



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

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 **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

 **ESCMID**
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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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ESCMID Postgraduate
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

08:30	Arrival, Registration
09:00	Welcome and presentation of the course <i>Surbhi Malhotra-Kumar, Spyros Pournaras</i>
09:15	Keynote: State of the art in colistin resistance in Enterobacterales <i>Gian-Maria Rossolini</i>
10:00	Tolerance and acquired resistance of Pseudomonas aeruginosa to colistin <i>Katy Jeannot</i>
10:30	The complexity of genotype and phenotype correlations in colistin resistance <i>Valeria Bortolaia</i>
11:00	Coffee break
11:15	Dynamics of plasmid-mediated colistin resistance in a competitive fitness landscape <i>TBD</i>
11:45	The global distribution and spread of the mobilised colistin resistance gene mcr-1. <i>Francois Balloux</i>
12:15	Mining the global biome for mediators of plasmid-mediated colistin resistance <i>Surbhi Malhotra-Kumar</i>
12:45	Lunch
13:30	Antimicrobial susceptibility Testing for Polymyxins: EUCAST Recommendations <i>Onur Karatuna</i>
14:00	The role of the Clinical Microbiology Lab in the assessment of colistin susceptibility testing methods <i>Sophia Vourli</i>
14:30	Hands-on: Workshop on antimicrobial susceptibility testing for colistin <i>Onur Karatuna</i>
	The following colistin susceptibility testing methods will be demonstrated and then performed by the participants:
	<ul style="list-style-type: none">• 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
17:30	End of session
18:00	Barbeque/Dinner at Drie Eiken campus (University of Antwerp)

Tuesday, July 2021

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

Wednesday, July 2021

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

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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.