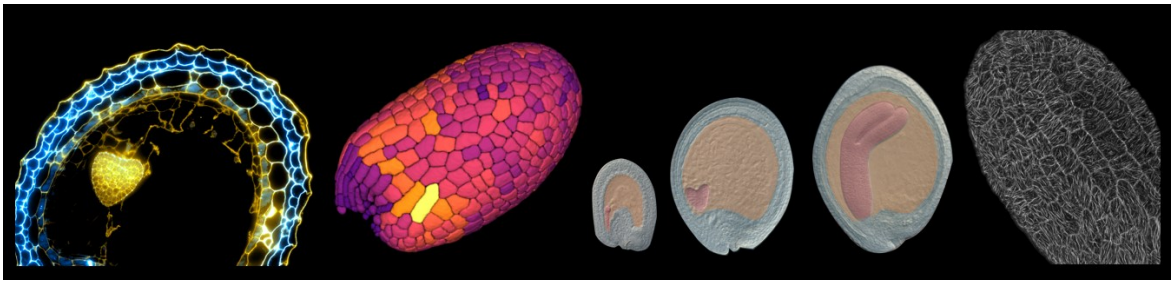
Postdoctoral Researcher Position in Seed Development

Interplay between chromatin remodeling and transcriptional regulation in the control of seed coat differentiation upon fertilization



Laboratory of Plant Development and Reproduction, ENS de Lyon, France

Position: 2 years + possible 1-year extension
Starting date: January 2027
Host: Benoit Landrein (Seed-Dev team, RDP)
Employer: CNRS

The project

How does fertilization trigger the acquisition of cell identity during seed development?

We are seeking a highly motivated postdoctoral researcher to investigate the interplay between chromatin remodeling and transcriptional regulation in the control of seed coat differentiation upon fertilization in the model plant *Arabidopsis thaliana*.

Seed development provides a unique system in which fertilization triggers rapid and coordinated changes in cell fate, growth and differentiation. The central question of this project is how hormone-dependent signals are translated into tissue-specific changes in chromatin state and how they interact with the transcriptional regulators that establish seed coat cell identity.

The project will combine molecular genetics, genomics, quantitative imaging and biophysical approaches. It is part of a joint ANR/DFG collaboration between the RDP laboratory at the ENS de Lyon and the group of Duarte Figueiredo at the Max Planck Institute of Molecular Plant Physiology in Potsdam, Germany. The successful candidate will work closely with a postdoctoral researcher recruited in the German group, combining complementary expertise and approaches.

Research environment

The researcher will join the Seed-Development team at the laboratory of Plant Development and Reproduction (RDP), a multidisciplinary research institute of approximately 125 researchers and support staff studying fundamental mechanisms of plant development.

The Seed-Development team (~15 researchers) investigates how biochemical and mechanical cell-to-cell communication coordinates the behavior of developing seed tissues in *Arabidopsis* and in maize. The project will benefit from the team's expertise in genetics, plant developmental biology, quantitative imaging and mechanics, as well as from the experimental platforms and facilities available at the RDP, including plant growth facilities and advanced microscopy.

The RDP laboratory is hosted by the Ecole Normale Supérieure de Lyon (ENS de Lyon), one of the most-renowned small universities in France. The city of Lyon, located in east-central France, is renowned for its Roman heritage, exceptional gastronomy, and well-preserved architecture. As a gateway to the Alps, and the Mediterranean Sea, it is also a major economic and cultural hub with excellent train connections to France and neighboring countries.

Candidate profile

We welcome applications from candidates with a PhD in plant molecular and cellular biology, plant developmental biology, or a related field. Experience in molecular genetics applied to seed development and/or to Arabidopsis research would be particularly valuable.
Beyond technical expertise, we are looking for someone who is independent, creative, curious and critical, with a strong motivation for fundamental research. The successful candidate should enjoy working both independently and collaboratively in an interdisciplinary environment involving biologists, physicists and modelers.

What we offer

- A scientifically ambitious project addressing a fundamental question in plant development
- A multidisciplinary and international research environment
- Close collaboration with RDP and Max Planck researchers
- Access to advanced imaging, plant growth and molecular biology facilities
- Opportunities to develop expertise across genetics, quantitative imaging and biophysics
- Working language: English (no French required)

How to apply

The expected starting date is **February 2027**, although the date can be flexible. Candidates should send to **Benoit Landrein** (benoit.landrein@ens-lyon.fr):

- a CV
- a short motivation letter describing your research background and interest in the project
- the names and contact details of at least three referees

Bibliographic references associated with this project<

Creff A, Ali O, Bied C, Bayle V, Ingram G, Landrein B. Evidence that endosperm turgor pressure both promotes and restricts seed growth and size. ***Nat Commun***. 2023 Jan 5;14(1):67. doi: 10.1038/s41467-022-35542-5

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Bied C, Yao R, Creff A, Lelas L, David D, Bauer A, Boeuf S, Cerruti G, Braat J, Launay-Avon A, Paysant-Le-Roux C, Clarck F, Roeder A.H.K, Voxeur A, Ingram G, Golz, J.F, Landrein B. APETALA2 controls seed growth by regulating outer integument mechanical identity during seed coat differentiation. ***BioRxiv.*** 2025 doi: 10.64898/2025.12.16.694797

Pankaj R, Lima RB, Luo GY, Ehlert ST, Del Toro-De León G, Bente H, Finger P, Sato H, Figueiredo DD. Removal of seed coat H3K27me3 in Arabidopsis requires noncanonical functions of brassinosteroid receptors. ***Plant Cell***. 2026 Jun 2;38(6) doi: 10.1093/plcell/koag182.

Lima RB, Pankaj R, Ehlert ST, Finger P, Fröhlich A, Bayle V, Landrein B, Sampathkumar A, Figueiredo DD. Seed coat-derived brassinosteroid signaling regulates endosperm development. ***Nat Commun.*** 2024 Oct 29;15(1):9352. doi: 10.1038/s41467-024-53671-x.

Figueiredo DD, Batista RA, Roszak PJ, Hennig L, Köhler C. Auxin production in the endosperm drives seed coat development in *Arabidopsis*. ***Elife***. 2016 Nov 16;5:e20542. doi: 10.7554/eLife.20542.