

## Open PhD position to study the coordination of cell polarity and division in a simple shoot meristem

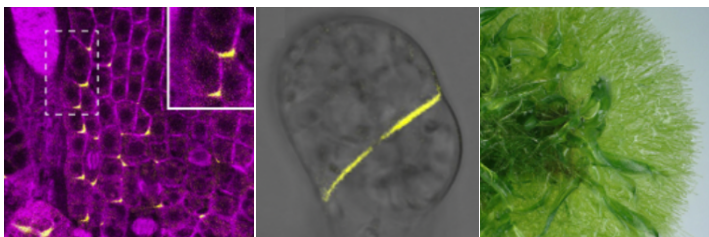
A fully funded 3-year PhD position (expected start October 2024) is available as part of a collaborative project between the Laboratory of Plant Reproduction and Development (ENS Lyon, France), the Laboratory of Biochemistry (WUR, The Netherlands) and the Institute Jean-Pierre Bourgin (INRAE Versailles, France). The PhD student will be based at the Laboratory of Plant Reproduction and Development and work under the direction of Dr Yoan COUDERT (ENS Lyon). She/they/he will be co-supervised by Prof Dolf WEIJERS (WUR) and Dr Philippe ANDREY (INRAE Versailles). Regular visits to WUR and INRAE Versailles are expected during the course of the PhD.

Working place : The [Laboratory of Plant Reproduction and Development](#), located on the campus of the prestigious [ENS Lyon](#), aims to generate a multiscale and quantitative understanding of the molecular and physical basis of plant development and evolution. To this end, we exploit an interdisciplinary expertise in molecular genetics, biophysics, mathematics and computational modeling.

Research topic : Cell polarity is pivotal for growth and patterning in multicellular organisms. While extensively studied in animal systems, notably in the regulation of asymmetric cell divisions and cell fate segregation, its role in plant development remains largely unexplored. Notably, the link between cell polarity and asymmetric division in plant meristems is still poorly understood (Véron *et al.*, Trends Plant Sci 2021). This is notably due to the complexity of cell division patterns in angiosperm stem cell niches and a limited knowledge on how polarity is set at the molecular level. However, this has started to change with the recent discovery of SOSEKI (SOK) proteins that share structural and functional homology with animal polarity regulators. SOKs are auxin targets, conserved in land plants, and exhibit tissue-specific polar distribution patterns (Yoshida *et al.*, Nature Plants 2019 ; van Dop *et al.*, Cell 2020). However, the developmental role of SOKs remains unexplored.

Research goal : This PhD project leverages the simplicity of the *Physcomitrium* shoot apical meristem to uncover the intricate interplay between cell polarity, division orientation, and shoot architecture. Initial unpublished experiments have shown that SOKs are essential for establishing *Physcomitrium* shoot apical meristem and ensuring the periodic production of lateral organs, but the underlying cellular mechanisms remain unclear. In this project, we will explore the cellular and molecular mechanisms by which SOK proteins dynamically coordinate cell polarity and division in a simple plant meristem to produce a robust shoot architecture.

Required skills: We are looking for highly motivated candidates with a strong involvement in their research project and an ability to solve scientific problems, critically discuss experimental results and interact with scientists from distinct backgrounds (biologists, biochemists, computer scientists...). The candidates should have a strong interest in plant developmental biology. Practical skills in molecular biology, cell/tissue culture, biochemistry, confocal microscopy and image analysis would be appreciated. The working language of the laboratory and the institute is English. Excellent written and communication skills are required.



If you are interested in joining our dynamic, international and diverse team, please apply by sending a single PDF document including a motivation letter, a CV and the names and contact details of two references to [yoan.coudert@cnrs.fr](mailto:yoan.coudert@cnrs.fr)