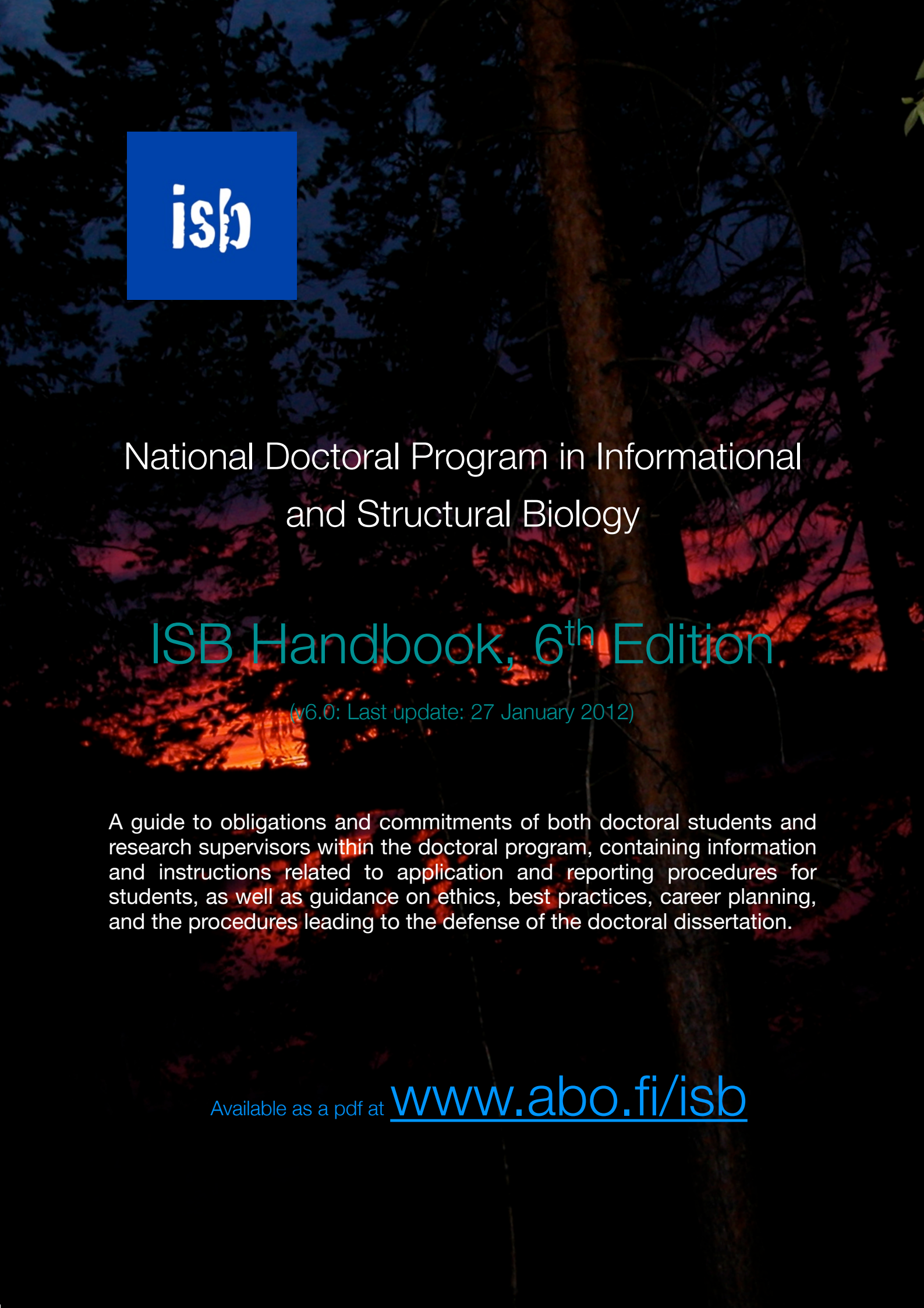

National Doctoral Program in Informational and Structural Biology

# ISB Handbook, 6th Edition

(v6.0: Last update: 27 January 2012)

A guide to obligations and commitments of both doctoral students and research supervisors within the doctoral program, containing information and instructions related to application and reporting procedures for students, as well as guidance on ethics, best practices, career planning, and the procedures leading to the defense of the doctoral dissertation.

