Doctoral student in Biology

Lund University, Faculty of Science, Department of Biology

Lund University was founded in 1666 and is repeatedly ranked among the world's top universities. The University has around 45 000 students and more than 8 000 staff based in Lund, Helsingborg and Malmö. We are united in our efforts to understand, explain and improve our world and the human condition.

Lund University welcomes applicants with diverse backgrounds and experiences. We regard gender equality and diversity as a strength and an asset.

Subject description

Biology is the broad subject about all living things. It encompasses everything from processes at the molecular and cellular level to global processes at ecosystem level. The subject is divided into a range of sub-disciplines and specialisations. The PhD programme at the Department of Biology includes many of these specialisations, from molecular biology to applied ecology, from viruses and individual cells to evolutionary biology and global biodiversity. Taking on research studies at the Department of Biology generally means focusing on a delimited part of the research area of biology and may include field studies, experiments, theoretical studies, or a combination of these.

Work duties

The main duties of doctoral students are to devote themselves to their research studies which includes participating in research projects and third cycle courses. The work duties can also include teaching and other departmental duties, up to 20%.

The overarching goal of this PhD project is to understand why the Eurasian spruce bark beetle *Ips typographus* seems to attack one of its secondary hosts at increasing rates in a warming climate. The project is expected to provide fundamental knowledge of the host preferences and host specificity of this devastating insect as well as insight into its performance on primary *versus* secondary host trees/breeding material. Studies will also be conducted on the symbiotic fungi of the beetle, which are likely of great importance for the success of the beetles on different host species. Furthermore, the importance of tree semiochemicals, individual insect odorant receptors and the gentic basis of the beetles' host preferences will be analyzed using state-of-the-art methods. From an applied perspective, the project is expected to identify new semiochemicals that can be used for improved pest control as well as resistance markers in the trees that may be selected in plant breeding programs for better protection againts attacks.

To approach these aims, behavioural experiments (in the lab and field) will be performed to study beetle preferences. Chemical analysis of bark extracts will be conducted to reveal profiles of volatile organic compounds, non-volatile defence compounds, and nutrients in the different hosts, and their effects on the beetles and fungal symbionts. Breeding experiments will be performed to study the performance and fitness of beetles and their symbionts on different hosts, and molecular and genomic/transcriptomic methods will be used to address the genetic and sensory basis of the beetles' host preferences. Hence, the project is suitable for candidates with a strong background and an interest in insect chemical ecology, preferably with expertise also in molecular biology and genomic/transcriptomic methods. The selected candidate will be

intergrated in the Max Planck Center *next-Generation Insect Chemical Ecology* (nGICE; https://www.ngice.mpg.de/), which will provide additional resources and expertise to the project and provide opportunities for internationalization of the candidate.

Admission requirements

A person meets the general admission requirements for third-cycle courses and study programmes if he or she:

- has been awarded a second-cycle qualification, or
- has satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in the second cycle, or
- has acquired substantially equivalent knowledge in some other way in Sweden or abroad.

A person meets the specific admission requirements for third cycle studies in Biology if he or she has passed an independent project (for example a degree project) of at least 30 credits in a relevant subject and have good oral and written proficiency in English.

Additional requirements

- MSc degree in Biology/Ecology or a closely related area.
- Excellent oral and written proficiency in English.
- Demonstrated ability for proactive and independent work.
- Demonstrated ability to work as part of a group.
- Practical experience in basic molecular biology methods.
- Practical experience in behavioural experiments in the lab or field.
- High motivation and a sincere interest in this particular project.

In addition to the mandatory requirements, documented experience in the following areas will be considered as strong merits:

- Theoretical or practical experience in the subject Insect Chemical Ecology.
- Experience in organic chemistry or biochemistry, and GC/MS analysis.
- Experience in basic microbiology methods.
- Strong experience in data processing and statistical analysis.
- Practical experience in the handling of bark beetles.
- Drivers license

Assessment criteria

Selection for third-cycle studies is based on the student's potential to profit from such studies. The assessment of potential is made primarily on the basis of academic results from the first and second cycle. Special attention is paid to the following:

- Knowledge and skills relevant to the thesis project and the subject of study.
- An assessment of ability to work independently and to formulate and tackle research problems.
- Written and oral communication skills

- Other experience relevant to the third-cycle studies, for example professional experience.

Consideration will also be given to strong collaborative skills, drive and independence, and how the applicant, through his or her experience and skills, is deemed to have the abilities necessary for successfully completing the third cycle programe.

Terms of employment

Only those admitted to third cycle studies may be appointed to a doctoral studentship. Third cycle studies consist of full-time studies for 4 years. A doctoral studentship is a fixed-term employment of a maximum of 5 years (including 20% departmental duties). Doctoral studentships are regulated in the Higher Education Ordinance (1993:100), chapter 5, 1–7 §§.

Instructions on how to apply

Applications shall be written in English and include a cover letter stating the reasons why you are interested in the postgraduate education programme and in what way the research project corresponds to your interests and educational background. The application must also contain a CV, degree certificate or equivalent, and other documents you wish to be considered (grade transcripts, contact information for your references, letters of recommendation, etcetera).
The Faculty of Science conducts research and education within Biology, Astronomy, Physics, Geosciences, Chemistry, Mathematics and Environmental Science. The Faculty is organized into eight departments, gathered in the northern campus area. The Faculty has approximately 1500 students, 330 PhD students and 700 employees.

We kindly decline all sales and marketing contacts.

Use our application system to apply for the position:

To login: https://lu.varbi.com/en/what:job/jobID:642767/

Application deadline: 8 August 2023