

Les mardis de
L'IAB

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**BEYOND M⁶A: TRNA MODIFICATIONS
FROM MECHANISM TO THERAPEUTIC
ENGINEERING**

29. SEPTEMBER 2026 – 11 AM – LECTURE HALL

RNA modifications are essential regulators of RNA structure and function, yet much of our mechanistic understanding of tRNA modifications has historically come from studies in bacteria and yeast. How these modifications are precisely installed, dynamically regulated, and functionally diversified in higher eukaryotes remains much less understood. By combining RNA mass spectrometry, high-throughput tRNA sequencing, and other approaches, our laboratory has systematically investigated tRNA modifications in mammalian cells. We have identified multiple previously uncharacterized tRNA-modifying and demodification enzymes, uncovered dynamic regulation and crosstalk among tRNA modifications, and revealed unexpected functional diversification of RNA-modifying enzymes during evolution, including expansion of their substrate repertoires from tRNAs to mRNAs and acquisition of non-catalytic functions. Using the m5C methyltransferases NSUN2 and NSUN6 as examples, I will discuss how these enzymes recognize distinct tRNA and mRNA substrates and how substrate specificity shapes their biological functions. Finally, I will highlight how these mechanistic insights can be exploited to engineer therapeutic tRNAs and mRNAs with improved properties.

Invited by : Guillaume Offmann

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Allée des Alpes, 38700 La Tronche (tram line B, stop : Grand Sablon)
The seminar is followed by discussions and exchanges with the speaker and a sandwich buffet is offered