Available as a pdf at www.abo.fi/isb

# The doctoral program has been supported over the years by ....

Ministry of Education and Culture
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# New additions to the ISB Handbook

## 6th Edition of the ISB Handbook

In the 6th Edition of the ISB Handbook contains the following additions and changes:

Many deletions throughout regarding ISB funding and reporting requirements for the Ministry of Education and Academy of Finland. Funding will continue through 2015.

Application deadlines, twice per year; thesis committee deadline change:

> Student, postdoctoral, senior scientists and supervisor applications have deadlines of March 15 and September 1.

Student application instructions have changed:

> Two independent letters of recommendation are required and may not include one from the proposed supervisor.
>
> Applications that exceed word limits or do not include required materials, will not be processed.

If an allegation of plagiarism is made, then an official investigation by the universities will automatically take place. No exceptions, no excuses.

Our use of NordForsk funding for activities has received a two-year extension.

All figures are from MSJ's own photos except were noted and referenced.

## 5th Edition of the ISB Handbook

In the 5th Edition of the ISB Handbook contains the following additions and changes:

"Graduate School" is now "Doctoral Program" as per new Ministry of Education and Culture guidelines.

ISB's mission statement is added.

Definition of a supervisor, senior scientist and postdoctoral members

Application deadline for potential supervisors, senior scientists, A single application deadline of February 15 of each year.

  

Postdoctoral researchers may apply three times per year, with the exception that we will not consider postdoctoral applications for the September 15th deadline in years where we are deciding on ISB-funded positions due to the large volume of applications to be processed.

Inactive members: The Board of ISB will review each year the status of ISB members deemed to be inactive for an extended period of time.

The text is updated throughout and reformatted; our forms have been updated to reflect changes in the Handbook.

All figures are from MSJ's own photos.

## 4th Edition of the ISB Handbook

The 4th Edition of the ISB Handbook incorporates numerous small changes that reflect the current policies of ISB, the Academy of Finland and Ministry of Education and Culture.

## 3rd Edition of the ISB Handbook

Key Changes in the 3rd Edition of the ISB Handbook:

Important Deadlines: Clearly listed on the back page of the handbook.

Electronic forms: reporting, activity funding requests: Forms, available from the ISB at www.abo.fi/isb, have been created to ease reporting of activities, funding, publications, etc., as well as for applications and evaluations.

E-mail submission, applications to join ISB: students and supervisors

Forms and instructions are available from the ISB website at www.abo.fi/isb. One signed copy by snail-mail to ISB.

Yearly research reports: Research reports are now extended from 3 pages to a maximum of 5 pages.

What to do in the rare case that a serious problem is encountered? General guidance is provided.

Career advice, postdoctoral training, funding: Its easy to give advice, but will you take advantage of it?

ISB support of activities – conference support for graduate students: ISB only supports applications where a oral, poster or written presentation is made.

Web-based plagiarism – zero tolerance policy: Plagiarism continues to be a problem in academic circles. Guidelines are given.

4-year support for ISB funded students – Academy of Finland changes: The Academy of Finland changes to our funding now permit more flexibility. Students joining ISB can be funded for 4 complete years but studies must begin within 12 months of the official starting date for funding. The only exceptions concern students on approved leave of absence.

All figures are from MSJ's own photos.

  

# Foreword to the 6th Edition

## Foreword to the 6th Edition

Big changes have occurred in Finnish higher education. The Ministry of Education and Culture has decided to give universities their freedom and in this vein they have decided to (1) remove external evaluation of programs by the Academy of Finland; (2) move all responsibilities to the universities; (3) stop all directed funding to doctoral programs for positions and also probably for activities beginning in 2016; and (4) there will no longer be any external oversight by the Academy of Finland. There has been very little support for these changes from outside the Ministry of Education and Culture.

