ÚOCHB AV ČR
IOCB PRAGUE
Ústav organické chemie a biochemie
Akademie věd České republiky, v. v. i.
Institute of Organic Chemistry and Biochemistry
of the Czech Academy of Sciences

Title: Evolution of terpenoid biosynthesis in insects

PhD position

Application deadline: 30 September 2025

Start date: early 2025

Offer Description

Terpenoid secondary metabolites represent the key class of compounds in chemical ecology of plants, fungi, animals and microorganisms, used both for chemical communication and defense. Their biological activities are also exploited by industries such as pharmaceuticals, cosmetics, or food and flavour. Our research group focuses, among others, on the chemical diversity, biological significance and biosynthesis of terpenoids produced by insects. In this project we address the question of evolutionary origin and functional properties of insect terpene synthases (TPS), the key enzymes responsible for the conversion of prenyl pyrophosphates into terpenes. Insect TPS are unrelated to their plant or microbial counterparts, and have evolved multiple times independently in different insect lineages. Our understanding remains limited in terms of their reaction mechanisms and structure-activity relationships. Within this PhD project, the doctoral candidate will functionally characterize a set of insect terpene synthases from several insect clades and define the common and idiosyncratic structural features acquired during their multiple independent origins.

This PhD project is funded by the European MSCA Doctoral Network 'ModBioTerp' and the grant support for the broader research project is funded by Ministry of Education, Youth, and Sports (2024-2027). The main supervisor is Dr. Robert Hanus (IOCB Prague) and a part of the project will be carried out in a partner laboratory within the ModBioTerp network. The monthly stipend includes 2690 EUR living allowance, 600 EUR mobility allowance, and 660 EUR family allowance (if applicable). The recruited PhD student must conform to the MSCA Mobility Rule: cannot have resided or carried out his/her main activity (work, studies, etc.) in the Czech Republic for more than 12 months in the 3 years immediately before their recruitment date. Students coming from Czech universities are not eligible for this position.

Interested candidates should contact the main supervisor Robert Hanus (robert.hanus@uochb.cas.cz) and/or Jitka Štáfková (jitka.stafkova@uochb.cas.cz).

Flemingovo nám. 2
166 10 Praha 6
Czech Republic
+420 220 183 333
uochb@uochb.cas.cz
www.uochb.cz
IČ: 61388963
DIČ: CZ61388963

About IOCB Prague

IOCB Prague is a leading research institution under the umbrella of the Czech Academy of Sciences. Our mission is basic research at the interface of chemical and biological sciences and translation of results from basic research into applications and commercial assets. IOCB was established as an interdisciplinary institute at the interface of chemistry, biology, and medicine with a combination of chemical and biological groups and teams working in the same field. This has led to many significant contributions through its pioneering cutting-edge research, as well as practical applications, particularly in medicinal chemistry.

More than 900 IOCB employees work in research as well as administrative and technical support. Among them are over 220 PhD students and 240 foreigners from dozens of countries around the world. IOCB provides targeted support to parents in science, backs young scientists, and encourages contributions to community life. The institute also values partnerships with nonprofit organizations, popularization, and science-related initiatives and foundations. Take a virtual tour of IOCB here.

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