

Post-doctoral position available at UMR INRA- AgroParisTech BIOGER, Thiverval-Grignon, France on transposon-based saturation mutagenesis in filamentous fungi

In the framework of a collaborative project between INRA and Syngenta (2020-2023), aimed at accelerating functional genomics in filamentous fungi, we are looking for a highly motivated post-doctoral research scientist. The researcher will develop genome-wide saturation mutagenesis using transposable elements (TEs) in the filamentous fungus *Zymoseptoria tritici*. Such approaches have been recently developed in yeast using hyperactive TEs derived from animals or plants (1, 2, 3). This technique offers unparalleled power for the identification of almost all genes controlling a given phenotype and is readily transferrable to any genetic background of interest.

Applicants should possess demonstrated experience in molecular genetics of eukaryotic microbes including expertise in one or more of the following areas: mycology, plant pathology, transposon mutagenesis, functional genomics, bioinformatics. Experience with fungal plant pathogens is desirable but not required, as well as experience with the analysis of eukaryotic genomes. Ideally, the applicant should have bioinformatics / programming skills in order to manage and analyze extensive datasets corresponding to pools of millions of mutants. The successful applicant will have a high degree of flexibility in research directions and approaches. The position is available from the 1st of February 2020 for a period of 2 years and a half.

The research project will be performed in the EGIP team (Marc-Henri Lebrun) at INRA-BIOGER near Paris, in close collaboration with the MoR (Mode of Resistance) team from Syngenta (Gabriel Scalliet) Stein, Switzerland. Marc-Henri Lebrun is a molecular geneticist expert in genomics of plant pathogenic fungi. He recently successfully developed insertional mutagenesis in *Z. tritici* using *impala*, a fungal TC1-mariner transposon. Gabriel Scalliet leads the Mode of Resistance (MoR) team within the Fungicide Bioscience division at Syngenta, a team specialized in resistance risk prediction, resistance mechanisms characterization and chemical-genetics. The BIOGER institute is a center for research on crop fungal diseases. BIOGER undertakes multidisciplinary studies on fungal plant pathogens from gene to landscape (genomics, molecular biology and genetics, biochemistry, cell biology, population genetics and evolution, epidemiology, modelling). BIOGER is currently located in the AgroParisTech campus of Thiverval-Grignon, near Versailles. It will move to a new building in 2021 within the Paris-Saclay University, South of Paris.

Applications consisting of a CV, publication list and a detailed statement of research interests, with names and contact information for 2 references should be prepared as a single pdf file and sent by email before 1 February 2020 to marc-henri.lebrun@inra.fr . Applications will be processed as they are received.

References

- 1- Michel, A. H., R. Hatakeyama, Kimmig P., Arter M., Peter M., Matos J., De Virgilio C., Kornmann B., Functional mapping of yeast genomes by saturated transposition. *Elife*. 2017. 6: e23570.
- 2- Segal ES, Gritsenko V, Levitan A, Yadav B, Dror N, Steenwyk JL, Silberberg Y, Mielich K, Rokas A, Gow NAR, Kunze R, Sharan R, Berman J. Gene Essentiality Analyzed by In Vivo Transposon Mutagenesis and Machine Learning in a Stable Haploid Isolate of *Candida albicans*. *MBio*. 2018. 9(5): e02048-18.
- 3- Grech L, Jeffares DC, Sadée CY, Rodríguez-López M, Bitton DA, Hoti M, Biagosch C, Aravani D, Speekenbrink M, Illingworth CJR, Schiffer PH, Pidoux AL, Tong P, Tallada VA, Allshire R, Levin HL, Bähler J. Fitness Landscape of the Fission Yeast Genome. *Mol Biol Evol*. 2019. 36(8):1612-1623.