Encouraging the universities to be more involved and to apply the same standard seen in existing programs to all doctoral students is a positive step by the ministry.

The most damaging aspect of these changes is the loss of activity funding, which for network programs – 85% of existing programs – signals that cooperation and networking are no longer important to the ministry. We think that that doctoral programs have done a remarkable job in developing cooperation and taking advantage of the distributed nature of expertise and recognition that in a small population country like Finland we need to cooperate. We feel the ministry has been terribly misguided and irresponsible to not provide any opportunities for competitive funding in some fashion: their reasoning being that they are giving “freedom to the universities.” Sadly, the consequences will largely be negative for doctoral student education and training, mobility and for research as a whole.

We and others strongly opposed these changes over the last two years, but it became clear this past fall that the ministry had made its mind up long ago and was unwilling to listen to the community it should be serving. It is a sad reflection on government institutions whose policies are out of touch with a community that has invested much in providing and developing high-quality higher education.

As a consequence, there will be no further ISB positions that are directly funded. Currently-funded positions will all end by 31.12.2015, as will our activity funding from the Academy of Finland.

We are exploring other possibilities on the international front and we will keep everyone informed.

## Foreword to the 5th Edition

The Graduate School is now a Doctoral Program. The universities are asked to take a more active role in training doctoral students, and changes are specifically aimed at students that do not belong to any doctoral program and existing programs that have not been as well managed as they might.

  

I would suggest, in all modesty, that ISB is among the top few percent of doctoral programs in Finland. We have implemented procedures well in advance (by 5 to 10 years in some instances) of the mandates coming from the Ministry of Education and Culture. ISB was one of the very few schools that apparently has a detailed Handbook and thesis committees (poll at the Fall meeting of directors and coordinators with the Academy of Finland and Ministry of Education and Culture). ISB may still be the only program to implement a quality program.

The universities are now asked to set up structures called “graduate schools” to provide interaction with the doctoral programs, but this has been slow in coming and different universities will certainly arrange things in their own way. Åbo Akademi University is being extremely thoughtful, for example.

At the end of 2009, FinBioNet asked Fredrik Karlsson, the ISB coordinator, and Katri Wegelius, coordinator of the Finnish Graduate School in Neuroscience, to help coordinate a national response from other bioscience programs to the proposed changes. I drafted the initial response and in revisions with Fred and Katri we took into account the views that were received. Programs outside of the biosciences also asked to “sign” the response. We held a meeting here in Turku with members of the committee that formulated the changes for the Ministry and I spoke out strongly on our concerns, especially regarding a lack of earmarked funding for coordination and expectations of chaos for networked programs if universities implement procedures in different ways. Our various responses did lead to changes in the proposal that was eventually adopted. Except on the issue of coordination.

Coordinators were recognized to be of necessity for doctoral programs, especially large, networked programs like ISB would not be able to continue without a coordinator. The Ministry of Education and Culture, against advice from research councils of the Academy of Finland, in its infinite wisdom, decided not to fund coordinators in the future but to have the universities take responsibility. (It is apparently unclear even at the MInistry who approved such a decision as some in charge were not aware of the change). One response to us was “we want to give the universities freedom to arrange things as they wish” – which is reported by many to be nonsense, given the wide variety of mandates and restrictions now placed on university operations. What this means for coordination is not exactly clear at this moment but changes in funding the coordinator will come into effect from 2012. At Åbo Akademi University there was a stated commitment from the head of academic affairs and the vice-rector in charge of the graduate schools for funding coordination. By the end of the summer all universities had supported the idea of funding coordinators based on participation levels of universities in the programs.

I think that many feel that having the universities get more involved in the process of training and educating doctoral students is good, but maybe it would have been wise to make all of these changes either before the changes in the university law at the start of 2010, or at a later date when the universities have stabilized. Because, frankly, to change all aspects of a university to untried systems over a period of several months has been a disaster and quite a chaotic process. The costs to moral and to the tax-payer certainly seem hard to justify. And heaped upon all of these changes, was a mandate to sort-out the doctoral programs and their mother schools for the future. SOS.

