

SCIENTIFIC PROGRAMME

Friday, 2 June 2023

15:00-17:00 Participant Registration and Poster Positioning

17:00-17:30 Opening Meeting

17:30-18:30 Plenary Lecture Karen Bush

19:00 Cocktail Party and Dinner

Saturday, 3 June 2023

9:30-11:00 Structure, Function, Mechanism and Evolution of Serine-Beta-Lactamases and Metallo-Beta-Lactamases

11:00-11:30 Coffee Break

11:30-13:00 Structure, Function, Mechanism and Evolution of Serine-Beta-Lactamases and Metallo-Beta-Lactamases

13:00 Lunch

14:30-16:30 New Beta-Lactams and Beta-Lactamase inhibitors, and new combinations

16:30-17:00 Coffee Break

17:00-18:30 Poster Session

20:30 Social Dinner

Sunday, 4 June 2023

9:30-11:00 Structure, Function, Mechanism and Evolution of Serine-Beta-Lactamases and Metallo-Beta-Lactamases

11:00-11:30 Coffee Break

11:30-13:30 New Beta-lactams and Beta-lactamase inhibitors, and new combinations

13:30 Lunch

15:00-16:00 Structure, Function, Mechanism and Evolution of Serine-Beta-Lactamases and Metallo-Beta-Lactamases

16:00-16:30 Coffee Break

16:30-17:30 Structure, Function, Mechanism and Evolution of Serine-Beta-Lactamases and Metallo-Beta-Lactamases

17:30-18:00 Concluding Remarks

14th BETA LACTAM and BETA LACTAMASE meeting

23-4 JUNE 2023 L'AQUILA



UNIVERSITÀ
DEGLI STUDI
DELL'AQUILA



DISCAB
Dipartimento di Scienze
Cliniche Applicate
e Biotecnologiche



MSD



SHIONOGI

Scientific Committee

Mariagrazia Perilli University of L'Aquila, Italy
Gianfranco Amicosante University of L'Aquila, Italy
Gian Maria Rossolini University of Florence, Italy
Karen Bush Indiana University Bloomington, IN, USA
Robert Bonomo Case Western Reserve University, Cleveland, OH, USA
Moreno Galleni University of Liège, Belgium

Organizing Committee

Alessandra Piccirilli University of L'Aquila, Italy
Giuseppe Celenza University of L'Aquila, Italy
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FORAZIONE EVENTI SEGRETERIA ORGANIZZATIVA

ideative
s t u d i o

14th BETA LACTAM and BETA LACTAMASE meeting

23-4
JUNE
2023

CONFERENCE ROOM
PALAZZO CAMPONESCHI
L'AQUILA
ITALY



FRIDAY, 2 JUNE 2023

OPENING MEETING

15:00-17:00 Participant Registration and Poster Positioning

17:00 Mariagrazia PERILLI, University of L'Aquila, Italy

17:05 Edoardo ALESSE, Rector of the University of L'Aquila, Italy

17:10 Francesca ZAZZERONI, Head of Biotechnological and Applied Clinical Sciences Department, University of L'Aquila, Italy

17:15 Gianfranco AMICOSANTE, Emeritus Professor, University of L'Aquila, Italy

17:30- 18:30 **Plenary Lecture** Karen BUSH - Indiana, USA

"What in the World Are We Going to Call Our New Beta-Lactamase? How Nomenclature Has Changed Over 50 Years"

SATURDAY, 3 JUNE 2023

MORNING SESSION

STRUCTURE, FUNCTION, MECHANISM AND EVOLUTION OF SERINE-BETA-LACTAMASES AND METALLO-BETA-LACTAMASES

Moderators: Mariagrazia Perilli, Alejandro J. Vila

9:30-10:00 Catherine TOOK - University of Bristol, UK

Investigating the Basis of Carbapenem Hydrolysis by Class A Beta-Lactamases

10:00- 10:30 Laura DABOS - Technical University of Madrid, SPAIN

Exploring the evolutionary potential towards extended spectrum of KPC-2 carbapenemase

10:30- 11:00 Shozeb HAIDER - UCL School of Pharmacy, London, UK

Enhanced Sampling Simulation of Beta-lactamases

11:00-11:30 **Coffee break**

STRUCTURE, FUNCTION, MECHANISM AND EVOLUTION OF SERINE-BETA-LACTAMASES AND METALLO-BETA-LACTAMASES

Moderators: Karen Bush, Gianfranco Amicosante

11:30-12:00 Bogdan IORGA - CNRS, FRANCE

Beta-Lactamase DataBase (BLDB): past, present and future

12:00- 12:30 Robert BONOMO - Case Western Reserve University School of Medicine, Cleveland, OH, USA

