Les mardis de L'IAB

iAB CELL BIOLOGY TRANSLATIONAL MEDICINE

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DYNAMICS AND SCALING OF COMPETITIVE ACTIN ARCHITECTURES

10.NOVEMBER 2026 – 11 AM – LECTURE HALL

Cells constantly experience environmental changes requiring a fast adaptation of their different actin structures. However, the mechanisms governing the size and dynamics of these multiple actin structures remain unknown. Decoupling the various parameters that would provide a complete understanding of these mechanisms is very complicated in a cellular context. This is why we have developed a **bottom-up approach to identify the key molecular mechanisms that determine the size and coexistence of multiple competing actin architectures**. We used a reconstituted system consisting of purified proteins and substrates to localize actin polymerization in microwells, enabling us to work with a limited number of components. With this system, we reconstituted several dynamic actin architectures, competing for a limited pool of protein, over a period of multiple hours. This allowed us to gain key insights into physiological functions related to actin turnover. I will show how we used this system to study the limits of scaling in dynamic structures, as well as the limits of coexistence in actin networks under resource-limited conditions. Finally, I will show how we can recapitulate these results in a complementary cellular system, in which we have demonstrated that an increase in spreading area leads to a decrease in overall turnover, due to a predominance of structures with low turnover.

Invited by : Olivier Destaing / MicroCell

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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

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