On the positive side, we will have had approximately 80 graduates from the program by the end of 2010, and over 70 doctoral students in ISB. 21% are now international students.

The draft application for positions and activity funding for the years 2012-2015 has been delivered to the ISB Board members and to the universities for comments and changes. The ISB Handbook, 5th edition released to the web site in early August has undergone a few additional changes. Please, if there is useful information that we have not yet provided or changes or additions that you would like to see, just give us a ring.

Thanks to all of you with a sense of humor for your hard work over the past years! the ISB Board, our supervisors and industrial members, our doctoral students chained to the lab bench (or the computer), and our senior scientists and postdoctoral members!

All the best to you all and hail to the travel system and all the other bureaucratic nonsense implemented in 2010! Fred, thank you for efficient and professional management of ISB and for not quitting despite all of the nonsense!

Hauskaa Juhannus, Mark, 11 June 2010; and 2 September 2010

## Foreword to the 4th Edition

The Graduate School System in Finland has undergone a change over the past year. The Academy of Finland is now responsible for applications and funding. Funding for positions is now once every two years and funding for activities is assigned at the same time, eliminating the need to send in separate applications nearly every year. The next reapplication period will be in 2011 for 2012-2015.

ISB was successfully renewed for the period 2010-2013, receiving 14 funded positions (2 additional positions) and activity funds above previous levels of support.

The Ministry of Education has now developed general guidelines that each school should fulfill. These guidelines are available on the ISB web pages. In short, ISB has from the onset fulfilled these guidelines and there are no changes necessary in our operations.

The Ministry of Education now recommends increasing foreign participation in the Graduate School System to 20%. At ISB it has typically been around 14%.

During 2008 we were awarded funding from NordForsk for activities within Scandinavia as part of a network of doctoral schools in biological informatics. Funds are available for students and for joint seminars or other activities. See our web pages and www.abo.fi/nnbi.

The 4th edition of the Handbook only incorporates some minor changes throughout, mainly to reflect how we operate in practice.

It is a busy time of year, so this is brief and to the point. A big thanks to all contributors to the success of ISB and best wishes for the future,

Mark Johnson, 11 August 2009

  

## Foreword to the 3rd Edition

Over the past 2 years, we (Kaija Söderlund, Fredrik Karlsson, Markku Kulomaa, Reijo Lahti and myself) have participated in a large number of meetings sponsored by the Ministry of Education and the Academy of Finland on the Finnish graduate school system. I have also presented ISB to the evaluation panel of the Ministry of Education, which is seeking to improve the quality of the Finnish graduate school system. This has been a useful exercise because it has led us to reassess the school's achievements over the past years, evaluate our present situation and develop plans for the future. We have now successfully applied for the 4-year renewal of the school (2006-2009) and 5-year renewal (2007-2011). Several important points were revealed from these discussions.

- We must begin graduating our students within a 48-month period and our participating supervisors must make commitments to do so.
- We must provide 4-years of funding for students accepted into the school no matter the source of funding, thus our supervisors are obligated to do their best to guarantee funding for that period of time.
- We must reduce the age of our graduates.
- Gender parity has been attained across schools.
- We must maximize internationalization, including encouraging mobility (international courses, research visits and presentations at conferences) and using foreign researchers as thesis committee members and as co-supervisors.
- We are encouraged to attract good foreign students.
- We must prepare our students for their future careers.
- We must give formal guidance on ethics to our doctoral students and not rely on them receiving such education informally within research groups.
- We should focus our attention (funding) on good productive groups, both from well-established researchers and from junior researchers.
- We need to improve the quality of our students' education and training, giving them the skills needed so that they can compete for the available jobs.
- Excellent Ph.D.s are sought after; mediocre ones may have trouble in getting funding and in establishing a career.