The State of Affairs: Clinical Challenges in Beta-Lactamase Research

12:30- 13:00 Fernando Augusto T. P. MEIRELES, Laboratory for Biomolecular Modeling at EPFL, Lausanne, SWITZERLAND

Investigating the mechanisms of Beta-lactamase membrane association

13:00-14:30 **Lunch**

AFTERNOON SESSION

NEW BETA-LACTAMS AND BETA-LACTAMASE INHIBITORS, AND NEW COMBINATIONS

Moderators: Shahriar Mobashery, Gian Maria Rossolini

14:30-15:00 John BUYNAK - Southern Methodist University, Dallas, TX, USA

Atypically Modified Carbapenem Antibiotics: What Have We Learned?

15:00-15:30 Moreno GALLENi - University of Liège, BELGIUM

Development of class A and class B anti-Beta-lactamase nanobodies as theranostic agents

15:30-16:00 Marco COPPI, University of Florence, ITALY

Emergence of cefiderocol resistance mechanisms among clinical isolates of Enterobacterales

16:00-16:30 James SPENCER, University of Bristol, UK

Interactions of Metallo-Beta-Lactamases with Beta-lactams and Inhibitors Studied by X-ray Crystallography and Multiscale Molecular Simulations

16:30-17:00 **Coffee Break**

17:00-18:30 **Poster Session**

20:30 **Social Dinner**

YOICHI - Fine Dining, Palazzo Pica Alfieri

SUNDAY, 4 JUNE 2023

MORNING SESSION

STRUCTURE, FUNCTION, MECHANISM AND EVOLUTION OF SERINE-BETA-LACTAMASES AND METALLO-BETA-LACTAMASES

Moderators: James Spencer, Moreno Galleni

9:30- 10:00 Alejandro J. VILA - IBR, CONICET, Rosario, ARGENTINA

Evolution of NDM variants

10:00-10:30 Lisandro GONZÁLEZ - IBR, CONICET, Rosario, ARGENTINA

In-cell kinetic stability is an essential trait in metallo-Beta-lactamase evolution

10:30-11:00 Matías C. CARNEVALE - IBR, CONICET, Rosario, ARGENTINA

Future threats on the horizon: environmental homologues of NDM-1 are found in diverse environmental niches

11:00-11:30 **Coffee Break**

NEW BETA-LACTAMS AND BETA-LACTAMASE INHIBITORS, AND NEW COMBINATIONS

Moderators: Robert Bonomo, John Buynak

11:30- 12:00 Vincenzo DI PILATO - University of Genoa, ITALY
Mechanisms of resistance and cross-resistance to novel BLICs in KPC-producing *Klebsiella pneumoniae*

12:00-12:30 Shahriar MOBASHERY - University of Notre Dame, IN, USA

Restoring Susceptibility to Beta-Lactam Antibiotics in Methicillin-Sensitive and Methicillin-Resistant *Staphylococcus aureus*

12:30-13:00 Emilia CASELLI - University of Modena and Reggio Emilia, ITALY

MB076: a new Boronic Acid Inhibitor targeting Extended Spectrum B-lactamases (ESBL), *Klebsiella* Carbapenemase KPC, and *Acinetobacter* Derived Cephalosporinases (ADCs)

13:00-13:30 Matteo BERSANI - University of Turin, ITALY

In silico-aided optimization of non-covalent Beta-lactamase inhibitors active against clinically relevant carbapenemases

13:30 - 15:00 **Lunch**

AFTERNOON SESSION

STRUCTURE, FUNCTION, MECHANISM AND EVOLUTION OF SERINE-BETA-LACTAMASES AND METALLO-BETA-LACTAMASES

Moderators: Gian Maria Rossolini, Karen Bush

15:00- 15:30 Lucía CAPODIMONTE - IBR, CONICET, Rosario, ARGENTINA

OxAs class D Beta-lactamases "get greasy" in *Acinetobacter*: selective advantage of OMVs

15:30-16:00 Marcellus UBBINK - Leiden University, NL

Beta-Lactamase of *Mycobacterium tuberculosis* as a model for protein evolution

16:00-16:30 **Coffee Break**

16:30- 17:00 Laura DABOS, Technical University of Madrid, SPAIN

Novel OXA-48 variant hydrolyzing carbapenem, expanded-spectrum cephalosporins and aztreonam. Welcome, OXA-793.

17:00- 17:30 Choon KIM - University of Notre Dame, IN, USA

Posttranslational modifications of *Staphylococcus aureus* Beta-lactamase BlaZ

17:30-18:00 **Concluding Remarks** Karen Bush, Indiana, USA