

Invitation to the Seminar series in Evolutionary Biology

Tuesday, 19.11.2024

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Beyond plants and microbes: Biosynthesis and evolution of terpene semiochemicals in insects

Abstract:

Many organisms release volatile compounds, including those in the diverse class of terpenes, as semiochemicals to interact with their environment. While the evolution of terpene specialized metabolism has been well documented in plants and microbes, the biosynthetic origin of terpene compounds in animals often remains obscure. I will present evidence for the evolution of biosynthetic genes that give rise to the formation of terpenes in animals with a focus on insect pheromone and defense compounds. Specifically, I will present examples for the ancient emergence and independent evolution of small gene families of terpene synthases from isoprenyl diphosphate synthase progenitors and discuss the potential structural changes that drive the evolution of terpene synthase function. New insights will also be given into the subcellular localization of insect terpene metabolism in mitochondria. Together, our findings indicate a frequent emergence of terpene semiochemical biosynthesis driven by chemical interactions in diverse groups of insects. Our results further provide evidence for convergent evolution in terpene metabolism between insects and plants but also suggest differences in TPS diversification between these organisms depending on different modes of gene functionalization in chemical interactions.

Host: Prof. Meret Huber

The colloquium takes place on Tuesdays at 12:15 pm until approx. 1:15 pm in the BZ 1 lecture hall (HS 00.187). Talks are given in English. Everyone interested is welcome!