

Assessment panel report (short version: chapter 1 and 4 of the full report)

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1. Introductory summary

Short summary of the assessment panel's conclusions. Strengths and weaknesses, areas of development/improvement.

The research and postgraduate environment of IOB comprises a total of 65-70 persons (the higher figure includes emeriti) of which approximately half are PhD students. Seven PhD subjects are hosted within six research programmes (sub-departments).

The panel concludes that the research carried out within the six research programs hosting the seven PhD subjects is of high or very high quality. Each PhD subject within IOB, even the very small subjects, have a clear scientific foundation and most of the supervisors conduct high-quality research at an internationally recognised level. Thus, the research conducted definitely possesses “such quality and scope that postgraduate education can be conducted at a high scientific level”.

However, IOB as a department needs to commit fully to attaining a high quality in PhD education, not just to maintaining a high quality in research. Suggestions, including some which are urgent, are given in the “summary and recommendations” of Section 3 and in point 1 of Section 1.1. Measures that may increase the quality and communality of PhD education are given in Section 1.1, points 2 – 4.

1.1 Quality enhancing measures

- 1) All staff that have been assigned to supervise PhD students need to agree on how to interpret faculty and department routines on recruitment ([recommendation 3.3c](#)), on the importance of the national examination goals ([several recommendations in Section 3.2](#)), on monitoring procedures ([several recommendations](#)), on half-time seminars ([several recommendations](#)) and on the assessment of PhD student “readiness” and the quality of the final PhD thesis manuscript ([several recommendations](#)). This has to be equalised over the six research programmes and over all individual research groups.
- 2) The panel recommends that the department creates a suite of common IOB-run obligatory postgraduate courses in general biological theory and philosophy for all PhD students at IOB. Such courses do not currently exist at IOB. These courses should be given regularly. For example, half of the courses could be held in odd years, with the other half in even years, a schedule which should not overburden the approximately 30 senior research staff.

This suite should be complemented with signature specialist postgraduate courses for each PhD subject – these do not exist at present ([recommendation 3.2.1b](#)). The courses should be open for all PhD students within IOB. Such specialist courses should also run regularly, but perhaps not more than once every 3-4 years (ensuring the PhD students needing the specialist course get it early) with a rotating schedule between the FUAPs of the seven PhD subjects. With 2-3 specialist courses offered per year, there will be one course per PhD subject every 3-4 years which would likely not overburden the FUAPs.

- 3) A second effective mechanism for increasing a sense of community and common purpose is to hold an annual PhD student conference, organised by the PhD students themselves. This should showcase talks and posters by students, and require the presence of the entire department.
- 4) Fewer PhD subjects would most certainly better serve IOB. A phasing out of the existing PhD subjects, while recruiting PhD students to a single PhD subject (e.g. “Organismal Biology”, or “Biology with specialisation in Organismal Biology”), would after a few years establish an improved (i.e. broader, more robust) educational environment with several active research groups. These research groups would still act as the immediate educational environment for PhD-supervisor interactions but with the boundaries (and barriers) set by the present organisation removed.

4. Summary of the evaluation and a list of all recommendations

4.1. Introduction

The panel has assessed the PhD education hosted within the Department of Organismal Biology (IOB). The research and postgraduate environments comprise a total of 65-70 persons (the higher figure includes emeriti) of which approximately half are PhD students.

The PhD subjects are Biology with specialization in (1) Comparative Physiology, (2) Environmental Toxicology, (3) Human Evolution and Genetics, (4) Physiological Botany, (5) Systematic Biology: (6) Evolutionary Organismal Biology and (7) Animal Developmental Biology. The department is composed of six research programs (“sub-departments”), five of these having one PhD subject each, with the remaining two PhD subjects being organized within the sixth research program.

The panel assessment is based on documents provided in advance by the department (self-assessment document with appendices and a full set of ISPs for one PhD student per PhD subject and information on the first employment of Department graduates for past five years), presentation slides provided by faculty representatives and by the Head of Department at the beginning of the site visit, and information collected in the three main interviews carried out during the site visit.

As preparation for the site visit, the panel met twice with an individual reading of documents taking place in between. After the site visit, the panel has (so far) met three times to summarize impressions, agree on conclusions and recommendations and to write the reports.

