

## Séminaire

Mardi 24 juin 2025 à 10h30  
Amphithéâtre Henri Benoît

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# Liquid Interfaces and Biophysics

Microfluidics and microfabrication technologies have become, over the past ten years, an essential tool in many fields such as liquid interfaces physics, materials science, cosmetics, chemistry, and particularly biology. Indeed, the typical dimensions of these systems allow for local and rapid control of flows, and therefore of the environment of microorganisms (such as cells, micro swimmers, or yeasts) at their own scale. In addition, these different phenomena present the same physics which is the physics of liquid interfaces.

In my team, at the Institute of Physics of Nice, we use microfabrication and microfluidic techniques to generate model systems and experimental setups where parameters can be quantitatively varied one at a time to analyze their individual effects on complex problems. We study both physical systems such as dynamic wetting phenomena on surfaces and biomimetic leaves and living systems such as cancer cells and micro swimmers. In this talk, I will present two main focuses. One concerning our work on plant pathogenic pathogens [1,2] and a second one, focusing on the coalescence dynamics of vibrated droplets [3].

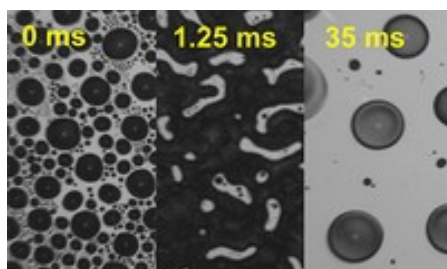


Figure 1. Coalescence between droplets in a vibrated breath figure.

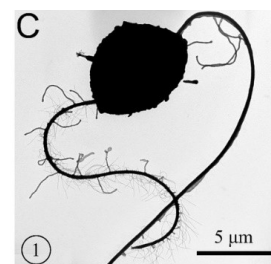


Figure 2. *Phytophthora parasitica* zoospores: a new type of micro swimmer.

[1] Tran, Quang D., Galiana, E., Thomen, P., Cohen, C., Orange, F., Peruani, F., & Noblin, X. (2022). Coordination of two opposite flagella allows high-speed swimming and active turning of individual zoospores. *Elife*, 11, e71227.

[2] Cohen, C., Gauci, F. X., Noblin, X., Galiana, E., Attard, A., & Thomen, P. (2025). Kinetics of zoospores approaching a root using a microfluidic device. *Physical Review E*, 111(2), 024411.

[3] Betti, L., Cohen, C., & Noblin, X. (2023). Mechanical impact on a breath figure. *Physical Review Fluids*, 8(1), 013601.

Les personnes souhaitant rencontrer C. Cohen sont priées de prendre contact avec Aurélie Hourlier-Fargette.