Our school has been repeatedly rated "excellent" by the Academy of Finland but it is clear to us that we can improve the school further. The only comment for improvement from the 2006 evaluation is that we need to reduce the time it takes to obtain the degree and this reflects on the quality of the supervision. In other words, supervisors get the blame and credit for the time it takes their students to graduate. It also means that each supervisor must do her/his best to see that students remain on-track to graduate within about 4 years.

We clearly need to monitor the progress of our students better and especially to make sure that starting students get off to a good start in the school. Four years is a short time (pray that we do not adapt the three-year system as part of the Bologna process). Thus, we will now require that the newly appointed thesis committee meets with newly accepted doctoral students within about 2 months after full-time research begins. New students should have had time to complete a literature survey on their topic of study and formulate their research and educational goals. The thesis committee should consider the study plan that has been accepted by the university, modifying it if required. This means that first-year students will meet with their thesis committees twice during the first year, but this should help to get each student off to a good start.

In the Summer of 2004, ISB became the first school in Finland, to our knowledge, to begin implementing a quality assurance program. We do not aim for certification at this time: paraphrasing the Academy of Finland, "quality is continuously revealed by the yearly reports that ISB makes and the excellent rating received from review panels." Instead, we are using the ISO guidelines to improve the efficiency, effectiveness and fairness of our operations. Dr. Robin Manelius helped us in preparing a draft management guide detailing the procedures that we use. As a part of our quality assurance program, we have revised this handbook; it is larger than previous editions and we have tried to place as many of our operating guidelines as possible into print. Furthermore, we have added sections on plagiarism and on the doctoral student career and career planning.

We are now developing electronic forms that can be obtained from our web site and E-mailed to ISB. The forms include those needed to apply to join ISB, report information to us that is required for reporting to the Academy of Finland, the Ministry of Education, and to apply for support to attend conferences, workshops, meetings and research visits, etc. These forms should make it easier for everyone to help the school fulfill its obligations to the funding agencies.

Changes have taken place within the day-to-day administration of ISB. Kaija Söderlund has retired and we miss her very much. Kaija worked very hard for the school since its inception in 1998. Kaija left her position in very good condition. We are very fortunate that Fredrik Karlsson, M.Soc.Sc. has replaced Kaija as the coordinator of ISB. Fred has considerable experience in financial and organizational management and he assisted Kaija in previous years.

Fred is now assisted by the capable Jonna Denessiouk, M.Sc., who is the ScanBalt Campus coordinator for the new Knowledge Network in Informational Biology. ISB is a member of ScanBalt (www.scanbalt.org) and has been asked to develop the Informational Biology Knowledge Network – initially through the linking of M.Sc. programs in bioinformatics and systems biology. ScanBalt is an open organization consisting of academic and industrial participants from the regions comprising the former Hanseatic League: Scandinavia, Iceland, the Baltic States, Northern Russia, Poland and Northern Germany. This link will help ISB improve the internationalization of our school's activities and our links to industry.

In summary, our school is well respected but to insure our future there is more that we should do to improve our standards and quality, especially with regard to the years required to obtain the degree. Members of ISB are very productive scientifically, 35 students have now graduated from the program,

  

and all of our graduates are currently employed. Improvements will make our school more secure and secure the futures of our graduates as the employment situation in academia and in industry becomes more competitive within Finland and internationally, for only the best will have their futures assured. For all of our sakes, we should focus on excellence, excellence in research training and in the education of our students; we have done well so far and I am sure that we can introduce the improvements sought by the Ministry of Education and the Academy of Finland, and that these improvements will benefit us all.

Thank you all for your participation, hard work, and support of ISB!

Best regards,

Mark Johnson, August 14, 2006

## Foreword to the 1st and 2nd Editions

We (the administration, academic and industrial researchers, and doctoral students) are seeking to make the National Graduate School in Informational and Structural Biology the best school possible.

We have produced this little booklet in order to provide guidance on obligations to both students and supervisors within the school.

The thesis committee is of particular importance and we wish to emphasize its role in our school and for our students. In particular, the thesis committee can help provide guidance and detect potential problems before they seriously hinder and delay graduate studies.

