

Program:

Monday 14.10.2019

Themes: Antibiotics, antibiotic resistance, antimicrobial susceptibility testing methods and resistance epidemiology.

- 12.00 Welcome and introduction to the course. Arnfinn Sundsfjord (AS), UiT/K-res/NWGA
Presentation of the participants from presubmitted biosketches (1 min each)
- 13.00 **Basic concepts in antibiotics and antibiotic resistance**
- *Antimicrobial resistance in a clinical perspective.* (30 min) Lecturer: Professor Arnfinn Sundsfjord (AS)
 - *Basics concepts of antibiotics and antibacterial resistance* (45 min) Lecturer: Professor Ørjan Samuelson (ØS), K-res/UiT/ NWGA
- 14.30 Break
- 15.00 **Antimicrobial susceptibility testing and important clinical resistance mechanisms**
- *Antimicrobial susceptibility testing; concepts, methods and interpretation.* (30 min) Lecturer: AS
 - *Challenges in Gram-negative bacteria exemplified by beta-lactamases and colistin resistance.* (45 min) Lecturer: ØS
 - *Challenges in Gram-positive bacteria exemplified by glycopeptide and linezolid resistance in enterococci.* (45 min) Lecturer: Professor Kristin Hegstad (KH), K-res/UiT/NWGA
- 17.00 Group work and disclosing of group work in plenum.
- 18.00 End

Social gathering in the evening

Tuesday 15.10.2019

Themes: Resistance transmission: mechanisms and evolution.

- 08.30 **Genetic mechanisms for resistance spread. 30 min lectures** 15 min for discussion
- *Transduction/bacteriophages: examples and limitations.* Lecturer: To be announced
 - *Transformation: within and between species.* Lecturer: Professor Daniel Rozen (DR), Leiden University
 - *Conjugation: promiscuity of mobile genetic elements (MGEs).* Lecturer: KH
- 11.00 **Poster/oral presentations from participants** and lunch break
- 13.00 **Evolution of resistance. 30 min lectures** 15 min for discussion

- *Drivers in the development and spread of antimicrobial resistance.* Lecturer: Professor Gunnar Skov Simonsen (GSS), University Hospital of North-Norway/ UiT/NORM
- *Reversibility of antibiotic resistance – easy to get and hard to get rid of?* Professor Pål Jarle Johnsen (PJJ), UiT
- *Successful clones/clonal spread.* Lecturer: To be announced

15.15 Group work and disclosing of group work in plenum.
17.15 End.

Wednesday 16.10.2019

Themes: Molecular methods for typing. Laboratory demonstrations antimicrobial susceptibility testing (AST). Antibiotic discovery and development.

- 08.30 **Molecular methods for typing of resistant bacterial clones and MGEs. 30 min lectures** 15 min for discussion
- *Defining bacterial clonality by molecular typing methods.* Lecturer: Professor Johanna E Sollid, UiT
 - *How to use whole genome sequencing (WGS) in public health and clinics?* Lecturer: Henrik Hasman (HH), Statens Serum Institut?
 - *Pros and cons of phenotypic and genotypic susceptibility testing.* Debaters: HH & ØS
- 11.00 **Poster/oral presentations from participants** and lunch break
- 13.00 *How do we handle big data in whole genome sequencing (WGS)?* 30 min lecture 10 min for discussion. Lecturer: Senior scientist Jessin Janice, K-res/UiT
- 13.40 *Introduction to AST in practice.* 20 min lecture. Lecturer: Leading biomedical engineer Bjørg Haldorsen (BH), K-res
- 14.00 **Laboratory demonstrations of AST methods** (disk diffusion, gradient test, micro broth dilution, rapid phenotypic of biochemical detection of resistance mechanisms, WGS and bioinformatic detection).
- 16.00 End.

Thursday 17.10.2019

- 8.30 **The future of antibiotics. 30 min lectures** 15 min for discussion
- *Concepts in drug discovery.* Lecturer: Professor John Sigurd Svendsen, Faculty of Science (NT), UiT
 - *What is discovery and development? Pipeline status, what are the challenges?* Lecturer: To be announced
 - *Bioprospecting for novel antimicrobial agents.* Lecturer: Professor Jeanette Hammer, Faculty of Biosciences, Fisheries and Economics, UiT
- 10.45 Panel debate/group work/interaction: to be announced.

- 11.45 Lunch
- 12.45 **Alternative anti-infective strategies. 30 min lectures** 15 min for discussion
- *Bacteriophage therapy* Lecturer To be decided or /*Selection inversion strategies*. Lecturer: PJJ
 - *Anti-virulence strategies; know your enemies and disarm them.* Lecturer: Professor Mona Johannessen, IMB/UiT
 - *Microbiome based strategies for decolonization of multidrug resistance and infection prevention.* Lecturer: To be announced
- 15.15 Course evaluation.
- 16.00 End