



Franco-Indian workshop on infectious diseases & antimicrobial resistance

An international initiative to strengthen research and innovation capabilities aimed at discovering new therapeutic and preventive approaches to pathogenic bacteria and antibiotic resistance



May 26-28, 2025, Toulouse

Centre de biologie intégrative
Amphithéâtre Nicole Le Douarin



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PROGRAM of the FRANCO-INDIAN WORKSHOP ON INFECTIOUS DISEASES AND ANTIMICROBIAL RESISTANCE

An international collaborative initiative to strengthen research and innovation capabilities aimed at discovering new therapeutic and preventive approaches to pathogenic bacteria and antibiotic resistance

Date: May 26-28, 2025

Main Venue: Centre for Integrative Biology, Amphitheatre Nicole Le Douarin and Reception Hall
169 rue Marianne Grunberg-Managó, Université Toulouse 3, Toulouse, France

Keywords: emerging or re-emerging infectious diseases, antimicrobial resistance/tolerance, surveillance/epidemiology, antimicrobial target, alternative therapies, host directed therapies, pathogenic bacteria, tuberculosis, ESKAPE, diagnostics, vaccines

Target Public: Academic and private scientists with an interest in the field of (re-)emerging infectious diseases and antibiotic resistance and wishing to expand their international cooperation, Master and PhD students

Recent decades have seen unprecedented changes in human-environment interactions and increasing disruption of ecosystems and climate, creating a particularly favourable context for the emergence of infectious diseases. In addition to this threat, the worldwide spread of (multi-)antibiotic resistant bacteria represents a major short-term threat to global health. It is therefore essential and urgent to strengthen our efforts to put in place all the necessary means for prevention, surveillance and response to emerging infectious diseases and antibiotic resistance.

By combining their strengths and complementary resources, the 9 international partners (4 French and 5 Indian) making up the MIRA "International Research Network (IRN)", supported by the CNRS (2023-2027), share the common objective of strengthening their research and innovation capacities, from the most fundamental research to applied research for the discovery of new therapeutic and preventive approaches against pathogenic bacteria, through an international collaborative approach.

Initiated by the French-Indian consortium MIRA, this Franco-Indian workshop is jointly organised in Toulouse by the IPBS, the LMGM-CBI, Infinity and the IRSD, with the support of the CNRS, the CEFIPRA, the federative research structure "Biology and Biotechnologies for Health" (SFR-B2S), the University of Toulouse, the Region Occitanie, the French Embassy in India, the ANTABIO company and other supports to be confirmed (among which the ANRS, Inserm, INRAe, Toulouse Hospital and private partners).

For 4 half-days, experts in the field from research institutes in Toulouse and India will have the opportunity to present their work and exchange ideas with a view to developing, structuring or strengthening collaborative research programmes. Specific working group meetings by interest and B to B meetings may also be organised according to the needs and requests.

This scientific and information event is designed to encourage the Toulouse research community to develop cooperation with India, and to present existing funding mechanisms. The participation is open free of charge to the entire community. Masters and PhD students and postdoctoral fellows are strongly encouraged to participate to introduce themselves to international cooperation from their first research experience and offer them opportunities in India or France for further studies or career development.

The partners will endeavour to structure and develop the various areas of cooperation identified and to implement the various levers to perpetuate their joint efforts in favour of global health.

Scientific Committee: Olivier Neyrolles (France), Amit Singh (India), Nathalie Campo (France), Anjana Badrinarayanan (India), Julien Vaubourgeix (France) and Sheetal Gandotra (India)

Organizing Committee: Abel Abli, Mélanie Bégué, Marcelle Borro-Cosson, Anne Boyeldieu, Julien Brouzes, Martin Campoy, Patricia Constant, Aélia Farge, Justine Fontaine, Chloé Garcia, Elodie Gayral, Gwenaëlle Jézéquel, Calum Johnston, Hedia Marrakchi, Rathies Ravindra, Isabelle Saves and Françoise Viala ;

Coordination: Isabelle Saves – contact: Isabelle.Saves@univ-tlse3.fr

Information and registration (free but mandatory): <https://www.ipbs.fr/mira2025/>

Day 1: 26 May 2025

Centre for Integrative Biology, Amphitheatre Nicole Le Douarin and Reception Hall

Morning: Welcoming event for Indian delegates and IRN MIRA meeting (if time allows) – *On invitation, venue to be identified*

