M.Sc.-project in Plant Ecology and Evolution:

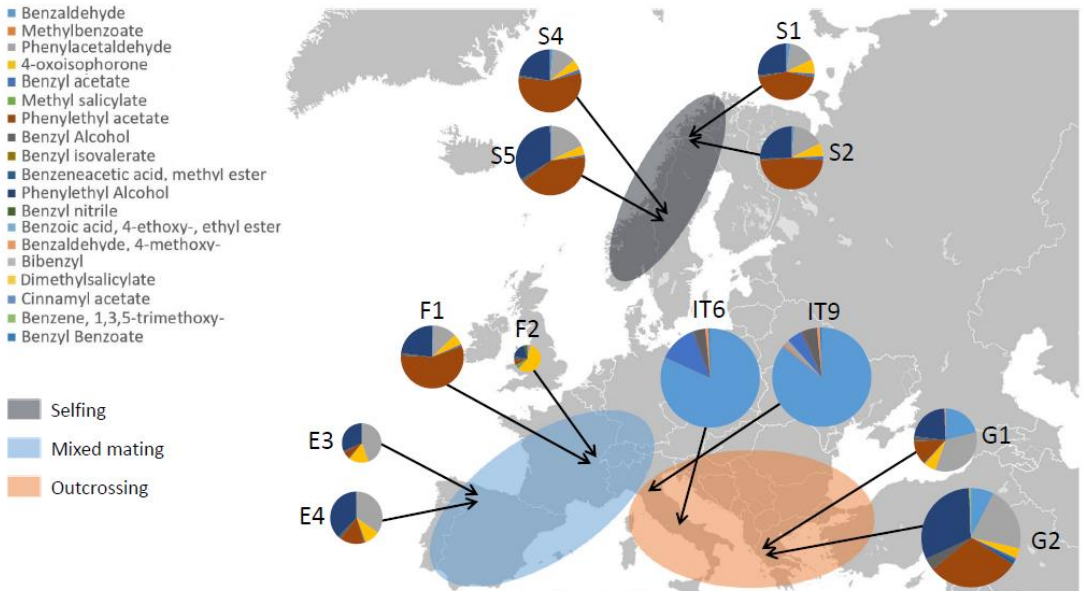
Patterns of inheritance and local adaptation of floral scent emission

Life on earth is overwhelmingly diverse. To elucidate what causes and maintains this diversity is still a major challenge in evolutionary biology. At the most general level, diversification requires both processes that generate diversity and processes that selectively filter this diversity in different ways in different populations. While random mutations and recombination are the ultimate sources of heritable variation, natural selection and genetic drift filter diversity and thus drive diversification.

One important group of selection agents on plant functional traits is the insects that are involved in antagonistic (e.g. herbivores) and mutualistic interactions (e.g. pollinators) with the plants. This should be especially true for floral traits, because any floral signal (color/shape or scent) that plants emit in order to attract pollinator could potentially be detected also by enemies such as herbivores or seed predators. Indeed, there are multiple examples of pollinator- and enemy-mediated selection on visual and morphological traits, and in several cases such selection acts diversifying across populations, with potential importance also for speciation. By contrast, only very few examples have studied selection on floral scent, and no study has so far shown the potential for selection for diversification in this trait of pivotal importance for many plant-insect interactions.

A current project in the Evolutionary Ecology of Plant-Insect Interactions research group at the Department of Biology, Lund University, investigates the potential for pollinator-mediated selection to be a driving-force behind the striking floral scent variation detected among populations in the crucifer species *Arabis alpina* (Brassicaceae). Within this project there are ample opportunities for M. Sc.-students interested in studying the evolution of floral traits and plant-insect interactions, and the ecology and evolution of floral scent.

For more information, contact Magne Friberg (magne.friberg@biol.lu.se) and/or visit the research group's web page: https://www.biology.lu.se/research/research-groups/evolutionary-ecology-of-plant-insect-interactions



Examples of among-population variation in floral scent in the *Arabis alpina*. This plant shows intraspecific variation in self-compatibility, with different populations being either self-incompatible (needing pollinators to move pollen between individuals), mixed maters (being self-compatible, but needing pollinators to move pollen within individuals), or completely selfing.