

# Plasmid Biology and Evolution lab

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Group members.

Plasmids are small, mobile DNA elements that enable bacteria to exchange genetic material, including genes for antibiotic resistance. Their ability to transfer resistance genes horizontally between different bacterial strains is a major factor driving the global spread of antibiotic resistance. By studying these genetic vehicles, we aim to uncover how plasmids facilitate the emergence and persistence of antibiotic-resistant pathogens, contributing to the ongoing health crisis.

With over a million deaths annually linked to antibiotic resistance, tackling this crisis is urgent. By investigating the genetic and evolutionary factors that drive plasmid adaptation, we aim to understand how resistance spreads in real-world settings, such as the gut microbiota of hospitalized patients. Our research sheds light on the conditions that promote plasmid persistence, helping us develop strategies to disrupt their transmission.

## ➤ Our objectives at the PBE lab

➤ **Understanding evolutionary dynamics.** Investigate how plasmids shape bacterial evolution and contribute to antibiotic resistance.

➤ **Advancing molecular and evolutionary techniques.** Utilize cutting-edge tools to better understand plasmid-bacteria dynamics.

➤ **Addressing the antibiotic resistance crisis.** Contribute insights to mitigate the spread of resistance in clinically relevant bacteria.