12:00 - 1:30 pm: Lunch with Indian delegates – *On invitation, venue to be identified*

1:30 - 2:00 pm: Participants reception / Poster installation

2:00 - 2:30 pm: Welcoming speeches

2:30 - 3:30 pm: **Opening keynote lecture “The global AMR research landscape” by Prof. Marie-Cécile Ploy**, Head of the Bacteriology-Virology-Hygiene Department of Limoges Hospital (France) and Coordinator of the European Joint Action on Antimicrobial Resistance 2024-2027 (EU-JAMRAI 2)

3:30 - 3:45 pm: Coffee break

3:45 - 5:45 pm: **Scientific session 1 “Phenotypic AMR/Antibiotic tolerance”**, chaired by Anjana Badrinarayanan (NCBS, India) and Pierre Genevaux (LMGM-CBI, France)

- **Amit Singh (IISc, India):** Reprogramming mitochondrial bioenergetics to target drug tolerance in *Mycobacterium tuberculosis* (15min pres. + 5min Q&A)
- **Julien Vaubourgeix (IRSD, France):** Multiform AMR in mycobacteria (15min pres. + 5min Q&A)
- **Hélène Botella (IPBS, France):** Use of genetic engineering for forward selection of high survival mutants of *Mycobacterium tuberculosis* *in vitro* and in host environments (10min pres. + 5min Q&A)
- **Matthieu Chavent (LMGM-CBI, France):** Modelling host-pathogen interactions using multiscale MD simulations: the *Mycobacterium tuberculosis* case (10min pres. + 5min Q&A)
- **Asha Joseph (NCBS, India):** Toggling the replisome: ensuring integrity of the genome across contexts (10min pres. + 5min Q&A)
- **Ashwani Kumar (CSIR-IMTech, India):** Mycobacterial biofilms; Emerging hypothesis of *in vivo* drug tolerance and resistance (10min pres. + 5min Q&A)
- **Dhiraj Kumar (ICGEB, India):** Host-pathogen crosstalk at the innate immune driveway (10min pres. + 5min Q&A)

5:45 - 7:00 pm: Poster session and social event

7:30 pm: Dinner of IRN MIRA partners – *On invitation, venue to be identified*

Day 2: 27 May 2025

Centre for Integrative Biology, Amphitheatre Nicole Le Douarin and Reception Hall

8:30 - 8:45 am: Participants reception

8:45 - 8:55 am: Introduction of Day 2

8:55 - 10:15 am: Scientific session 2 "Surveillance of infectious diseases and antimicrobial resistance: emergence and evolution", chaired by Nathalie Campo (LMGM-CBI, France) and Amit Singh (IISc, India)

- **Vinay K. Nandicoori (CCMB, India):** *presentation to be announced* (15min pres. + 5min Q&A)
- **Samay Pande (IISc, India) & Olaya Rendueles-García (LMGM-CBI, France):** Bacterial predators drive the maintenance of antibiotic resistance (15min pres. + 5min Q&A)
- **Romane Dusfour-Castan (LMGM-CBI, France):** *Caenorhabditis elegans* as a model organism to study the emergence of antimicrobial resistance (10min pres. + 5min Q&A)
- **Audrey Goman (IRSD, France):** The role of lipids in the war between *Pseudomonas aeruginosa* and *Staphylococcus aureus* (10min pres. + 5min Q&A)
- **Bhupesh Taneja (CSIR-IGIB, India):** A pathogenomics surveillance unveils widespread AMR in fungal dermatophytic infections in India (10min pres. + 5min Q&A)

10:15 - 10:30 am: Coffee break and poster session

10:30 - 12:30 nn: Scientific session 3 "Novel targets for novel antimicrobials", chaired by Hedia Marrakchi (IPBS, France) and Vinay K. Nandicoori (CCMB, India)

- **Ranjana Pathania (IIT Roorkee, India):** Revisiting bacterial pathophysiological fitness determinants as potential drug targets (15min pres. + 5min Q&A)
- **Ramandeep Singh (THSTI, India):** Identification of novel therapeutic interventions against *Mycobacterium tuberculosis* (15min pres. + 5min Q&A)
- **Anne Boyeldieu (LMGM-CBI):** Deciphering the mode of action of the RumC1 bacteriocin in *Streptococcus pneumoniae* (10min pres. + 5min Q&A)
- **Martin Campoy (IPBS, France):** Structural and enzymatic characterization of Baeyer-Villiger Monooxygenases from *Mycobacterium tuberculosis*: Insights into prodrug activation and structural features (10min pres. + 5min Q&A)
- **Harinath Chakrapani (IISER, India):** Towards identifying new druggable targets through chemoproteomics (10min pres. + 5min Q&A)
- **Arunava Dasgupta (CSIR-CDRI):** *presentation to be announced* (10min pres. + 5min Q&A)
- **Sheetal Gandotra (CSIR-IGIB):** Phospholipid remodelling in mycobacteria (10min pres. + 5min Q&A)
- **Xue Han (LMGM-CBI):** Mechanisms of self-poisoning by ribonuclease toxins in *Mycobacterium tuberculosis* (10min pres. + 5min Q&A)

