



Target Audience

Microbiologists, clinical microbiologists, infectious disease specialists and clinicians.

Faculty Members

Francois Balloux, London, UK
Valeria Bartolaia, Copenhagen, Denmark
Patrick Butaye, St. Kitts, West Indies
Önder Ergönül, Istanbul, Turkey
Herman Goossens, Antwerp, Belgium
Katy Jeannot, Besançon, France
Onur Karatuna, Växjö, Sweden
Surbhi Malhotra-Kumar, Belgium
Joseph Meletiadis, Athens, Greece
Nicola Petrosillo, Rome, Italy
Spyros Pournaras, Athens, Greece
Gian-Maria Rossolini, Florence, Italy
Sophia Vourli, Athens, Greece
Britto Basil Xavier, Antwerp, Belgium
Raffaele Zarrilli, Naples, Italy

Contact

For the Scientific Programme

Surbhi Malhotra-Kumar
University of Antwerp
Campus Drie Eiken, Building S.6.23
Universiteitsplein 1
2610 Wilrijk
Belgium

Phone +3232652752
surbhi.malhotra@uantwerpen.be

Administrative Secretariat

Christine Lammens and Joyce Jacobs
University of Antwerp
Laboratory Medical Microbiology
Campus Drie Eiken, Building S.6.23
Universiteitsplein 1
2610 Wilrijk
Belgium

Phone +32 3 2652750 or +32 3 2652551
joyce.jacobs@uantwerpen.be
Imm@uantwerpen.be

 **Laboratory of Medical Microbiology
Vaccine & Infectious Disease Institute**
University of Antwerp

NATIONAL AND KAPODISTRIAN
UNIVERSITY OF ATHENS

 **EUCAST** THE EUCAST
DEVELOPMENT
LABORATORY
European Society of Clinical Microbiology and Infectious Diseases

 **ESGARS** ESCMID STUDY GROUP
FOR ANTIMICROBIAL
RESISTANCE SURVEILLANCE
European Society of Clinical Microbiology and Infectious Diseases



 **ESCMID** EUROPEAN SOCIETY
OF CLINICAL MICROBIOLOGY
AND INFECTIOUS DISEASES

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ESCMID Postgraduate
Technical Workshop

Colistin and other last-line antibiotics against XDR/PDR Gram-negatives:

Understanding phenotype-genotype
correlations and PK/PD approaches

**Antwerp, Belgium
5 – 7 July 2021**

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Technical Workshop

Colistin and other last-line antibiotics against XDR/PDR Gram-negatives:

Understanding phenotype-genotype
correlations and PK/PD approaches

Organisers

- ESCMID Study Group for Antimicrobial Resistance Surveillance (ESGARS)

Course Coordinators

- Surbhi Malhotra-Kumar, University of Antwerp, Belgium
- Spyros Pournaras, University of Athens, Greece

Course Objectives

Multi-drug resistant (MDR) Gram-negatives are important nosocomial pathogens with minimal treatment options and polymyxins (colistin) are universally recognised as one of the last-line antibiotics for their treatment. Although critical for the selection of appropriate antimicrobial therapy, colistin susceptibility testing for these pathogens as well as pharmacokinetic/pharmacodynamic (PK/PD) parameters have been a subject of much debate in recent years. Recent studies, informed both by *in vitro* models as well as by clinical observations, have improved our understanding about the PK/PD and also led to EUCAST guidelines for colistin susceptibility testing. Application of next-generation sequencing techniques has also improved our understanding of the dynamics, spread and maintenance of both mutational and plasmid-mediated colistin resistance in MDR pathogens in human and animals, and in metacommunities. This Postgraduate Educational Course will comprise state-of-the-art lectures dealing with colistin resistance mechanisms, including new knowledge on mobilised colistin resistance, phenotypic and molecular diagnostic approaches, global use of colistin and treatment issues and finally, will also discuss alternative/novel antibiotic therapies. A major focus will be on hands-on wet-lab activities for colistin susceptibility testing (co-organized with the EUCAST Development Laboratory), resistance detection using third-generation long-read sequencing and bioinformatics analysis using an automated whole-genome sequencing pipeline and *in silico* PK/PD modelling for optimisation of colistin dosing.

