

**Post-doctoral Fellowships in Chemistry or Biochemistry**  
**Escola Superior de Agricultura "Luiz de Queiroz" (ESALQ/USP)**  
**Departamento de Fitopatologia e Nematologia**  
**Laboratório de Fisiologia e Bioquímica Fitopatológica**  
**Piracicaba, SP, Brazil**

The post-doctoral fellow will work at the Luiz de Queiroz College of Agriculture (ESALQ/USP), in the department of Plant Pathology and Nematology, at the Phytopathological Physiology and Biochemistry Laboratory, in the city of Piracicaba, São Paulo State, Brazil.

The candidates will carry out research on the interaction between plants, insects and microorganisms to better understand the communication between them and to generate strategies for insect and phytopathogen control, under supervision of Prof. Sergio Florentino Pascholati. The research is linked to the Thematic Project “The Biorational Control of Pest-Insect and Phytopathogens” (Grant number 2014/50918-7), coordinated by Professor Maria Fátima das Graças Fernandes da Silva and funded by the Sao Paulo Research Foundation.

**The post-doctoral fellows will work in the following activities:**

Several compounds are important metabolites that contribute to the defense of plants against the attack of phytopathogens and insects. Many of these are hemiterpenes, containing C<sub>5</sub> prenyl groups attached to the carbon atoms of heterocyclic systems, and they presented as phytoalexins or phytoanticipins associated with resistance to pathogens of citrus such as *Phytophthora citrophthora*, *Xylella fastidiosa* and *Candidatus liberibacter*, and most of these studies have been carried out by our group. Aromatic prenyltransferases catalyze the transfer of isoprenoids diphosphates to aromatic compounds. This family of enzymes can be classified in three types: cytosolic ABBA ( $\alpha$ - $\beta$ - $\beta$ - $\alpha$  barrel) type, dimethylallyltryptophan synthase (DMATS) type and membrane-embedded UbiA type. Prenylation of aromatic rings in plants is catalyzed by prenyltransferases (PTs) belonging to the membrane-bound UbiA protein superfamily. Several enzymes as PTs and cytochrome P450 monooxygenases (P450s) of the hemiterpenoid compounds pathway have been isolated and characterized, and most of the work in this area has been conducted by Alain Hehn at “Laboratoire Agronomie et Environnement-LAE”, at Université de Lorraine, France. The preliminary results obtained so far by our group in collaboration with Hehn’s group, allow directing studies of genetic engineering on the biosynthesis of hemiterpenoid compounds. Thus, the sequence of this work in the identification of enzymes involved in the biosynthesis of hemiterpenoid compounds in citrus will provide important information for genetic engineering in order to increase the levels of these compounds and, thus, improve resistance against phytopathogens, mainly against *Phytophthora*, in addition to creating conditions to produce new fungicides to protect citrus crop.

**This research program requires expertise in:**

In particular in the identification of specialized metabolites that allow the plants to protect themselves from environmental restriction and to defend themselves against attacks from insects and/or microorganisms (phytopathogens). Requiring experience in exploiting the genes involved in this process and the cellular machinery to produce these molecules of interest (metabolic engineering).

**CONTACT INFORMATION:**

The applicants should send their résumé (in pdf) before July 31, 2023, showing their experience with these techniques and highlighting their publications in indexed journals. To submit your application, please send email to dmfs@ufscar.br address with title “Biorational Control 14/50918-7” with one pdf file. This opportunity is open to candidates of any nationalities. The selected candidate will receive a FAPESP’s Post-Doctoral fellowship in the amount of R\$ 9,047.40 monthly and a research contingency fund, equivalent to 10% of the annual value of the fellowship which should be spent in items directly related to the research activity.

Research Areas: Chemistry, Agronomy, Biochemistry.