12:30 - 2:00 pm: Buffet lunch

2:00 - 3:00 pm: Round table on India-France cooperation moderated by Isabelle Saves (IPBS and CBI, France) / Parallel IRN MIRA consortium meeting, and face to face meetings

- **Marc Lemonnier (ANTABIO, France)**
- **Leelavati Narlikar (IISER Pune, India)**
- **Olivier Neyrolles (IPBS, France)**
- **Marie-Cécile Ploy (University of Limoges, France)**
- **Didier Raboisson (ENVT, France)**
- **Amit Singh (IISc, India)**

3:00 - 4:00 pm: Coffee break and poster session

4:00 - 6:00 pm: Scientific session 4 "Alternative therapies, host-directed and anti-virulence therapies", chaired by Sheetal Gandotra (CSIR-IGIB, India) and Dhiraj Kumar (ICGEB, India)

- **Vivek Rao (CSIR-IGIB, India):** Importance of host cell metabolism in tuberculosis control - Cues for the development of novel host directed therapies (15min pres. + 5min Q&A)
- **Christel Verollet (IPBS, France):** Deciphering mechanisms of cell-to-cell transfer of HIV-1 towards macrophages and their modulation by *Mycobacterium tuberculosis* (15min pres. + 5min Q&A)
- **Rachit Agarwal (IISc, India):** Engineering approaches to tackle lung infections: bacteriophages and inhalable carriers (10min pres. + 5min Q&A)
- **Saurabh Chugh (IPBS, France):** Exometabolome insights: A new perspective on *Mycobacterium tuberculosis* virulence (10min pres. + 5min Q&A)
- **Yogita Kapoor (CCMB, India):** Wag31, a membrane tether, is crucial for lipid homeostasis in mycobacteria (10min pres. + 5min Q&A)
- **Debapriya Mukherjee (IISc, India):** Critical concentration of formate determines the susceptibility of *Salmonella Typhimurium* to meropenem and ciprofloxacin (10min pres. + 5min Q&A)
- **Olivier Neyrolles (IPBS, France):** Sulfur metabolism in *Mycobacterium tuberculosis* response to stress (10min pres. + 5min Q&A)
- **Albertus Viljoen (IPBS, France):** Surface organization of mycobacterial envelope glycans: Implications for immune interactions (10min pres. + 5min Q&A)

6:00 - 6:30 pm: Social event or Cocktail reception at the Capitole of Toulouse (to be confirmed)

7:30 pm: Dinner – *On invitation, venue to be identified*

Day 3: 28 May 2025

Centre for Integrative Biology, Amphitheatre Nicole Le Douarin and Reception Hall

8:30 - 8:45 am: Participants reception

8:45 - 9:00 am: Introduction of Day 3

9:00 - 11:00 am: **Scientific session 5 "From early discovery to clinical trial: tricks and opportunities"**, chaired by Arunava Dasgupta (CSIR-CDRI, India) and Olivier Neyrolles (IPBS, France)

- **Sidharth Chopra (CSIR-CDRI, India):** Discovering drugs for bad bugs: Progress amongst challenges! (15min pres. + 5min Q&A)
- **Lionel Mourey (IPBS, France):** Targeting an old target: Is mycobacterial InhA suitable for rational drug design? (15min pres. + 5min Q&A)
- **Parvinder Kaur (FNDR, India):** Humanised 3-D granuloma predicting reactivation of tuberculosis (10min pres. + 5min Q&A)
- **Hugo Lebrette (LMGM-CBI, France):** Structural dynamics of radical enzymes and metalloenzymes by femtosecond crystallography (10min pres. + 5min Q&A)
- **Hedia Marrakchi (IPBS, France):** Mycobacterial cell envelope as an inspiring target for anti-tuberculosis drug discovery (10min pres. + 5min Q&A)
- **Avik Pathak (IIT Roorkee, India):** Deciphering the role of cysteine biosynthesis pathway in the pathophysiology and virulence of *Acinetobacter baumannii* (10min pres. + 5min Q&A)
- **Maxime Pingret (IPBS, France):** Exploring the role of a novel β 3-Tubulin expressing cell population in *Mycobacterium tuberculosis* pathogenesis (10min pres. + 5min Q&A)
- **Vaishnavi Vijaya (IISc, India):** Tuberculosis granuloma organoids for studying host-pathogen interactions (10min pres. + 5min Q&A)

