Postdoctoral Researcher (20-Month Fixed-Term Contract) – Regulation of Vacuolar Nitrate Transport in Plants (M/F)

A 20-month postdoctoral position is available at the Institute for Integrative Biology of the Cell (I2BC), located on the CNRS research campus in Gif-sur-Yvette, France. The successful candidate will join a project funded by the PEPR-SVA program (Priority Research and Equipment Program for Advanced Plant Breeding) and conducted in close collaboration with the Jean-Pierre Bourgin Institute (INRAE, Versailles).

The project aims to elucidate the mechanisms regulating vacuolar nitrate transport in plants through the study of CLCa, a major transporter involved in nitrate storage within the vacuole. The postdoctoral researcher will investigate how modifications of CLCa activity affect both Nitrogen Use Efficiency (NUE) and Water Use Efficiency (WUE) in *Arabidopsis thaliana* and barley (*Hordeum vulgare*). Ultimately, this project seeks to develop innovative strategies for breeding cereal varieties that require less nitrogen fertilizer and are better adapted to environmental constraints associated with climate change.

Responsibilities

Using integrated approaches combining plant physiology, molecular biology, and phenotyping, the postdoctoral researcher will investigate how optimizing vacuolar nitrate storage affects plant performance under varying nitrogen and water availability conditions.
Main responsibilities will include:

- Generation and characterization of CRISPR-Cas9-edited plant lines in Arabidopsis and Barley;
- Design of molecular constructs, cloning, and preparation of CRISPR-Cas9 vectors for plant transformation;
- Genetic transformation of *Arabidopsis thaliana* and contribution to barley transformation workflows, including tissue culture, regeneration, selection, and molecular screening of edited lines;
- Molecular characterization of edited lines, including genotyping, mutation analysis, and selection of homozygous or transgene-free lines when applicable;
- Plant cultivation under controlled conditions (*in vitro*, substrate-based, and hydroponic systems);
- Analysis of traits related to nitrogen use efficiency (NUE), including nitrate, amino acid, and protein quantification;
- Assessment of water use efficiency (WUE)-related parameters, including water content determination, gas exchange measurements, and stomatal aperture analyses;
- Development and implementation of phenotyping approaches to evaluate plant responses to nutritional and water stresses;
- Data analysis, visualization, and presentation during meetings with PEPR-SVA project partners;
- Dissemination of research findings through seminars, scientific conferences, and publications in peer-reviewed international journals.

Required qualifications

Applicants must hold a PhD or equivalent degree in plant biology, plant physiology, plant molecular biology, biotechnology, or a related discipline. Candidates should have strong knowledge of plant physiology and molecular biology, as well as substantial hands-on experience with plant genetic transformation and/or genome editing.

Previous experience with *Arabidopsis thaliana* is expected, ideally in the field of plant nutrition. Experience with cereal transformation, particularly barley, wheat, or other monocot species, would be highly valued. Skills in tissue culture, plant regeneration, Agrobacterium-mediated transformation, CRISPR-Cas9 vector design, and molecular screening of edited lines would be strong assets.

The successful applicant will demonstrate scientific independence and initiative, strong analytical and problem-solving skills, excellent organizational and communication abilities and the ability to work effectively in a collaborative and multidisciplinary research environment.

Proficiency in scientific English, both written and spoken, is essential for presenting results, participating in consortium meetings, and interacting with project partners.

Previous experience in one or more of the following areas would be considered an advantage, but is not mandatory: membrane transport, nitrogen physiology and metabolism, and plant phenotyping.

Research environment

The postdoctoral researcher will join the Integrated Approaches to Ion Transport team within the Cell Biology Department of the Institute for Integrative Biology of the Cell (I2BC), located on the CNRS research campus in Gif-sur-Yvette, France. The project will be carried out in close collaboration with the SATURNE team (Senescence, Autophagy, Nutrient Recycling and Nitrogen Use Efficiency) at the Jean-Pierre Bourgin Institute (IJPB, INRAE Versailles), providing a highly complementary research environment at the interface of plant physiology, mineral nutrition, and cell biology.

The successful candidate will have access to state-of-the-art experimental facilities, including controlled growth chambers and fully equipped laboratories for molecular biology, biochemistry, and plant physiology. Both teams are members of the Saclay Plant Sciences (SPS) network, which brings together approximately 60 research groups. This unique environment offers numerous opportunities for interdisciplinary interactions, scientific collaborations, and professional development.

Contract information

Contract duration: 20 months, with the possibility of extension through our INRAE partner, depending on project progress.

Gross monthly salary: Between €3,131 and €4,341, depending on experience.

Additional benefits

- 44 days of annual leave and RTT (working-time reduction days);
- Partial reimbursement of public transportation costs;
- Complementary health insurance coverage;
- Access to on-site staff cafeteria facilities.

- For more information, please contact Sophie Filleur (Sophie.filleur@i2bc.paris-saclay.fr). Applicants should also provide the names and contact details of **two referees** who may be contacted for references.
- **Apply on the CNRS website before the 8th of July**: https://emploi.cnrs.fr/default.aspx?lang=EN