The school's administration has obligations to both the Ministry of Education and the Academy of Finland. We file reports and applications for support almost on a yearly basis. Some of the information requested herein is needed to help us fulfill these obligations.

We have also detailed the procedures required for doctoral student and new research groups to apply to our school. Whether a student is funded directly by the school or by other sources of funding, the application procedure is now the same.

If you have any questions, then please contact us. We are here to listen and help if we are able to. All of us – students and supervisors alike – have contributed to the success of this school. We hope that these "rules and regulations" are not seen as a burden to our doctoral students but are instead seen as a positive aspect of the research and educational experience. Our interactions with each other, whether at yearly graduate school meetings or through the thesis committees, show our interest in our students, their education, and their progress as students within the school.

ISB has a firm policy of non-discrimination, however, we encourage participation of younger scientists and female scientists.

Mark Johnson, Director of the school 20th day of September 2001


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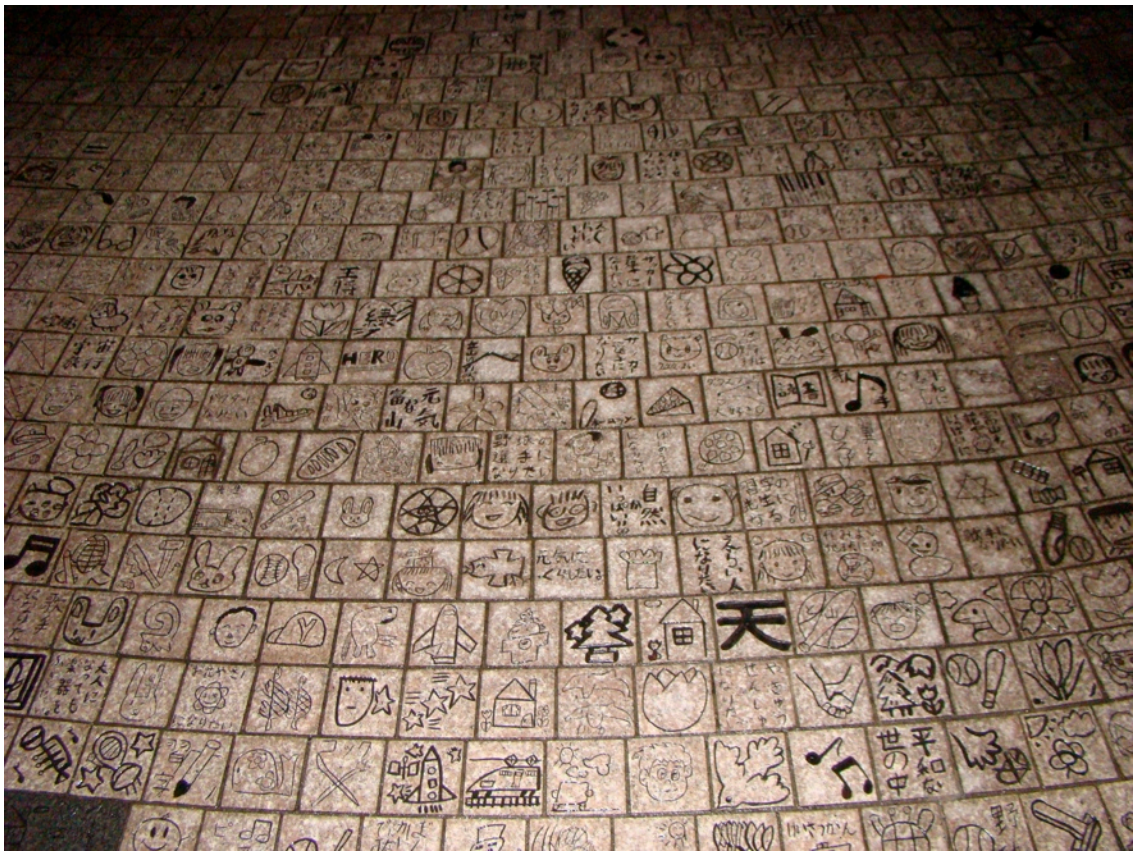

# 1. So, you want to study for the Ph.D.?

## The Ph.D. degree is the ticket needed for career opportunities in academic science and industry R & D

Being a doctoral student is not a career; it is a relatively long study course, but the requirements to graduate are challenging and require a dedicated, intense effort to be successful. The rewards can be in the long term equally large.

