



university of
 groningen

Postdoc position: Metabolic modeling in plants

The Molecular Systems Biology group (led by Matthias Heinemann) at the University of Groningen, Netherlands, has an opening for an enthusiastic and talented postdoc. The University of Groningen, located in the north of the Netherlands, enjoys an excellent reputation as one of the oldest and leading research universities in Europe, currently being ranked on the 65th position in the last Academic Ranking of World Universities.

The aim of the Heinemann lab is to understand (i) how cellular metabolism functions on the systems-level, and (ii) how metabolism controls other cellular processes, such as the cell cycle. The lab members tackle these challenges by combining classical and systems biology approaches, and using both experimental and computational tools. Together, the members of the international and interdisciplinary team (i.e. students and postdocs with backgrounds in biology, engineering, physics and mathematics) create an inspiring research and working environment. On these grounds, the lab has recently published a number of high profile stories:

- Papagiannakis et al. (2017) Autonomous metabolic oscillations robustly gate the early and late cell cycle. *Molecular Cell*, 65:285-295.
- Niebel et al. (2019) An upper limit in Gibbs energy dissipation governs cellular metabolism *Nature Metabolism*. 1: 125-132.
- Litsios et al. (2019) Differential scaling between G1 protein production and cell size dynamics promotes commitment to the cell division cycle in budding yeast, *Nature Cell Biology*, 21, 1382-1392.

Within the EU project Gain4Crops, which aims at developing improved plants with increased CO₂ assimilation capabilities, together with experimentalists, we will develop a thermodynamic/stoichiometric model for Arabidopsis, as we have recently done for yeast and *E. coli* (Niebel et al, 2019, *Nature Metabolism*) and which has shown to have excellent predictive capabilities. The developed model will be used to design new engineering strategies. For this work, we will collaborate with research groups in France and Germany.

Required background of the candidate: (Systems) biology, engineering, or (bio)physics, with basic knowledge on metabolism, ideally experience in flux balance analysis, and mathematical optimization (but this not a must).

Application deadline: March 31st, 2020

Starting date: sometime between May and September 2020; position is for 4 years

Application

Candidates should send their application to Prof. Matthias Heinemann (m.heinemann@rug.nl). The application should contain (i) a CV, (ii) information about grades and other measures of success, and (iii) two letters of recommendation (these can also be emailed directly), or names of potential references.

About the group: <http://www.heinemannlab.eu>

About Groningen: <http://www.rug.nl/about-us/who-are-we/discover-groningen/>

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