

Postdoctoral fellowship in *Generation and Characterization of Base editing (BE) CRISPR/Cas9 mutants*

We are looking for highly motivated and skilled candidates to develop a post-doc project in the subjects Molecular Genetics and Plant Development, which are part of the main project “*Study of the interplay between gibberellin and microRNA-controlled pathways*”. MicroRNAs and targets are fundamentals for plant growth and development, controlling crop yield. Indeed, several pathways regulated by microRNAs have been identified as regulatory “hubs” to manipulate distinct agronomical traits, such as the timing of vegetative and reproductive phase change, leaf development, tillering/branching, panicle/tassel architecture, fruit development, and fertility [1]. Fine-tuning miRNA target expression levels may lead to the optimization of their effects in plant architecture and seed/grain production. For example, the characterization of a semi-dominant quantitative trait locus, *IPAI (Ideal Plant Architecture 1)* demonstrated the importance of the miR156-SPL module for crop improvement [2]. Although it is rare to identify point mutations that perturbs miRNA:target interactions such as the *IPAI*, the use of novel CRISPR-associated protein 9 (Cas9)-based techniques may help to circumvent this difficult [3].

Responsibilities: (1) to create CRISPR/Cas9-based vectors targeting selected miRNA targets; (2) to generate CRISPR/Cas9-based mutants using the Base Editor (BE) technology; (3) to characterize phenotypically and molecularly the CRISPR/Cas9-based tomato mutants regarding the establishment of vegetative architecture and reproductive development; (3) Collaboration with partner institutions and colleagues.

The selected candidate will work most of the time at the Department of Biological Sciences (ESALQ/USP-Sao Paulo), in the GMDV lab (<http://gmdv.webnode.com/en/>), coordinated by Prof. Fabio Nogueira. However, the selected candidate will also expend six to eight months in Dr. Thomas Jacobs lab, at VIB-Belgium (<http://www.vib.be/en/research/scientists/Pages/Thomas-Jacobs-Lab.aspx>). In Dr. Jacobs lab, the candidate will be responsible to generate and test CRISPR/Cas9-based vectors.

Requirements

- The candidates must have obtained a PhD degree in Plant Genetics or Plant Physiology or Plant Biochemistry less than seven years ago. Preference will be given to candidates whose degree has been received within the last 3 years;
- Background in developmental biology, genome editing, and experience with plant genetic transformation is highly advantageous;
- Strong communications skills in English. Knowledge of Portuguese will be considered advantageous, but not a prerequisite;
- Proven ability to work effectively as part of a multi-disciplinary, international team, plus the motivation and discipline to carry out autonomous research and supervise students.

Duration of the fellowship: Initially, the post-doc fellowship is for two years, renewable twice of 12 months, totalizing 48 months, depending on supervisor's recommendation and available budge. For salary details, please see <http://www.fapesp.br/3162> (Pós-Doutorado PD-BR).

How to apply: Please, send the following documents to ftsnoque@usp.br ' Postdoctoral Fellowship' in the subject line of email application.

- A single PDF that includes curriculum vitae, motivation letter (one page), and two recommendation letters;

Deadline: 10/04/2019

References and links:

1. Tang J, Chu C. MicroRNAs in crop improvement: fine-tuners for complex traits. *Nat Plants*. 3:17077. (2017)
2. Jiao Y, Wang Y, Xue D, et al. Regulation of OsSPL14 by OsmiR156 defines ideal plant architecture in rice. *Nat Genet*.42:541-544. (2010)
3. Kim JS. Precision genome engineering through adenine and cytosine base editing. *Nat Plants*. 4(3):148-151. (2018)
4. <https://onlinelibrary.wiley.com/doi/full/10.1111/tpj.12493>
5. <https://nph.onlinelibrary.wiley.com/doi/10.1111/nph.15492>
6. <https://www.frontiersin.org/articles/10.3389/fpls.2018.01760/full>