

PhD position Mechanisms underlying plant-root microbiome recruitment under stress

In this PhD position you will use experimental data and data integration approaches to unravel causal relations in plant-microbiome interactions under stress.

Plant roots house one of the most diverse microbial communities on Earth. Potentially these can be used to improve stress resilience of crops and enable sustainable food production. In collaboration with company partner Keygene you will look for relations between plant genotype and microbiome functionality changes under stress. You will collect experimental data on how a lack of phosphorus results in changes in gene expression, root exudate metabolite composition and microbiome recruitment in tomato. From these data, using advanced data integration approaches and causal relationship analyses, you will look for evidence of decision points and trade-offs in changes in microbiome recruitment. The selection of gene candidates will be further supported by a GWAS experiment in which you will look for genomic associations for microbiome recruitment in tomato. Gene candidates will be verified using mutants and/or Virus Induced Gene Silencing.

You are expected

- to study the effect of phosphate starvation on plant root microbiome recruitment;
- to analyse causal relations between changes in gene expression, root exudate metabolite composition and microbiome composition and function;
- to analyse the trade-off between recruitment of the microbiome and other P-starvation responses;
- to supervise bachelor and master students.

Profil

- MSc in Biology or Plant Science;
- experience with data analysis and/or bioinformatics;
- affinity with (plant) microbiome analysis;
- affinity with experimental plant science, RNAseq and/or metabolomics;
- fluency in English, both written and spoken.

Information

Do you have questions about this vacancy? Or do you want to know more about our organisation? Please contact:

- Prof. Harro Bouwmeester, chair of the Plant Hormone Biology group
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- Prof. Age Smilde, chair of the Biosystems Data Analysis group
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About the Faculty of Science and the Swammerdam Institute for Life Sciences

The Faculty of Science has a student body of around 7,000, as well as 1,600 members of staff working in education, research or support services. Researchers and students at the Faculty of Science are fascinated by every aspect of how the world works, be it elementary particles, the birth of the universe or the functioning of the brain. The Swammerdam Institute for Life Sciences (SILS) is one of the Faculty of Science's largest institutes. Its approximately 240 scientists and staff members work in 16 research groups that perform excellent research centred on four themes: 1) Cell & Systems Biology, 2) Neurosciences, 3) Microbiology and 4) Green Life Sciences. Within the Research Priority Area Systems Biology several of these groups are involved in the host-microbiome interaction. This PhD position is shared by the Plant Hormone Biology and Biosystems Data Analysis groups. The Plant Hormone Biology group investigates the role of plant hormones and other signalling molecules in the communication of plants with other organisms. The Biosystems Data Analysis group develops and implements advanced statistical and machine learning tools for integrating omics data.

Appointment

A temporary contract for 38 hours per week for the duration of 4 years (the initial contract will be for a period of 18 months and after satisfactory evaluation it will be extended to a total duration of 4 years). This should lead to a dissertation (PhD thesis). We will draft an educational plan that includes attendance of courses and (international) meetings. We also expect you to assist in teaching undergraduates and master students.

Based on a full-time employment contract (38 hours per week) the gross monthly salary will range from €2,395 in the first year to €3,061 in the last year. This is exclusive 8% holiday allowance and 8.3% end-of-year bonus. A favourable tax agreement, the '30% ruling', may apply to non-Dutch applicants. The Collective Labour Agreement of Dutch Universities is applicable.

Are you curious about our extensive package of secondary employment benefits like our excellent opportunities for study and development? Take a look here.

Application

The UvA is an equal-opportunity employer. We prioritize diversity and are committed to creating an inclusive environment for everyone. We value a spirit of enquiry and perseverance, provide the space to keep asking questions, and promote a culture of curiosity and creativity.

Do you recognize yourself in the job profile? Then we look forward to receiving your application by 1 April 2021. Send an email with motivation letter and CV to Profs Harro Bouwmeester and Age Smilde, h.j.bouwmeester@uva.nl; a.k.smilde@uva.nl