



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 to Beirut and Introduction to the School and isirv

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

EPIDEMIOLOGY AND ECOLOGY

09.00 - 09.40 **Alicia Fry** (Centers for Diseases Control and Prevention, USA)
Human influenza, burden of disease

09.40 - 10.10 **Mamunur Rahman Malik** (Easter Mediterranean Regional Office, World Health Organization, Egypt)
Influenza in the Eastern Mediterranean region

10.10 - 10.40 **Nada Ghosn** (MOH, Lebanon)
SARI surveillance Lebanon

10.40 - 11.00 **Hassan Zaraket** (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)
Influenza virus structure, replication, and pathogenesis

16.30 - 17.00 *Coffee & Networking*

17.00 - 18.00 **Maria Zambon** (Public Health England, UK)
MERS-CoV structure, replication, and pathogenesis



Day2- Tuesday 8 May 2018

DIAGNOSIS AND ANALYSIS TOOLS

09.00 - 10.00 **Maria Zambon** (Public Health England, UK)

Influenza and MERS-CoV Diagnostic tools: current and future perspectives

10.00 - 11.00 **Isabella Monne** (OIE reference laboratory / FAO reference centre for avian influenza and Newcastle disease, Italy)

Genetic databases and analysis tools (NCBI and GISAID)

11.00 - 11.30 *Coffee & Networking*

PREVENTION AND CONTROL: VACCINES I

11.30 - 12.00 **Ali Ellebedy** (Washington University, USA)

The immune response to influenza infections and immune correlates of protection

12.00 - 13.00 **Nancy Cox** (Centers for Diseases Control and Prevention, USA)

Influenza vaccines

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

17.00 - 18.00 *Students' Presentations*

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 - 10.00 **Alicia Fry** (Centers for Diseases Control and Prevention, USA)

Effectiveness of live-attenuated influenza vaccines

10.00 - 11.00 **George Kassianos** (Royal College of General Practitioners, UK)

Vaccines and strategy implementation

11.00 - 11.30 *Coffee & Networking*

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 **Ralph Wagner** (Paul Ehrlich Institute, Germany)
Regulatory challenges for influenza vaccines

THERAPEUTIC STRATEGIES I

15.00 - 16.00 **Larissa Gubareva** (Centers for Diseases Control and Prevention, USA)
Mechanisms of action and resistance

16.00 - 16.30 *Coffee & Networking*

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

17.30 - 18.00 *Students' Presentations*

Day 4- Thursday 10 May 2018

THERAPEUTIC STRATEGIES II

09.00 - 10:00 **Larissa Gubareva** (Centers for Diseases Control and Prevention, USA)
Future antivirals: monoclonal antibodies, short peptides, polymerase inhibitors

10.00 - 11.00 *Students' Presentations*

11.00 - 11.30 *Coffee & Networking*

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, Egypt)
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*

16.00 - 17.00 (Trainees divide into two groups)

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

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 SPEAKERS

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 **Nancy Cox** (Centers for Diseases Control and Prevention, USA)

Influenza in the past, present and future

13.00 - 14.00 *Lunch*

14.00 - 15.00 **CLOSING REMARKS & DIPLOMAS**