The panel mission was to assess postgraduate education in the research-intense contexts of the Department, addressing all the different aspects requested by Uppsala University. The main focus for the interviews carried out during the site visit was on three key educational aspects: “Design, implementation and results”, “Doctoral student perspective” and “Future career”

4.2 Summaries and recommendations, per assessment area (numbering refers to where in Section 3 the full discussion can be found)

Basis of the education programme

Research environment, Staff and education environment

Summary 3.1.1a: Each PhD subject within IOB, even the very small subjects, have a clear scientific foundation and most of the supervisors conduct high-quality research at an internationally recognised level. The research conducted within the six research programs hosting the seven PhD subjects is of high or very high quality, and definitely possesses “such quality and scope that postgraduate education can be conducted at a high scientific level”.

Summary and recommendation 3.1.1b: An overarching commonality of purpose between the seven PhD subjects, as well as common goals for a postgraduate education in Organismal Biology, is not apparent. PhD students feel isolated from each other and likely receive a relatively narrow “stuprör” education exclusively within their own PhD subject specialty, thus failing to receive a much broader education in organismal biology. This needs to be addressed.

Summary and recommendation 3.1.2: Seven separate PhD subjects is excessive considering the small size of IOB. This has led to some PhD subjects becoming so small that their intellectual and educational environments are at risk in the future. Thus, the number of supervisors and teachers (and their collective competence) within these small PhD subjects is at present not adequate or proportional for the needs of the educational program in the short to medium term. Fewer but larger PhD subjects (or even a single subject – Organismal Biology) would go a long way to solve these problems.

Design, implementation and results

Overview of processes in relation to all examination goals

Summary and recommendation 3.2.1a: The administrative processes at the department level are excellent. However, the principles and procedures for following up progress, for updating the ISP and for organising half-time seminars etc. need streamlining across all PhD subjects within the department.

Summary and recommendation 3.2.1b: A comprehensive list of postgraduate courses in organismal biology – including attractive specialist courses offered by the different PhD subjects – appears to be absent. The PhD subjects thus need to develop such courses to ensure that each doctoral student obtains a core set of skills with respect to conceptual insights, subject knowledge, and transferable skills. Moreover, compulsory courses in laboratory animal science education and training are not listed as mandatory in any of the PhD subjects, although the research in some of the subjects is strongly focused on work involving laboratory animals and animal tissues. Even though PhD students at IOB that are involved in such research are required to take this course, its compulsory nature needs to be more clearly communicated throughout the department.

Summary and recommendation 3.2.1c: Procedures for ensuring that doctoral theses have the required quality needed prior to their defence are unclear, are likely vary between PhD subjects and may result in conflicts of interest. Development of an IOB process for “pre-examination” of theses prior to printing, and definitely before public defence, is worth considering in order to ascertain equal treatment across all PhD subjects, and to avoid potential conflicts of interest.

Summary and recommendation 3.2.1d: The educational outcomes (“utbildningsmål”) of the PhD education at IOB are apparently not given the same weight as the scientific outcomes. To achieve balance, the department needs to define the general skill-set that all doctoral students should possess, regardless of thesis subject, in order to be employable both inside and outside academia.

Assessment criterion “Knowledge and Understanding”

Summary and recommendation 3.2.2.1: Scientific research training within most of the PhD subjects is ambitious and at the highest international standard, ensuring good development of specialist knowledge and understanding. However, student participation in other activities that are important for a postgraduate education (e.g. courses, conferences, teaching) is less clear. These components provide the broader knowledge base needed for an independent research career and a strategy needs to be formulated within each PhD subject that redresses this apparent weakness.

Assessment criterion “Competences and Skills”

Summary and recommendation 3.2.2.2: A major goal of postgraduate education is to train a student to become an independent researcher. The strategies used to attain this goal in the different PhD subjects were not very clear. The progression towards, and development of, intellectual independence during the course of doctoral training needs to be given higher priority, and documented more explicitly in the ISP.

Assessment criterion “Judgment and Approach”

Summary and recommendation 3.2.2.3: The trajectory towards intellectual autonomy and the principles of disciplinary rectitude should be made more explicit and more visible to both supervisors and doctoral students.

Gender equality and equal opportunities

Summary and recommendation 3.3a: The department takes GE and EO related questions very seriously and this is laudable. However, it is unclear how GE- and EO-related issues are documented and how issues that potentially arise are followed up. The procedures should be defined and documented.

