International Course on Antibiotics and Resistance (ICARe)

Day by day programme

DAY 1 (Saturday, October 6)
14:00 General orientation of the course: P. Courvalin, M. Gilmore, and G. Wright
14:15 Les Pensières : B. Pansier
Opening Lectures: Current infectious disease management and antibiotic use
14:30 The problem of antibiotic resistance in the developed world (G.-M. Rossolini, IT)
15:15 The problem of antibiotic resistance in the developing world (T. Walsh, UK)
16:00 Break
16:30 Overview of biochemistry and genetics of resistance (P. Courvalin, FR)
17:15 Nuts and bolt of hit discovery: Overview of history and current strategies (T. Dougherty, US)
18:00 Mixer, presentation of the participants
19:30 Dinner

DAY 2 (Sunday, October 7)
Modes of action and mechanisms of resistance of existing classes
Cell wall
8:30 Cell wall structure, biosynthesis, and targets (H.-G. Sahl, DE)
9:30 Outer membrane barrier (M. Trent, US)
10:15 Break
10:45 Inner membrane structure and function (M. Trent)
11:30 β-lactams, β-lactamases, and β-lactamase inhibitors (J.-D. Docquier, IT)
12:30 Lunch
14:00 Glyco-, lipo-, lipoglyco-peptides (P. Courvalin)
14:45 Cationic peptides (M. Pucci, US)
15:30 Break
Ribosome
16:00 Ribosome structure and function (A. Mankin, US)
17:00 Bioinformatics (C. Arias, M. Gilmore, F. Lebreton, S. Lory, D. Rasko)
18:30 Posters
19:30 Dinner
DAY 3 (Monday, October 8)
Modes of action and mechanisms of resistance of existing classes (continued)
Ribosomes (continued)
8:30 Macrolides-Lincosamides-Streptogramins, pleuromutilins, oxazolidinones (N. Vazquez-Laslop, US)
9:15 Tetracyclines, fusidic acid, chloramphenicol (A. Mankin)
10:00 Break
10:30 Aminoglycosides (P. Courvalin)
11:15 CARB-X goals and progress (K. Outterson, US)
11:30 Pew's SPARK project (J. Thomas, US)
11:45 Group picture and Lunch
Nucleic acid synthesis, replication, transcription
14:00 Type II topoisomerases as targets (M. Fisher, UK)
14:45 Quinolones (D. Hooper, US)
15:30 Rifampicin, fidaxomicin, bacitracin (G. Wright, CA)
16:00 Break
16:30 Bioinformatics (continued)
18:30 Posters
19:30 Dinner

DAY 4 (Tuesday, October 9)
Modes of action and mechanisms of resistance of existing classes (end)
Efflux
8:30 Structure-function of efflux systems and inhibitors (K. Pos, GE)
9:30 Influx-efflux in Pseudomonas aeruginosa (S. Lory, US)
10:15 Break
10:45 Efflux in Acinetobacter baumannii (C. Grillot-Courvalin, FR)
11:30 Daptomycin (C. Arias, US)
12:15 Lunch
Origin, mutations, and transfer of resistance
14:00 Origins of resistance genes (G. Wright)
14:45 Mutations, selection, biological cost, compensation (D. Hughes, SE)
15:30 Mobile genetic elements (R. Hall, AU)
16:15 Break
16:45 Bioinformatics (continued)
18:30 Posters
19:30 Dinner
DAY 5 (Wednesday, October 10)
Antibiotic discovery
Antibiotic chemical space
8:30 Antibiotic chemical space: Gram-positives (S. Lahiri, US)
9:15 Antibiotic chemical space: Gram-negatives (H. Moser, US)
10:00 Break
Antibiotic chemical matter : Natural products
10:30 Overview of historical approaches, new sources (G. Challis, UK)
11:15 New strategies, synthetic biology (G. Challis)
12:00 Inhibitors of biosynthesis (E. Brown, CA)
12:45 Lunch and afternoon off
14:00 Bioinformatics (hands-on, optional)
19:30 Dinner

DAY 6 (Thursday, October 11)
Antibiotic discovery (continued)
8:30 Antibiotic chemical matter: Synthetics (A. Myers, US)
10:00 Break
10:30 Target vs non-target based strategies (E. Brown, CA)
11:15 Screens and hit generation (M.-W. Tan, US)
12:00 Lunch
Antibiotic development and approval
13:30 Hit to lead (T. Dougherty)
14:15 Preclinical PK/PD: key elements and optimizing leads (D. Andes, US)
15:00 Preclinical toxicity assessment (E. Rosner, CH)
15:45 Break
16:15 Compound scale-up, GLP vs GMP, CMC needs (M. Page, CH)
17:00 Pathways to approval and commercialization (J. Ambler, US)
17:45 Bioinformatics (continued)
19:00 Posters
19:30 Dinner
DAY 7 (Friday, October 12)

New topics in antibiotic discovery
8:30 Systems biology to guide antibiotic discovery and MOA (E. Brown)
9:15 Antibiotic adjuvants (G. Wright)
10:00 Break

Strategies for more focused applications of antibiotics
10:30 Narrow spectrum antibiotics and diagnostics (K. Bush, US)
11:15 Targeting biofilm (L. Hall-Stoodley, US)
12:00 Lunch
14:00 Targeting virulence (S. Lory)
14:45 Targeted delivery (M. Gilmore, US)
15:30 Break
16:00 New pathways to antibiotic registration (J. Rex, US)
16:45 GARD-P RESPIRE (J.P. Paccaud, CH)
17:00 Bioinformatics (continued)
18:30 Posters
19:30 Dinner

DAY 8 (Saturday, October 13)

New technologies for determination of susceptibility and detection of resistance
8:30 Antibiotic susceptibility testing by phenotypic techniques and clinical categorization (C. Giske, SE)
9:15 Rapid techniques and point-of-care (C. Giske)
10:00 Break
10:30 Antiobiogram interpretation (P. Courvalin)
11:15 Mass spectrometry (J.P. Charrier, FR)
12:00 Lunch

New antiinfective strategies
14:00 Antibodies (S. Projan, US)
14:45 Vaccines (R. Rappuoli, IT)
15:30 Break
16:00 Antibody-antibiotic conjugates (M.-W. Tan)
16:45 CRISPR/Cas9 (D. Bikard, FR)
17:30 Closure of the course and certificate awards (M. Sala, P. Courvalin, M. Gilmore, and G. Wright)
19:30 Dinner

DAY 9 (Sunday, October 14)

8:30 Microbiome and antibiotics (Y. Taur, US)
9:30 Tuberculosis and resistance (S. Cole, FR)
10:30 Break
11:00 How to return to the future (S. Projan)
12:00 Lunch