Master internship (can be followed with a PhD): Assembly, mechanics and growth of plant cell walls

This interdisciplinary project in the area of plant biomechanics is part of a collaboration that combines mechanical modelling, soft matter physics, synthetic biology, and modern plant biology. The aim is to understand the fundamental processes and feedback mechanisms whereby a plant cell wall is assembled, acquires mechanical properties, and undergoes oriented growth.

The project will mainly occur at the MSC laboratory in Paris Cité University with Pauline Durand-Smet in the group physics of living systems. The student will also work as a team with the members of the HFSPO project (Pr. Enrico Coen at the JIC in Norwich, UK; Pr Daniel Corgrove at the Pennsylvania State University, USA; and Pr Ana Svagan at the KTH institute in Stockholm, Sweeden). We will combine innovative imaging (confocal combined with microfluidics systems) and micromechanical approaches (microplates techniques, micropipettes) to quantify constitutive properties of newly formed plant cell walls.

Informal inquiries should be directed to Pauline Durand-Smet (pauline.durand@u-paris.fr).

Our group values diversity and inclusion. Women and scientists from under-represented groups are strongly encouraged to apply.

Key refs:

1. Zhang et al, Molecular insights into the complex mechanics of plant epidermal cell walls, *Science*, 2021.
2. Paulraj et al, Primary cell wall inspired micro containers as a step towards a synthetic plant cell, *Nature Comm*, 2020.
3. Chan et al, Intrinsic Cell Polarity Coupled to Growth Axis Formation in Tobacco BY-2 Cells, *Curr Bio*, 2020.
4. Durand-Smet et al, Cytoskeletal organization in isolated plant cells under geometry control, *PNAS*, 2020.