Summary and recommendation 3.3b: Despite having many PhD students that are unable to speak Swedish, much of the department's web information regarding postgraduate education is only available in Swedish. The department is highly encouraged to rectify this situation by providing the information in English as well as Swedish. Moreover, it is unclear if Swedish and non-Swedish speaking PhD students are given the same opportunities to teach at all levels, to take an active part in the administration of IOB and to hold other commissions of trust. The department is encouraged to actively recruit their foreign PhD students to administrative roles

Summary and recommendation 3.3c: The routines for PhD student recruitment and financing are not sufficiently clear among all categories at IOB. The department is strongly encouraged to ensure that the still quite new (early 2020) procedure for recruitment becomes known and used throughout the entire department, and that a common procedure for advertising, financing and selecting PhD students is implemented.

Summary and recommendation 3.3d: The formal credit points available for different postgraduate courses, as well as detailed information about course contents, are in most cases not readily available. The department is strongly encouraged to specify course credits in advance and to base each course upon a formal course curriculum, mandatory for all kinds of PhD courses, and available on the IOB home page. Listed IOB PhD courses should be accessible for all PhD students and supervisors within the department as well as eventually for students from other universities.

Doctoral student perspective

Summary and recommendation 3.4a: The panel found clear indications that not all half-time seminars are planned and occur as presented in the self-evaluation report and supervisors do not seem to share the same understanding of the requirements. Procedures specifying the content and timing of half-time reports and seminars must be harmonized.

Summary and recommendation 3.4b: The panel found clear indications of widely differing views among supervisors on the importance of the ISP, and on the nature of, and need for, regular follow-up discussions between PhD students and their supervisors regarding educational progress. The department is strongly encouraged to communicate to all supervisors the importance of regular follow-ups of progress and of thorough updates to the ISP.

Summary and recommendation 3.4c: As noted also under other assessment areas, the panel is concerned about a lack of clarity concerning how the readiness of PhD students for defending their PhD thesis is assessed. A more formal process for assessing students as being qualified for public defence should be developed in order to increase clarity, reduce stress and to ensure that all PhD students are treated equally. Ideally this process should include also persons not directly involved in the thesis projects.

Internationalization and sustainability perspective

Internationalization and international perspective

Summary and recommendation 3.5.1a: The research carried out at IOB is highly international, and this is considered to be a very positive aspect of the postgraduate educational environment. The department has staff and students from many parts of the world, and this is laudable. However, as a consequence the department has a large number of foreign students who are unable to speak Swedish and are thus likely to have difficulty fully integrating into Swedish society. The department and

supervisors are encouraged to better communicate the need for foreign students to learn Swedish, and to communicate why this would be beneficial.

Summary and recommendation 3.5.1b: Some PhD students felt that they lacked information about opportunities to make their education more international, namely via participation in conferences and exchange visits and the possibilities of financial assistance that might be available. The benefits and opportunities for internationalisation could be better communicated to the PhD students.

Sustainability perspective

Summary and recommendation 3.5.2: The department has clear goals and procedures for sustainably running postgraduate education and other activities. This is to be commended. One possibility to further these efforts would be for PhD subjects to link to the UN Agenda 2030 in order to increase awareness of global sustainability goals among PhD students and supervisors.

Future career and collaboration

Summary and recommendation 3.6a: Even though PhD students clearly receive a high-quality scientific education at IOB, it was less obvious how and if the PhD subjects also train their students to become independent researchers. Thus, the department is strongly encouraged to place a stronger focus on active career development within all PhD subjects, and to emphasise the development of intellectual independence and the acquisition of practical skills, qualities that are needed to continue a career both inside and outside academia.

Summary and recommendation 3.6b: There is a need to better understand how students fare after receiving their PhD degree from the department (e.g. if they have relevant jobs, and where they work). This could be achieved, for example, through regular surveys among former students or by establishing an alumnus network.

4.3. Recommendations for quality enhancing actions

As highlighted in several of the assessment criteria above, IOB as a department needs to commit fully to quality in PhD education, not just quality in research. Suggestions, including those considered urgent, are given in the “summary and recommendations” of Section 3, and collected in Section 4.2 above. The following actions, if implemented, will lead to an improved commonality of purpose within IOB and to a broader postgraduate education (and perhaps also to a more vital research portfolio).

