KU LEUVEN CROP BIOTECHNICS

The Mehta Lab for experimental plant systems biology
www.mehta-lab.com

Funded 4-year PhD on dissecting the temporal and functional dynamics of the plant clock interactome

About the University & Research Environment

KU Leuven offers a competitive and international working environment with access to the latest technologies and expertise. KU Leuven is the top ranked university in Belgium, ranks 5th in mainland Europe, and 45th globally (Times Higher Education). KU Leuven has also been ranked the most innovative university in Europe by Thompson Reuters for several years running. Leuven is also one of Europe's best university towns located only 30 minutes from the EU capital, Brussels and has an international and diverse student community.

The Division of Crop Biotechnics performs cutting-edge research on crop and model plant species, integrating knowledge at the cellular, tissue, plant, environment, and agro-systems level. The Division consists of six relatively new research groups with a strong expertise in molecular biology, plant pathology, tropical crops, cell biology, secondary metabolism, and plant hormones. The member labs work as a highly integrated team with extensive shared facilities, equipment and expertise and thus provide a very international, collaborative working environment.

The Laboratory for Experimental Plant Systems Biology (EPSB Lab)

The Laboratory for Experimental Plant Systems Biology (www.mehta-lab.com) specializes in developing and applying genomics and proteomics technologies in plant systems for a variety of different problems. The lab is currently researching the plant circadian clock as a potential source of genetic variation to address climate-change related challenges in agriculture.

Project

All multicellular organisms possess internal circadian clocks that allow their physiology to adapt to and anticipate cyclic environmental changes. The plant clock is a complex genetic network consisting of several proteins that bind to the promoter regions of other clock genes (in addition to thousands of other genes) and thus regulate each other. Past genetic studies have uncovered many such regulatory links; however, we still do not understand how exactly clock transcription factors (TFs) act to impact the expression of all their target genes. In this project, the candidate will use plant synthetic biology tools to develop new methods that allow us to precisely identify the protein-protein interactions that direct the functioning of clock TFs. You will then employ these methods to study how these interactions change depending on the location and genomic context of the clock TFs. This will deepen our understanding of the plant clock and potentially lead to the discovery of new roles for many clock TFs under different environmental conditions such as future climates. Ultimately, discovering how clock TFs act under different environments will lead to new targets for crop improvement.

The project will involve experiments using standardized DNA assembly methods, protein biochemistry, targeted proteomics, and bioinformatics. As a result, the successful candidate will have the opportunity to acquire a range of skills suitable for both academic and industrial careers, including beyond the plant domain. Further, you will be given the freedom to shape the project as you develop scientifically and use the excellent research environment at KU Leuven to realise your own ideas within the project's context.

Contact: Prof. dr. Devang Mehta (devang.mehta@kuleuven.be)

(Please apply by uploading a CV with contact details for 2 references and a cover letter using this link or the QR code. Please do not upload any additional documents at this stage.)