

Panel evaluation summary

The graduate education program at the Department of Ecology and Genetics (IEG) at Uppsala University is carried out within a high-profile research environment and spans over a broad field of research topics. The program is internationally well-known and attracts a diverse community of PhD students with PhD research projects over a wide range of specializations.

Strengths

- A large team of successful individual researchers, both highly experienced and those earlier in their career, share the responsibilities of being main supervisors and shape the core of the further group of co-supervisors. A substantial number of additional co-supervisors provide active links to several other departments at Uppsala University, to the Swedish Agricultural University, and to research groups at other research institutes nationally and internationally. All in all, the graduate education program rests on a long-term tradition of successful research and is framed in a strongly developed culture of science.
- During the on-site visit the panel found that students were overall content and that supervisors and program responsible professors were committed and engaged. In some research areas there were existing connections and interactions across administrative units such as research collaborations, or book and journal clubs. All research streams view the Individual Study Plans (ISPs) as an important tool for transparency, accountability and quality control, and use it in varying degrees to assess the students' progress and prospects.
- In response to earlier evaluations, such as KoF17 which "*strongly recommends the establishment of a graduate school in biology in order to offer a structured graduate program*" (KoF17, Panel 12 for Biology), the biology departments including IEG recently launched the Biology PhD School. While the panel recognizes the current effort and the existence of the school as strong points for the graduate education program, its success will depend on its resources, mandates, and scope, as further discussed below.
- Today's research education is increasingly complicated and the availability and accessibility of information about structure and procedures are essential. At the same time, the need for and importance of information is increased for example due to an increased internationalization and highly variable backgrounds of students. Information hubs, such as <https://www.teknat.uu.se/education/postgraduate/rules-regulations/>, serve well the needs of a generic information platform, and the needs for specific preparations near thesis defense.

Weaknesses and potential areas for improvements

- For a department with four separate programs and six postgraduate research specializations, promoting interaction and integration among these specializations is a challenge. The impression gained during the site visit is that PhDs interact mainly within programs. Three of the specializations are also quite small (3-4 PhD students), and although promoting integration is beneficial for all six specializations, especially since there is a significant scientific overlap among them, it would be crucial for the smallest specializations.
- A common view among senior supervisors and postgraduate education responsible professors (FUAPs) highlights the importance of providing the PhD students with specialized research skills within their respective fields, and foster them to become the next generation experts able to represent the specific research direction. Such a view is not necessarily well aligned with the educational aspects of the graduate program, which also emphasize e.g. all-purpose research training, education and training of pedagogical skills, and opportunities to develop skills that prepare them for a career both within and outside the academic world.
- A big and diverse department is also diverse and heterogeneous with regard to PhD education. This diversity is partly a remnant from the department's history and can enrich and elevate. Too much variation in routines, rules and procedures can, however, hurt the very purpose of a common academic and intellectual environment. We find sometimes striking differences in how the ISP updates, follow-up meetings, half-time controls and other tools for progression are used among the programs and specializations. There are however good examples that could serve as templates for synchronization among the specializations.
- Another, partly related issue is the tangled, sometimes obscure structure of the leadership and chain of command at the department. The doctoral student has a clear and natural relation to the supervisor, but the connections to co-supervisors, FUAPs, program heads, director of studies, and the head of department is sometimes not obvious and many students report uncertainty about who to talk to and when, should it be necessary to go beyond the supervisor and the immediate environment.
- Observed from outside of the department, the specializations appear fragmented with overlaps and redundancies. Panel members were confused and we think the system might be a source of confusion for new and potentially new graduate program students.
- At IEG, much vital information as to what is expected from the students and what constitutes their degree of responsibility is exchanged through close interactions with supervisors. However, not all programs provided important information to the same extent. An example is the extent to which students can participate in the annual ISP

evaluations. Clearly, the heterogeneous structures of the programs form obstacles to disseminating information in a standardised way sometimes resulting in slow information flow and that information was not always easily accessible.

- The PhD students are represented in the department board, the graduate education committee (which however only meets once a year), and have access through a faculty-wide system to many other committees and boards. However, the engagement from the students seems restricted to a small group that feel responsibility of taking on the work. A broader engagement from the graduate students would be beneficial for all parties as this would improve communication between students and the department, making the leadership and FUAPs aware of problems that the students have identified, and not least bring up ideas for solutions to problems from the students themselves.

Recommendations

- Interaction among the specializations would be promoted by making the Committee of Postgraduate Education (chaired by the Study Director, and including the FUAPs and PhD representatives) more active. This Committee might be given the explicit task to increase coordination among specializations and to promote joint activities.
- To strengthen student representation practices and strengthen networking and interactions among the graduate students, IEG should actively encourage creation of an informal or more structured PhD Council at the department. Such a Council would promote interactions among PhD students, irrespective of the specialization they belong to.
- The structure and organization of PhD-training have raised some concerns, such as lack of transparency and lack of clarity as to the role of specializations, varying practices over research programs, etc. IEG hosts 6 of a total of 23 (17 as of admittance since 2019) research education specializations in biology. The 6 specializations, linked to the 4 research programs, have each one FUAP, and together 47 PhD students (currently), with declining numbers over the last years. This organization seems to have support from senior faculty at least, and voices are raised to not change a system that essentially works. Junior faculty members appear to relate more to key people and functions, not the research education programs as such. PhD students relate to supervisors primarily and identify with social groups determined by buildings, corridors, lunch rooms, journal clubs etc.

The panel recommends that IEG carries out an in-depth investigation to decide whether to keep the present structure, or change to a more transparent set-up with

emphasis on creating a departmental graduate education community with equal expectations, opportunities, access to information, etc. For the case of keeping the current organization, IEG should comment on potential risks or costs associated with a re-organization. For the case of a transition to a new system, we stress the importance of maintaining diversity in the scientific environments, e.g. by letting traditional practices in each research program affect daily work, weekly meetings, biweekly meetings, and so forth, whereas the aspects of graduate training as an education program should be kept generic on the departmental level. The investigation should consider as an option, or at least a thought experiment: form a single research education track, Biology with specialization ecology and genetics sciences. An existing format involving FUAP, sub-FUAPs, and director of research study, should be applicable for this scenario.

- Together with the previous task, we also recommend that IEG develops a clear strategy for the Biology PhD research school. Undoubtedly, the initiative is great for interactions, fuel for collaboration, education and research. The PhD school has the potential to greatly improve the PhD education by improving information flows, creating shared procedures and increasing scientific and social interaction across different areas of research. At one extreme, it could replace the educational responsibilities of the current programs. At another (where it is now - remembering that it is just starting) it might add to the confusion and create yet another layer and structure to the already structure-rich organization. It is the position of the panel that the department really has to make up its mind how to either fit the school to the present situation, or how to use it as an instrument for change. Such decisions on resources, mandate and scope of the research school will be particularly important if the basic structure discussed under the previous point is unaltered. Then the Research School & the Committee with FUAPs/Study Director/PhD representatives are the remaining tools available to promote integration, and reduce the confusing variation among specializations/programs.

Panel members:

- Ove Eriksson, Dept of Ecology, Environment and Plant Sciences, Stockholm University
- Kerstin Johannesson, Dept of Marine Sciences, Tjärnö Marine Laboratory, Gothenburg University
- Kai Lindström, Environmental and Marine Biology, Åbo Akademi University
- Ingemar Kaj, Dept of Mathematics, Uppsala University (chair)
- Per Lundberg, Dept of Biology, Theor Population Ecology and Evolution, Lund University
- Marcel Tarbier, Computational Biology, SciLifeLab, Stockholm University (PhD repr)