## In Finland, a Master's of Science degree is required to study for the Ph.D.

Although the degree is required to begin studies, applications are accepted in advance of the M.Sc. degree. The length of study for a doctoral degree is about four years but the requirements for graduation are considerable and require long hours and good supervision. Doctoral studies in Finland are to be completed within about 48 months.

So, you want to study for the Ph.D. either within ISB or elsewhere. Great! Fantastic! Independent research can be a life-changing experience. You have made a smart decision in this doctoral program's view.

Do you know what you are taking on? Are you prepared for 4 years of intensive study and research?

## What are the aims of doctoral research?

An official example: "Instructions for licentiate and doctoral studies at Åbo Akademi University"

*"The aims of the postgraduate education is that the student:*

*1) becomes well-versed in his/her own field of research and its social significance and gains knowledge and skills needed to apply scientific research methods independently and critically and to produce new scientific knowledge within his/her field of research;*

*2) becomes conversant with the development, basic problems and research methods of his/her own field of research; and*

*3) gains such knowledge of the general theory of science and of other disciplines relating to his/her own field of research as enables him/her to follow developments in them."*

  

## If you are considering ISB we want you to consider these comments carefully

We hope that you are not discouraged but if the quantity of work matters to you, if you want a normal 0900 to 1700 job, then you probably will not be successful in this or any other graduate program; you probably should go elsewhere and not waste your time and our time. If not, then please consider ISB.

Being forewarned, your mind should be prepared for the sustained, intense effort required to complete a degree within this school and the relatively short time to accomplish it within.

University requirements and activities within ISB:

- 240 credits are required
- Original research resulting in international, peer-reviewed publications
- Two to three first-author publications, plus
- Two to three second or third author publications
- Scientific maturity – difficult to describe but obvious to supervisors when it has been achieved, often only attained through hard continuous work and the experience that comes with it. At the time of the defense, you should know how to write scientific articles, get them published and have your own ideas about research problems and how to solve them independently.
- Training in scientific ethics – knowing what is acceptable behavior, what is not, and what to do when ethical problems arise.
- Participating in teaching and in guiding other students in research – the best way to learn a subject very well is by teaching it to someone else.
- Participation in yearly courses sponsored by ISB – mandatory participation at the ISB Spring School (organized by students and focused on career development issues) and ISB Winter School (students report progress in oral and poster presentations).
- Participation in courses at the home university and elsewhere within Finland.
- Participation in international activities: courses and workshops, research visits and conferences.
- Yearly project review and reporting to the thesis committee and hence to ISB.
- Written dissertation, including compilation of international peer-reviewed publications.
- Review of dissertation by two independent expert reviewers.
- Oral public defense of the dissertation before an independent expert opponent.

A career in science is a not an easy one but it has other great advantages. If you are good or very hard working or both you will have an excellent chance to get that degree – the Ph.D., get that postdoctoral fellowship, get that job, otherwise you are competing against many other good graduates and internationally even more. Our goal at ISB is to train students to the highest level in

  

multidisciplinary collaborative research, but most of the responsibility rests with the doctoral student. You must take responsibility for your course of training within the doctoral program. That is an exciting prospect as you can design into your study plan national and international courses and participate in research at several institutions and in industry as part of collaborative research – it is all up to you and your desire to be successful.

Will you put in the extra hours needed to make forward progress on your research? Will you spend the time screening the literature for every available clue related to your research? Can you persevere when your current results fail and turn the failure into success?

If you want a typical 7-hour a day job, 5-days a week, then doctoral studies probably are not for you (and you are probably not for it). The work is tough, requires dedication, imagination, development of an inquisitive mind, but most of all it requires a lot of intense effort.

So, we at ISB have tried to discourage you, if you are in anyway hesitant about fulfilling the requirements for study in this doctoral program.