11:00 - 11:15 am: Coffee break

11:15 - 12:15 nn: **Closing keynote lecture “Towards antibiotic rescue by identifying and targeting emergent vulnerabilities in drug resistant bacteria” by Prof. Nagasuma Chandra**, Professor in the Biochemistry department of the Indian Institute of Science (IISc) of Bangalore (India)

12:15 - 12:30 nn: Closing remarks

12:30 - 2:00 pm: Lunch – *On invitation*

Afternoon: On-site visit to academic/private partner, or of Airbus, or other sightseeing tour – *Indian delegates and organisers on invitation*

Speakers and Chairs

We are pleased to welcome **46 speakers and chairs** for our Franco-Indian Workshop on Infectious Diseases and Antimicrobial Resistance, **23 from India and 23 from France**, including **25 men and 21 women**. Among them, 11 young researchers, 6 from France and 5 from India, including 8 women and 3 men, will present their work alongside experts in the field of antimicrobial resistance and infectious diseases.

Rachit Agarwal Indian Institute of Science, Bangalore (IISc, <https://be.iisc.ac.in/~rachit/>)

Anjana Badrinarayanan National Center for Biological Sciences of Bangalore (NCBS, <https://www.ncbs.res.in/>) - Chair Session 1

Anne Boyeldieu Postdoc in Patrice Polard's team, Laboratoire de Microbiologie et Génétique Moléculaires, Toulouse (LMGM-CBI, <https://cbi-toulouse.fr/eng/equipe-polard>)

Hélène Botella PI in Christophe Guilhot's team, Institute of Pharmacology and Structural Biology, Toulouse (IPBS, <https://www.ipbs.fr/molecular-mycobacterial-pathogenesis/>)

Nathalie Campo PI in Patrice Polard's team, LMGM-CBI, Toulouse (<https://cbi-toulouse.fr/eng/equipe-polard>) - Chair Session 2

Martin Campoy PhD student in Hedia Marrakchi's team, IPBS, Toulouse (<https://www.ipbs.fr/mycobacterial-envelopes-and-therapeutic-targets/>)

Harinath Chakrapani Indian Institute of Science Education and Research, Pune (IISER, <https://www.hclab.in/>)

Nagasuma Chandra IISc, Bangalore (<https://biochem.iisc.ac.in/nagasuma-chandra.php>) - Keynote speaker

Matthieu Chavent LMGM-CBI, Toulouse (<https://cbi-toulouse.fr/eng/equipe-m3bi>)

Sidharth Chopra CSIR-Central Drug Research Institute, Lucknow (CSIR-CDRI, <https://cdri.res.in/1826.aspx?id=1826>)

Saurabh Chugh Postdoc in Olivier Neyrolles' team, IPBS, Toulouse (<https://www.ipbs.fr/mycobacterial-interactions-with-host-cells/>)

Arunava Dasgupta CSIR-CDRI, Lucknow (<https://cdri.res.in/1776.aspx?id=1776>) - Chair Session 5

Romane Dusfour-Castan PhD student in Bouet/Cornet GEDY team, LMGM-CBI, Toulouse (<https://cbi-toulouse.fr/eng/equipe-gedy>)

Sheetal Gandotra CSIR-Institute of Genomics and Integrative Biology, New Delhi (CSIR-IGIB, <https://sites.google.com/site/gandotralab/people>) - Chair Session 4

Pierre Genevau LMGM-CBI, Toulouse (<https://cbi-toulouse.fr/eng/equipe-genevau>) - Chair Session 1

Audrey Goman PhD student in Eric Oswald's team, Institut de Recherche en Santé Digestive, Toulouse (IRSD, <http://en.irsd.fr/>)

Xue Han Postdoc in Pierre Genevau's team, LMGM-CBI, Toulouse (<https://cbi-toulouse.fr/eng/equipe-genevau>)

