PhD position in the frame of the MAMMA MIA project “New targets to select and improve maize digestibility under different pedoclimatic conditions”

The Plant2Pro® Carnot Institute proposes an integrated and multidisciplinary research and development offer “from laboratory to field”, and does so to support innovative partner-oriented research. Within that frame, the Institut Jean-Pierre Bourgin (IJPB, Versailles, France), a research unit from INRAE and AgroParisTech, and the agricultural technical institute ARVALIS-Institut du Végétal are looking for a highly motivated doctoral candidate for the MAMMA MIA project. MAMMA MIA focuses on the identification of biochemical and histological targets, as well as driver genes, to select and improve maize digestibility, while ensuring the maintenance of yield, under different pedoclimatic conditions and particularly under water limitations.

Overall aim
Maize is a pillar of French forage system and its silage feeding value is one of the criterion used for the registration of maize hybrids varieties in the official French catalogue. To improve this criterion, it is necessary to improve maize cell wall digestibility. As maize used for cattle feeding is mainly cultivated under rainfed conditions, its yield is put in jeopardy by climate change. We have already shown that a strong water deficit induces an increase in maize cell wall digestibility associated with changes in cell wall composition and histological profiles within the maize stem. In the framework of MAMMA MIA, the PhD candidate will (1) investigate the effect of different pedoclimatic conditions on both yield and digestibility, (2) characterize the composition and tissue distribution of cell wall components in response to these pedoclimatic conditions and (3) characterize the co-expression networks involved in tissue distribution of cell wall-related traits under different pedoclimatic conditions. With this exciting project, the PhD candidate will provide fine and robust predictive tools related to cell wall digestibility and tissue distribution, which will be of interest to breeders in the context of climate change.

Required Profile
- Master degree in Plant Science or another related subject.
- Intellectual curiosity, creativity and dynamism.
- Motivation to deliver research results and disseminate these (written and oral).
- Autonomy, ability to work in a team and time management skills.
- Ability to work in an inter- and cross-disciplinary manner.
- Good mastery of English language.

MAMMA MIA offers
MAMMA MIA is a Plant2Pro®-funded multidisciplinary project involving two INRAE research laboratories (IJPB, Versailles, France; GQE-Le Moulon, Gif-sur-Yvette, France), ARVALIS-Institut du Végétal and an INRAE experimental unit (DIASCOPE, Montpellier, France), which are internationally recognized for their work on cell wall-related traits, their use for ruminants, and their high level of expertise to characterize the pedoclimatic conditions of experimental field trial sites.

The successful candidate will be jointly supervised by Sylvie Coursol (IJPB, INRAE research scientist) and Anthony Uijttewaal (ARVALIS-Institut du vegetal). The PhD position will be at IJPB (INRAE, Versailles, France), but will involve constant interactions with ARVALIS-Institut du Végétal.
This position will offer:

- A 3-year PhD position.
- Exciting and stimulating tasks in a strong academic-private research environment, covering an interesting combination of state-of-the-art techniques including cell wall biochemistry, cell wall imaging, genetics and plant breeding, pedoclimatic characterizations, precision farming, transcriptomics and statistics.
- An open and inclusive work environment with dedicated colleagues.
- Access to the Doctoral School Plant Sciences: from genes to ecosystems (SEVE) of Paris-Saclay University, which will provide training and guidance.
- Access to the Saclay Plant Sciences Graduate School of Research program.
- Access to the Plant2Pro® Carnot Institute network.

**Starting date:** the position is available from **July 2021** and will remain open until filled.

**How to apply**

Enthusiastic candidates should email a complete application package as a single PDF file **before 12 May, 2021.** The application package should include:

- A detailed curriculum vitae including contact details for two references.
- A motivation letter of no more than one page expressing interest in and suitability for the project.

**Contact:**

- Sylvie Coursol, sylvie.coursol@inrae.fr
- Valérie Méchin, valerie.mechin@inrae.fr
- Anthony Uijtewaal, a.uijttewaal@arvalis.fr
- Nathalie Mangel, n.mangel@arvalis.fr

**IJPB website:** [https://ijpb.versailles.inrae.fr/en/](https://ijpb.versailles.inrae.fr/en/)
**ARVALIS-Institut du Végétal website:** [https://www.arvalis-infos.fr](https://www.arvalis-infos.fr)