



External seminars - Speaker

Nom de l'invitée/Name of the speaker

Aude Bernheim



Laboratoire de l'invitée/Laboratory of the speaker

Institut Pasteur (<https://mdmlab.fr>)

Invitée par/Invited by

Filipe De Vadher

Date

February 2nd, Salle des Thèses, 11 am

Titre de la présentation/Title of the presentation

Evolution of immunity across domains of life

Résumé/Short abstract

What principles govern immunity across all forms of life? Addressing this question requires understanding how immune systems function at the molecular level, how they evolve, and how this knowledge can be leveraged for therapeutic discovery. This work builds on the emerging realization that bacteria harbor a vast and previously underappreciated diversity of immune mechanisms, including homologs of eukaryotic systems. The diversity and conservation of these mechanisms challenge the view that immunity is fundamentally organized differently across life domains, instead pointing to shared underlying logic.

By systematically mapping the diversity, function, and evolution of microbial immune systems, this research aims to uncover their connections to eukaryotic immunity and to exploit these links to identify novel immune genes across fungi, plants, algae, and animals. This cross-domain framework—termed ancestral immunity—offers a way to dissect what is conserved, what is innovative, and how immune systems remain both ancient and adaptable.

Mini-CV/Short CV

Aude Bernheim is a group leader at Institut Pasteur, heading the Molecular Diversity of Microbes laboratory. Trained in molecular biology, bioinformatics, and public policy, she earned her PhD in microbiology at Institut Pasteur and completed postdoctoral research with Rotem Sorek at the Weizmann Institute. Her research integrates genomics, phylogenetics, bacterial genetics, and phage biology to study the diversity and evolution of immune systems. She has received multiple distinctions, including the Jacques Monod Prize (2020), ERC Starting Grant (2021), Rosalind Franklin Award (2021), Collège de France Prize (2022), EMBO Young Investigator (2024), and the Irène Joliot-Curie Prize (2024). She is also active in science outreach, citizen science, and science-policy dialogue, co-authoring a book on algorithmic gender bias and serving on the French President's scientific advisory board.