPIDEMIOLOGY AND ECOLOGY

09.00 - 09.40 **Hassan Zaraket** (American University of Beirut, Lebanon)

*Human influenza, burden of disease*

09.40 - 10.10 **Mamunur Rahman Malik** (Eastern Mediterranean Regional Office, WHO, Egypt)

*Influenza in the Eastern Mediterranean region*

10.10 - 10.40 **Nada Ghosn** (Ministry of Public Health, Lebanon)

*SARI surveillance Lebanon*

10.40 - 11.00 **Ghassan Dbaibo** (American University of Beirut, Lebanon)

*Outpatient influenza surveillance in Lebanon*

11.00 - 11.30 *Coffee & Networking*

11.30 - 12.00 **Isabella Monne** (OIE reference laboratory / FAO reference centre for avian influenza and Newcastle disease, Italy)

*Animal influenza*

12.00 - 13.00 **Richard Webby** (WHO Collaborating Center for Studies on the Ecology of Influenza in Animals and Birds, Center of Excellence for Influenza Research and Surveillance, St Jude Children's Research Hospital, USA)

*Influenza at the human animal interface*

13.00 - 14.00 *Lunch*

14.00 - 14.45 **Ziad Memish** (Alfaisal University, Ministry of Health, KSA; Emory University, USA)

*MERS-CoV, influenza and Hajj: burden and challenges*

14.45 - 15.30 **Ziad Memish** (Alfaisal University, Ministry of Health, KSA; Emory University, USA)

*MERS-CoV surveillance and ecology*

## VIROLOGY

15.30 - 16.30 **Maria Zambon** (Public Health England, UK) –*via video*

*Influenza virus structure, replication, and pathogenesis*

16.30 - 17.00 *Coffee & Networking*

17.00 - 18.00 **Stanley Perlman** (University of Iowa, USA)

*MERS-CoV structure, replication, and pathogenesis*



## Day2- Tuesday 8 May 2018

### DIAGNOSIS AND ANALYSIS TOOLS

09.00 - 10.00 **Isabella Monne** (OIE reference laboratory / FAO reference centre for avian influenza and Newcastle disease, Italy)

*Genetic databases and analysis tools (NCBI and GISAID)*

10.00 - 11.00 **Maria Zambon** (Public Health England, UK) –*via video including live Q&A*  
*Influenza and MERS-CoV Diagnostic tools: current and future perspectives*

11.00 - 11.30 *Coffee & Networking*

### PREVENTION AND CONTROL: VACCINES I

11.30 - 12.30 **John Wood** (Formerly NIBSC, UK)  
*Influenza vaccines*

12.00 - 13.00 **Ali Ellebedy** (Washington University, USA)  
*The immune response to influenza infections and immune correlates of protection*

13.00 - 14.00 *Lunch*

14.00 - 15.00 **John Wood** (Formerly NIBSC, UK)  
*Influenza vaccine virus selection process*

15.00 - 16.00 **Stanley Perlman** (University of Iowa, USA)  
*Role of host immune responses in protection, in immunopathological disease and in diagnosis in patients and experimentally infected animals with MERS-CoV*

16.00 - 16.30 *Coffee & Networking*

16.30 - 17.00 **Joshy Jacob** (Emory University, USA)  
*Original antigenic sin and antibody responses to drifted influenza viruses*

### *Students' Presentations*

17.00 - 17.15 **Rukshan Rafeek** (University of Peradeniya - Sri Lanka)  
*Epidemiology of influenza and parainfluenza viruses in children with acute respiratory tract infections*

17.15 - 17.30 **Nadia Soudani** (American University of Beirut, Lebanon)  
*Respiratory virus infections among pediatric cancer patients in Lebanon*

17.30 - 17.45 **Sweetie Upadhaya** (Department of Health Service, Nepal)  
*Sporadic outbreak of pandemic influenza A/H1N1 and laboratory response in Nepal in 2017*

17.45 - 18.00 **Edgar Mojica** (National Autonomous University of Mexico, Mexico)  
*Use of space-time cubes to detect influenza patterns in Mexico*



**Day 3- Wednesday 9 May 2018**

**PREVENTION AND CONTROL: VACCINES II**

09.00 - 9.30 **Ghassan Dbaibo** (American University of Beirut, Lebanon)  
*Effectiveness of inactivated influenza vaccines*

09.30 - 10.30 **George Kassianos** (Royal College of General Practitioners, UK)  
*Vaccines and strategy implementation*

**Students' Presentations**

10.30 - 10.45 **Amani Audi** (American University of Beirut, Lebanon)  
*Depletion of sphingomyelin at the plasma membrane suppresses the replication of influenza A virus*

10.45 - 11.00 **Wafaa Al Soussi** (American University of Beirut, Lebanon)  
*A novel role for neutral sphingomyelinase during influenza A virus replication*