4.3.1 Short–medium term timescale: Enhancing PhD *educational* involvement among supervisors and other senior research staff to improve departmental communality

(1) All staff that have been assigned to supervise PhD students need to agree on how to interpret faculty and departmental routines on recruitment ([recommendation 3.3c](#)), on the importance of the national examination goals ([several recommendations in Section 3.2](#)), on the importance of monitoring procedures ([several recommendations](#)), half-time seminars ([several recommendations](#)) and assessment of PhD student “readiness” and the quality of the PhD thesis manuscript ([several recommendations](#)). This has to harmonize over the six research programs and over all individual research groups.

(2) The panel recommends that the department creates a suite of common IOB-run courses in general biological theory and philosophy that are obligatory for all PhD students at IOB. Such courses do not currently exist at IOB. An example of such an advanced course might be a course on evolutionary theory (a topic which is equally relevant in all areas of Biology). A course on the history and philosophy of biological science might be another possibility. A common course in biological statistics might be yet another. This would take advantage of the high-level competence of the IOB supervisors, and not only as highly skilled researchers. These courses should be given regularly. For example, half

of the courses could be held in odd years, with the other half in even years, a schedule which should not overburden the approximately 30 senior research staff.

This suite of obligatory courses should be complemented with signature specialist postgraduate courses for each PhD subject that currently do not exist ([recommendation 3.2.1b](#)). The courses should be open for all PhD students within IOB. Such specialist courses would also attract international students (and could employ, for example, the internationally established summer/winter “school” format), hence creating networking opportunities for the PhD students and enhancing the international visibility of the department. Such specialist courses should also run regularly, but perhaps not more than once every 3-4 years (ensuring the PhD students needing the specialist course get it early) with a rotating schedule between the FUAPs of the seven PhD subjects. With 2-3 specialist courses offered per year, there will be one course per PhD subject every 3-4 years which would likely not overburden the FUAPs.

(3) A second effective mechanism for increasing a sense of community and common purpose is to hold an annual PhD student conference, organised by the PhD students themselves. This should showcase talks and posters by students, and require the presence of the entire department. Social events and a conference dinner should ideally also be a part of the program. The Biology in Lund Annual Meeting is a good example of this, but such activities are organized also within Uppsala University, for example the annual “Chemistry PhD student conference” organized jointly by PhD students from the two chemistry departments.

4.3.2 Long-term timescale: Reorganize the PhD education at IOB

Fewer PhD subjects would most certainly better serve IOB. One option is to reduce the number of PhD subjects to at most four by assimilating (in the short to medium term) the three smallest current PhD subjects into the four larger ones. Another (probably better) option is to phase out the existing PhD subjects altogether while instead recruiting PhD students to a single PhD subject: “Organismal Biology”, or “Biology with specialisation in Organismal Biology”. Within this single PhD subject, several research groups would then be active.

During the interviews, when this possibility was presented to the FUAPs, all (with one exception) expressed fear that the adoption of a single PhD subject would lead to a loss of their identity and visibility in the existing research environments, particularly those that already have high international visibility. However, this has not been the experience of other Biology departments in Sweden that have adopted the same postgraduate education strategy, that is, fewer and larger PhD subjects (e.g. the Biology department in Lund which has the single PhD subject “Biology”, or at other departments within Uppsala University, for instance at the Faculty of Medicine).

In the scenario of a single PhD subject, supervisors would still have the main responsibility for the PhD students in their groups, including day-to-day contacts and regular monitoring of progress (including updating the ISP). For the role as subject FUAP, the IOB professors could take turns in the role as subject FUAP (a single person with a full set of FUAP responsibilities) and “co-FUAP” (one or more people that are responsible for following-up a subset of PhD students), in line with the present faculty guidelines. This model is already in use, for example at the Department of Physics. At the Department of Biology in Lund, the roles and tasks are defined slightly differently from the Uppsala model – 15 “Institutional Representatives”, or IRs, act as the chair of a small supervision committee for each PhD student consisting of the IR, the supervisors and a mentor. The IR is always a professor and typically chairs the committees of up to 8 PhD students and is responsible for regularly following up progress and updating the ISP (typically every 6 months). This system was implemented some years back and works extremely well.