



Postdoc position: Role of volatile compounds and their derivatives to settle plant-microorganism interaction

The LBVpam laboratory

The LBVpam laboratory (CNRS UMR 5079: Plant Biotechnology applied to aromatic and medicinal plants) of the University of Saint-Etienne studies plant volatile organic compounds (VOCs) from their biosynthetic pathways to their ecological function (<https://www.univ-st-etienne.fr/fr/lbvpam.html>).

The proposed project

The Phytobiome@LSE project which gathers the expertise of 4 laboratories of the University of Lyon (RDP, ENS Lyon; MAP, INSA Lyon; LEM, UCBL1 and LBVpam, CNRS-UJM Saint-Etienne) aims at better understanding the importance of the plant holobiont on plant development. The study will focus on plant-microbe interactions to investigate the effects of microbiome on plant and flower development on the hand and the role of plant volatiles in the selection and shaping of the diversity of flower microbiome. More particularly, LBVpam will focus on understanding the effect of flower VOCs on the establishment of the specific phyllosphere microbiome and vice versa. The post-doc will investigate if microbes selected by the other teams of the consortium having an effect on plant development have an effect on the emission of VOCs. In addition, and based on previous works showing that sesquiterpenes and their derivatives affect both the floral microbiome and flower development, the post-Doc will investigate the plant-microbe interaction to decipher the mechanisms linking the relationship between VOC production and the selection of the floral microbiome and ultimately its effect on flower development in *Arabidopsis* and *Petunia*. The project relies on a unique combination of expertise in systems biology/modelling, microbial ecology, chemical ecology, molecular microbiology, plant physiology/development, and plant metabolomics.

The expected profile

PhD in plant molecular Biology, plant biochemistry or plant specialized metabolism. General skills in molecular biology. Hands-on experience in the study of plant metabolites is mandatory and experience on plant volatiles is a plus. Hands-on experience in the study of plant interactions with microorganisms and chemical ecology using statistics is welcome.

What we offer and how to apply

We offer a two-year fellowship starting no later than October 2021. The eligible candidate will be offered a salary ranging from 26000 to 29000€ (net wage,) per year depending on its experience. To apply, please send your detailed CV (Including list of publications and names and contact information of two references) and a cover letter summarizing your research interests, experience and motivation for applying at Sylvie.baudino@univ-st-etienne.fr and benoit.boachon@univ-st-etienne.fr. The position will remain open until it is filled.

Selected publications of the lab:

- Magnard, J.-L., A. Rocca, J.-C. Caissard, P. Vergne, P. Sun, R. Hecquet, A. Dubois, L.H.-S. Oyant, F. Jullien, F. Nicolè, O. Raymond, S. Huguet, R. Baltenweck, S. Meyer, P. Claudel, J. Jeauffre, M. Rohmer, F. Foucher, P. Huguéney, M. Bendahmane, S. Baudino 2015. **Biosynthesis of monoterpene scent compounds in roses.** *Science* 349: 81-83.
- Boachon B., Lynch J.H., Ray S., Yuan J., Caldo K.M.P., Junker R.R., Kessler S.A., Morgan J.A., Dudareva N. 2019. **Natural fumigation as a mechanism for volatile transport between flower organs.** *Nature Chemical Biology* 15: 583-588.
- Boachon B., Burdloff Y., Ruan J.X., Rojo R., Junker R.R., Vincent B., Nicolè F., Bringel F., Lesot A., Henry L., Bassard J.E., Mathieu S., Allouche L., Kaplan I., Dudareva N., Vuilleumier S., Miesch L., André F., Navrot N., Chen X.Y., Werck-Reichhart D. 2019. **A promiscuous CYP706A3 reduces terpene volatile emission from Arabidopsis flowers, affecting florivores and the floral microbiome.** *Plant Cell* 31: 2947-2972.