11.00 - 11.30 *Coffee & Networking*

**PREVENTION AND CONTROL: VACCINES II**

11.30 - 12.00 **Hadi Yassine** (Qatar University, Qatar)  
*Universal influenza vaccines*

12.00 - 12.30 **Nada Melhem** (American University of Beirut, Lebanon)  
*Influenza vaccine policies and implementation in the EMR*

12.30 - 13.00 **Kayvon Modjarrad** (Walter Reed Army Institute of Research, USA)  
*Advances in Countermeasures for MERS-CoV*

13.00 - 14.00 *Lunch*

14.00 - 15.00 **Ralf Wagner** (Paul Ehrlich Institute, Germany)  
*Regulatory challenges for influenza vaccines*

**THERAPEUTIC STRATEGIES I**

15.00 - 16.00 **Hassan Zaraket** (American University of Beirut, Lebanon)  
*Mechanisms of action and resistance of antivirals*

16.00 - 16.30 *Coffee & Networking*

16.30 - 17.30 **Alicia Fry** (Centers for Diseases Control and Prevention, USA) –*via Skype*  
*Effectiveness of licensed antivirals*

17.30 - 18.00 **Alicia Fry** (Centers for Diseases Control and Prevention, USA) –*via Skype*  
*Effectiveness of live-attenuated influenza vaccines*

19:00 - 21:00

**Social event- Beit Ward Restaurant, Rawche**



**Day 4- Thursday 10 May 2018**

## THERAPEUTIC STRATEGIES II

09.00 - 10:00 **Joshy Jacob** (Emory University, USA)

*Harnessing ancient innate immune mediators to combat modern day pathogens*

### **Students' Presentations**

10.00 - 10.15 **Abira Paramsothy** (University of Bergen, Norway)

*Antibody responses in hospitalized influenza patients and correlation to clinical illness*

10.15 - 10.30 **Jessica Shartouny** (Emory University, USA)

*Harnessing an innate frog defense peptide as an anti-influenza agent*

10.30 - 10.45 **Myriam Harrabi** (Institut Pasteur De Tunis, Tunisia)

*Influenza viruses: molecular detection and biosensor diagnostic based on neuraminidase activity*

10.45 - 11.00 **TBD**

11.00 - 11.30 *Coffee & Networking*

## THERAPEUTIC STRATEGIES II

11.30 - 13.00 **Jonathan Van Tam** (Deputy Chief Medical Officer, England)

*Treating influenza with neuraminidase inhibitors*

13.00 - 14.00 *Lunch*

14.00 - 14.30 **Ghazi Kayali** (Human Link, Lebanon)

*Update on avian influenza viruses in human and birds in Egypt*

## PANDEMIC PREPAREDNESS/ LAB PRACTICE

14.30 - 15.30 **Chloe Sellwood** (National Health Service, London, UK)

*Pandemic preparedness*

15.30 - 16.00 *Coffee & Networking*

*(Trainees divide into two groups)*

16.00 - 17.00

**Group I: Pandemic preparedness group exercise- Chloe Sellwood** (National Health Service, London, UK) & **Jonathan Van Tam** (Deputy Chief Medical Officer, England)

**Group II: Lab practice: Virus isolation in eggs and cells; titration; detection- CIDR lab**

17.00 - 18.00

**Group I: Lab practice: Virus isolation in eggs and cells; titration; detection- CIDR lab**

**Group II: Pandemic preparedness group exercise- Chloe Sellwood** (National Health Service, London, UK) & **Jonathan Van Tam** (Deputy Chief Medical Officer, England)



**Day 5- Friday 11 May 2018**

**GUEST LECTURES: Research workshop**

08.30 - 09.00 **Miguela Caniza** (St Jude Children's Research Hospital)  
*Prevention and Care of Respiratory Virus Infections in Immunocompromised Children*

09.00 - 09.30 **Hadi Yassine** (Qatar University, Qatar)  
*Immunogenicity testing using viral pseudo-types*

09.30 - 10.00 **Ali Ellebedy** (Washington University, USA)  
*Broadening vaccine efficacy: harnessing the HA stalk immune response*

10:00 - 10.30 **Hassan Zaraket** (American University of Beirut, Lebanon)  
*New avenues for antiviral discovery*

10.30 - 11.00 *Coffee & Networking*

**KEYNOTE SPEAKER**

11.00 - 12.00 **Ab Osterhaus** (Research Center for Emerging Infections and Zoonosis, Germany and Erasmus University, Netherlands)  
*How to prevent a major disease outbreak -from SARS to MERS*

12.00 - 13.00 **Ab Osterhaus** (Research Center for Emerging Infections and Zoonosis, Germany and Erasmus University, Netherlands)  
*Influenza in the past, present and future*

13.00 - 13.30

**CLOSING REMARKS**

14.00 - 15.00 *Lunch*