# Call for applications for Post-Doctoral fellowship

## Adaptation of soil-borne pathogen populations to quantitative resistance in grain legumes

*IGEPP, the Institute for Genetics, Environment and Plant Protection, is a joint research unit tackling important societal challenges in Agronomy by defending agriculture practices leading to the limitation of pesticides and fertilizers uses, and by protecting and using biodiversity. IGEPP gathers experts from INRAE, Institut Agro Rennes-Angers and University of Rennes 1, and welcomes and trains young scientists to the different trades in research. IGEPP is located in Western France, only 1h30 hour from Paris, in one of the largest and most important agronomical regions in Europe (https://www6.rennes.inrae.fr/igepp_eng).*

**PROJECT DESCRIPTION**

- IGEPP strongly contributes to the French national project **SPECIFICS** "Sustainable PEst Control In Fabaceae-rich Innovative Cropping Systems" (2021-2027) which aims to acquire new knowledge for assisting in the development of pesticide-free and legume-rich cropping systems (https://www6.inrae.fr/specifics_eng/).

- To strengthen the SPECIFICS project, IGEPP is looking for a motivated candidate to apply for a **24-month post-doctoral fellowship** funded by the Brittany region, **France** (BIENVENUE, SAD programs), in pathology and genetics of adaptation of soilborne pathogen populations to quantitative resistance in grain legumes.

- The **post-doc project** will aim to analyse the evolution of the genetic structure and aggressiveness of populations of *Aphanomyces euteiches*, a major soilborne pathogen of pea, in an experimental multi-year (2016-2023) field trial in Brittany, France. The trial comprises original resistant and susceptible pea lines, grown as single-crops or in rotation with resistant faba bean. The project will benefit from (i) collections of *A. euteiches* isolates acquired in 2016, 2019 and 2023 from the different crop successions of the field trial (600 isolates/year), (ii) SSR genotyping data from these collections and (iii) soil inoculum potential data for each crop succession in each year and pathogenicity data of isolates from selected crop successions. The work of the post-doc will consist of appropriating the available data, possibly developing other markers and acquiring additional data on the collections, analysing and publishing the data.

- To **prepare the grant application**, the candidate will benefit from all the support and scientific expertise of the IGEPP host teams in genetics of plant resistance, diversity of pathogen populations and epidemiology, on the *Aphanomyces euteiches* / legume pathosystem. The project will benefit from the greenhouse-experimental infrastructure and informatics platforms of IGEPP. It will take advantage of the national and international network of the host teams on root diseases of legumes developed over the past 20 years.

- **Recommended profile**: PhD in plant pathology and population genetics and genomics

- **Estimated starting date and location** of the Post-doc position: between September 2023 and June 2024, depending on the grant funding and the candidate availability –INRAE, Domaine de la Motte, 35653 Le Rheu, France

- **Contacts**:
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**before January 23th, 2023**

## SELECTED REFERENCES


8th International Legume Root Disease Workshop, 23-26th August 2022. Online workshop: https://workshop.inrae.fr/ilrd8

Quillévéré-Hamard A, Le Roy G, Lesné A, Le May C*, Pilet-Nayel M-L* (2021). Aggressiveness of diverse French *Aphanomyces euteiches* isolates on pea Near-Isogenic-Lines differing in resistance QTL. Phytopathol: 111:695-702

Quillévéré-Hamard A, Le Roy G, Moussart A, Baranger A, Didier A, Pilet-Nayel M-L*, Le May C* (2018). Genetic and pathogenicity diversity of *Aphanomyces euteiches* populations from pea-growing regions in France. Frontiers in Plant Sci 9:1673

Le May C, Onfroy C, Moussart A, Andrivon D, Baranger A, Pilet-Nayel M-L, Vandemark G (2018). Genetic structure of *Aphanomyces euteiches* populations sampled from United States and France pea nurseries. Eur J Plant Pathol 150:275–286

Lavaud C, Lesné A, Piriou C, Le Roy G, Boutet G, Moussart A, Poncet C, Delourme R, Baranger A, Pilet-Nayel M-L (2015). Validation of QTL for resistance to *Aphanomyces euteiches* in different pea genetic backgrounds using Near Isogenic Lines. Theor Appl Genet, 128:2273-2288


## APPLICATION GRANT INFORMATION

BIENVENUE Program, Brittany, France : https://msca-bienvenue.bretagne.bzh/apply-to-the-bienvenue-fellowship/; Eligibility: Not having resided/worked/studied in France for more than 12 months within the last three years (15 Feb. 2020 – 15 Feb. 2023) - **Application deadline: 15 February 2023**

SAD Program, Brittany, France: https://www.bretagne.bzh/aides/fiches/sad-accueil-nouveaux-chercheurs/; Eligibility: Have spent at least 18 months outside France between May 1st, 2020 and the start of the project – **Call opening from May 2023**