



POST-DOCTORAL POSITION (18 months)

The Research Institute in Horticulture and Seeds (IRHS) is seeking for an **18-month postdoctoral fellow** in the framework of the SUCSEED project funded by the Programme Prioritaire de Recherche Protéger Cultiver Autrement (PPR-PCA) and the French Research Agency (ANR)

Context: Stop the Use of pesticides on Seeds by proposing alternatives (SUCSEED)

The SUCSEED project is founded on the necessity to identify and develop novel solutions adapted to seed protection using natural and environmentally-friendly alternatives to pesticides. This project intends to establish the seed as a central player in next-generation crop health management in favor of a more sustainable agriculture. It focuses on two major phytosanitary problems: seed-transmitted pathogens and damping-off (i.e. absence of germination/emergence due to seed- or soil-borne pathogens) of four different crop species (i.e. wheat, tomato, common bean and rapeseed) and their most commonly associated pathogens. To identify these alternative solutions, SUCSEED proposes to investigate three cutting edge research directions: (i) enhancing seed defenses, (ii) engineering seed microbiota and (iii) unraveling the local molecular environment of germinating seeds, to design bio-innovative seed treatments.

The proposed project will focus on one particular work package of SUCSEED aiming to **identify and enhance seed defense mechanisms in tomato to prevent seed bacterial transmission of *Clavibacter* and seed damping-off due to *Fusarium***. The two main targeted molecules involved in seed defenses that will be studied are small RNA and peptides, in order to use them as biocontrol agents using nano-encapsulation technologies. To identify seed defense mechanisms, seed defense priming treatments will be performed and their transgenerational effects will be analyzed.

By unravelling such seed defense mechanisms and their corresponding intermediate molecules, our project aims to provide alternatives to pesticides by boosting existing seed defenses and their transgenerational effects.

Keywords: Seed defense, tomato, epigenetics, tomato, peptides, small RNA

Working environment

The successful candidate will join the SEed, Environment and Development Lab (SEED lab 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) and the SUCSEED consortium (https://www6.inrae.fr/cultiver-protéger-autrement_eng/Projects/SUCSEED) made up by 20 academic and industrial partners.

Qualifications

The successful candidate should have a strong background in **functional genomics** and **plant defense** 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 epigenetics will be a plus.

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