

1 PhD student in the research education subject: Ecology and infection biology

Microbial factors in the survival of a Swedish varroa-resistant honeybee population

Honeybees are critically important pollinators of both wild and crop plants. The main threat to honeybee colony survival is the Varroa mite and associated diseases. However, there are a number of feral honeybee populations that continue to survive long-term without Varroa control. The best studied of these is on Gotland. Recent studies show a major difference between these Varroa-surviving bees and non-resistant bees in the levels of certain pathogens, that manifests itself increasingly towards the end of the season. This is when the winter bees are produced whose primary role is to ensure survival of sufficient bees to re-start the colony the following spring. This project explores the possibility that these pathogens, and the rest of the honeybee microbiome, play a key role in the longevity of individual bees, allowing resistant colonies to survive where non-resistant colonies perish. It addresses this question through both comprehensive comparative surveys of the microbiomes of resistant and non-resistant colonies through several seasons, using Next Generation Sequencing techniques, and through studies of adult bees, reared so as to separate individual (genetic) from colony-level (microbial) influences on bee longevity. The honeybee transcriptome will also be analysed to identify any bee genes involved in longevity and microbial infections, which will be linked to concurrent genomic studies of this population before and after its adaptation to Varroa.

The position is based at the Department of Ecology of the Swedish University of Agricultural Sciences (SLU), in Uppsala, Sweden. The position is part of a collaborative project that also involves the Department of Virology of the Veterinary Faculty at SLU and the BioMedical Center at Uppsala University (UU). The Department of Ecology at SLU conducts empirical and theoretical research for sustainable forest and agricultural production and efficient biological conservation. Our research on populations, communities, and ecosystems forms the foundation for studying the influence of land use and climate on animals, plants, soils nutrient status and greenhouse gas balances. Solutions are sought that will mitigate climate change, preserve threatened species, benefit biological diversity and ecosystem services, and control pests in forest and agricultural landscapes as well as in urban areas.

Qualifications

Applicants should have a Masters Degree (or equivalent) in biology, biotechnology, bioinformatics or similar areas. Advanced knowledge of bioinformatics, statistical analyses or molecular biology is highly desirable. Prior experience with bees and beekeeping is useful, but not essential. The applicant must have the ability to work both independently and in a team, and to communicate well in written and spoken English. Knowledge of Swedish is desirable, but not essential. A valid Swedish or International drivers' license is also desirable.

Forms for funding or employment

Employment as PhD student 4 years

SLU is an Equal Opportunity Employer.

A person has basic eligibility for third level education if he or she has taken a second level qualification or has completed course requirements of at least 240 higher education credits, including at least 60 higher education credits at second level.

Those who met the requirements for general eligibility before July 1st, 2007, i.e. had completed a programme of higher education for at least 180 Higher education credits or the equivalent, will continue to do so until the end of 2015."

Selection among applicants meeting the requirements is made with reference to written application including curriculum vitae, copies of degrees and transcripts of academic records, one copy of the dissertation for masters or undergraduate degree, a list of at least two references familiar with the applicant's qualifications, certified knowledge of the English language and an interview.

Read more about the PhD education in [the Handbook for postgraduate students](#)

Read about the PhD education at SLU at www.slu.se/en/education/postgraduate-studies/

Use this [APPLICATION FORM](#)

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Academic union representatives

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Applications, marked with **ref no Dnr SLU ua 72/2014**, must have arrived at the Registrar of SLU, P.O. Box 7070, S- 750 07 Uppsala or registrator@slu.se no later than **2014-02-28**.