



## POST-DOCTORAL POSITION (24 months)

The Research Institute in Horticulture and Seeds (IRHS) is seeking for a **24-month postdoctoral fellow** in the framework of the DESWITCH project funded by the French Research Agency (ANR)

### **Context: Deciphering the molecular switch of seed desiccation tolerance to improve plant stress tolerance**

Drought has challenged food security worldwide, urging the development of drought-tolerant crop varieties. Crops do not withstand severe drought at the vegetative stage, but produce **desiccation tolerance (DT)** seeds. The ability to tolerate extreme dehydration is tightly regulated, being switched on during seed maturation and off shortly after germination (DT switch). While major efforts have focused on unravelling the nature of the protective compounds conferring DT, mechanisms that regulate their accumulation during seed development are poorly understood.

The **DEswitch project aims at unraveling the epigenetic regulation of the DT switch**. Based on preliminary evidence that epigenetic modifications tightly repress the regulatory networks responsible for DT in *Arabidopsis thaliana* and *Medicago truncatula* vegetative tissues. We propose combining cutting-edge molecular methods to decipher the exact timing and nature of the DT switch, enabling identification of putative regulators of the DT switch, including pioneer genes, able to switch on/off DT in plants. Candidate genes will be functionally characterized in Arabidopsis and recent CRISPR-based epigenome editing technique will be performed to validate their role in the DT switch.

By unravelling the DT switch, our project will target several pivotal agricultural issues, such as **food security and crop adaptation to climate change**, with potential improvement of plant stress tolerance, and conservation of genetic resources, with easier management of short-lived seeds.

**Keywords:** Desiccation tolerance, epigenetics, seed development, drought, histone marks, functional genomics, CRISPR ON/OFF

### **Working environment**

The successful candidate will join the Seed, Environment, Epigenetic and Development Lab (SEED lab [https://www6.angers-nantes.inrae.fr/irhs\\_eng/IRHS/Seeds-Environment-and-Development](https://www6.angers-nantes.inrae.fr/irhs_eng/IRHS/Seeds-Environment-and-Development)) at the **INRAE Research Institute in Horticulture and Seeds (IRHS) in Angers (FRANCE)** (IRHS [https://www6.angers-nantes.inrae.fr/irhs\\_eng/The-Institute](https://www6.angers-nantes.inrae.fr/irhs_eng/The-Institute)).

### **Qualifications**

The successful candidate should have a strong background in **functional genomics** and **epigenetics** and be able to conduct a research project independently. A satisfactory level of written and spoken English is also required. Previous experience in seed biology and/or with Arabidopsis will be a plus.

Please send your **CV, two referee contacts and your cover letter** to Jerome Verdier ([jerome.verdier@inrae.fr](mailto:jerome.verdier@inrae.fr)).