Course Programme

Monday, July 2021

- 08:30Arrival, Registration
- 09:00Welcome and presentation of the course
Surbhi Malhotra-Kumar, Spyros Pournaras
- 09:15Keynote: State of the art in colistin resistance in Enterobacterales
Gian-Maria Rossolini
- 10:00Tolerance and acquired resistance of Pseudomonas aeruginosa to colistin
Katy Jeannot
- 10:30The complexity of genotype and phenotype correlations in colistin resistance
Valeria Bortolaia
- 11:00Coffee break
- 11:15Dynamics of plasmid-mediated colistin resistance in a competitive fitness landscape
TBD
- 11:45The global distribution and spread of the mobilised colistin resistance gene mcr-1.
Francois Balloux
- 12:15Mining the global biome for mediators of plasmid-mediated colistin resistance
Surbhi Malhotra-Kumar
- 12:45Lunch
- 13:30Antimicrobial susceptibility Testing for Polymyxins: EUCAST Recommendations
Onur Karatuna
- 14:00The role of the Clinical Microbiology Lab in the assessment of colistin susceptibility testing methods
Sophia Vourli
- 14:30Hands-on: Workshop on antimicrobial susceptibility testing for colistin
Onur Karatuna
- The following colistin susceptibility testing methods will be demonstrated and then performed by the participants:
- Reference broth microdilution method

• Commercial systems for colistin susceptibility testing (MIC based and colorimetric tests)

• Use of selective culture media for early detection of colistin resistant isolates
- 17:30End of session
- 18:00Barbeque/Dinner at Drie Eiken campus (University of Antwerp)

Tuesday, July 2021

- 09:00Fitness and virulence of colistin-resistant Gram-negatives
Raffaele Zarrilli
- 09:30Colistin heteroresistance: Is it a problem in the clinics?
Spyros Pournaras
- 10:00Managing patients in a setting of high colistin use and resistance
Nicola Petrosillo
- 10:30A one-health approach to colistin use, resistance in animals and potential impact on human medicine
Patrick Butaye
- 11:00Coffee break
- 11:15The global usage of colistin and other last-line options to treat carbapenem-resistant infections
Herman Goossens
- 11:45Therapeutic potential of new beta-lactam/beta-lactamase inhibitors to treat XDR/PDR Gram-negative infections
Nicola Petrosillo
- 12:15Therapeutic potential of non-beta-lactam last-line options to treat XDR/PDR Gram-negative infections
Önder Ergönül
- 12:45Group Photo session
- 13:00Lunch
- 13:30Hands-on: Workshop on antimicrobial susceptibility testing for colistin
Onur Karatuna
- Reading results of susceptibility testing from the previous day
- 14:00Application and advantages of using short and long-read sequencing technologies in elucidating molecular mechanisms of colistin-resistance in MDR bacteria
Britto Basil Xavier
- 14:30Hands-on: Workshop on long-read sequencing: MinION library preparation (Oxford Nanopore) and short demonstration on PacBio Sequel
Britto Basil Xavier
- 17:30

Wednesday, July 2021

- 08:30Colistin PK/PD and optimisation of colistin dosing: In vitro models
Joseph Meletiadis
- 09:00Hands-on: Workshop on colistin PK/PD and optimisation of colistin dosing
Joseph Meletiadis
- 11:00Coffee break
- 11:15Hands-on: Bacterial whole genome sequencing analysis pipeline: BacPipe: Identifying genetic modifications linked to colistin resistance in Gram-negative bacteria
Britto Basil Xavier
- 13:00Concluding remarks and closure of the workshop
Spyros Pournaras, Surbhi Malhotra-Kumar
- 13:15Course feedback and lunch
- 14:00End of course



Organisation

Course Venue

University of Antwerp
Campus Drie Eiken
Laboratory of Medical Microbiology
Building S.6.23
Universiteitsplein 1
2610 Wilrijk
Belgium
<https://www.uantwerpen.be/en/research-groups/laboratory-of-medical-microbiology/>

Accommodation

A list of suggested hotels, including hostel rooms, can be accessed through the booking tool.

Address: Hotels in Antwerp city and around the University of Antwerp, Campus Drie Eiken (venue of the workshop)
Booking tool: <https://secure.cubilis.eu/group/antwerpconventionbureau/extendedSearch?lang=en>
Get an extra discount on the price by using code: **UAACB19**

Contact : Joyce Jacobs
Phone : +32 3 2652750 or +32 3 2652551
E-Mail: joyce.jacobs@uantwerpen.be or Imm@uantwerpen.be

Registration Procedure

Register on the ESCMID website at www.escmid.org/education by 10 June 2021

Registration Fee

EUR 500 for ESCMID members
EUR 600 for all others

The fee includes all course materials, lunches, coffee breaks, one dinner, and a local transportation pass. Accommodation and travel are not included.

Attendance Grants

ESCMID provides a number of attendance grants for ESCMID “young scientist members”. The grant covers the registration fee, but not travel or accommodation costs. Please apply via the course website before 20 April 2021. Applicants will be informed about their acceptance by 30 April 2021.

CME Accreditation

The organiser of the course will apply for European CME accreditation through EACCME.