Asha Joseph Postdoc in Anjana Badrinarayanan group, NCBS, Bangalore (<https://www.ncbs.res.in/>)

Yogita Kapoor Postdoc in Vinay Nandicoori's group, Centre for Cellular & Molecular Biology, Hyderabad (CCMB, <https://www.ccmb.res.in/People/Research-Group/Vinay-K-Nandicoori>)

Parvinder Kaur FNRS, Principal Scientist, Foundation for Neglected Disease Research, Bangalore (FNDR, <https://www.fndr.in/>)

Ashwani Kumar CSIR-Institute of Microbial Technology, Chandigarh (CSIR-IMTech, <https://www.imtech.res.in/contact/staff/dr-ashwani-kumar/114>)

Dhiraj Kumar International Centre for Genetic Engineering and Biotechnology, New Delhi (ICGEB, <https://www.icgeb.org/dhiraj-kumar/>) - Chair Session 4

Hugo Lebrette LMGM-CBI, Toulouse (<https://cbi-toulouse.fr/eng/equipe-mycomet/>)

Marc Lemonnier CEO ANTABIO, Labège (<https://antabio.com/team/marc-lemonnier/>)

Hedia Marrakchi IPBS, Toulouse (<https://www.ipbs.fr/mycobacterial-envelopes-and-therapeutic-targets/>) - Chair Session 3

Lionel Mourey IPBS, Toulouse (<https://www.ipbs.fr/structural-biophysics/>)

Debapriya Mukherjee PhD Student in Dipshikha Chakravorty's group, IISc Bangalore (<https://mcbl.iisc.ac.in/dclab/>)

Vinay Kumar Nandicoori CCMB, Hyderabad (CCMB, <https://www.ccmb.res.in/People/Research-Group/Vinay-K-Nandicoori>) - Chair Session 3

Leelavati Narlikar IISER, Pune (<http://sites.iiserpune.ac.in/~leelavati/>)

Olivier Neyrolles IPBS, Toulouse (<https://www.ipbs.fr/mycobacterial-interactions-with-host-cells/>) - Chair Session 5

Avik Pathak PhD Student in Ranjana Pathania's group, Indian Institute of Technology, Roorkee (IIT, <https://bt.iitr.ac.in/~BT/rpathfbs>)

Ranjana Pathania IIT, Roorkee (<https://bt.iitr.ac.in/~BT/rpathfbs>)

Samay Pande IISc, Bangalore (<https://mcbl.iisc.ac.in/samay-pande/>)

Maxime Pingret PhD student in Christel Verollet's team, IPBS, Toulouse (<https://www.ipbs.fr/index.php/phagocyte-architecture-and-dynamics>)

Marie-Cécile Ploy Université de Limoges, Limoges (<https://www.unilim.fr/recherche/laboratoires/omegahealth/resinfit/>) - Keynote speaker

Didier Raboisson Ecole nationale vétérinaire de Toulouse, Toulouse (<https://envt.fr/>)

Vivek Rao CSIR-IGIB, New Delhi (<https://www.igib.res.in/?q=VivekRao>)

Olaya Rendueles-García LMGM-CBI, Toulouse (<https://cbi-toulouse.fr/eng/equipe-rendueles>)

Isabelle Saves IPBS and CBI, Toulouse (<https://www.ipbs.fr/fr/cooperation-internationale-2/>)

Ramandeep Singh Translational Health Science and Technology Institute, Faridabad (THSTI, <https://thsti.res.in/en/faculty-profile/Ramandeep-Singh>)

Amit Singh Center for Infectious Disease Research, IISc Bangalore (<https://cidr.iisc.ac.in/amit/>) - Chair Session 2

Bhupesh Taneja CSIR-IGIB, New Delhi (<https://www.igib.res.in/?q=BhupeshTaneja>)

Julien Vaubourgeix PI in Eric Oswald's team, IRSD, Toulouse (<http://en.irsd.fr/>)

Christel Verollet IPBS, Toulouse (<https://www.ipbs.fr/index.php/phagocyte-architecture-and-dynamics>)

Vaishnavi Vijaya PhD Student in Rachit Agarwal group, IISc, Bangalore (<https://be.iisc.ac.in/~rachit/>)

Albertus Viljoen PI in Jérôme Nigou's team, IPBS, Toulouse (<https://www.ipbs.fr/immuno-modulation-by-mycobacterial-lipids-and-glycoconjugates/>)