We encourage all supervisors to intensify their oversight of new students during the first year. ISB requires two thesis committee meetings during the first year. One early on to revise the original project proposal and one towards the end of the year. The objective is ensure that new doctoral students perform with vigor during the first year, that supervision is adequate from the start of the student's studies, thus setting our doctoral students up for a successful 4 years within ISB, and ensuring that their future career goals can be attained.

You will find that supervisors, thesis committees, doctoral students, and other members of the school will do whatever they can to assist you if you need it. You can always consult the ISB office for confidential advice. We want our students to succeed and we want the quality of our doctoral program and our students to continually improve. ISB will then continue as an excellent doctoral program and graduates will go on to successful and satisfying careers.

Who can apply to the school? If you have an M.Sc. (or will have the degree soon) you can apply to join ISB. However, you will need to make arrangements with a supervisor and secure funding in order to apply. We have a strict non-discrimination policy. Within ISB, foreign doctoral students now account for about 30 % of our students. We currently have a 50:50 split between the genders, and our students are roughly evenly split among experimental wet lab work (biochemistry, cell biology, molecular biology), structural biology, and computational approaches (bioinformatics, computational chemistry). We encourage multidisciplinary research and collaboration between research groups and doctoral students within the school. Most of our researchers have active collaborations with foreign researchers, too.

Finally, the 4 years of doctoral training within ISB is a marvelous opportunity that comes to a person once in a lifetime. You receive a salary or stipend for full-time study and research. You work rather independently under supervision, beginning from a novice with little experience and proceeding towards scientific maturity where you have the experience and confidence to guide others within research projects. You will learn to effectively describe your research in good scientific English,

  

develop skills in presenting your research in oral and poster presentations, and your imagination will be stimulated and your mind will be trained to solve problems.

You will receive guidance on scientific ethics and you will understand from the beginning that we have a no-tolerance policy for scientific malpractice and plagiarism of any kind – do it and you may be removed from the doctoral program and local university for 6 months; any repeat and you will be asked to leave ISB and (you should be removed from the university position). If you have a question concerning what is an acceptable practice, ask someone who would know.

Upon completion of the degree you should be able to compete effectively for a postdoctoral position or grant, whether in Finland or abroad. You should be able to obtain that job in industry that others cannot. These are the hopes and goals for you that all of us forming the ISB doctoral program want. We want you to be the very best that you can be; it takes much hard work on your part, but the rewards for you should be corresponding large. You will find that you can handle the added responsibilities of postdoctoral research and guide junior researchers. It will prepare you for your first independent research post where you must take responsibility for raising funding, guiding personnel, formulating the research, etc.

Interested in challenging and stimulating research? Then please apply to ISB!

  

# 2. Administration

## Host university in charge

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Web address: www.abo.fi/isb

Tykistökatu 6A (Floor 3)
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## Board of ISB

Please see the ISB web pages www.abo.fi

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## Website design and maintenance

Mikko Huhtala, M.Sc.

  

# 3. Obligations of doctoral students

## Obligations of new doctoral students

New doctoral students, approved by the Board of ISB, are accepted into the graduate program under the following provisions.

Accepted applicants must provide to ISB evidence of an M.Sc. degree (official copy stamped by the university) or equivalent before officially joining ISB.

No doctoral student in ISB may simultaneously belong to more than one official doctoral program although all students will be members of their local university's graduate school.

ISB requires a contract signed by the doctoral student agreeing to the following:

- The doctoral student agrees to provide materials as requested by ISB.
- The doctoral student will have read (see Chapter 15) and acknowledged that ISB's zero-tolerance policy on plagiarism is understood, as well as how to properly acknowledge materials of other authors, whether from printed material or from the Internet.
- The doctoral student will, in consultation with the supervisor, select a thesis committee of no less than two additional members (see Chapter 5).
- No later than one month after starting in the doctoral program the doctoral student will provide the following to the coordinator of ISB:
    - The title of the proposed 4-year research project (can be changed later)
    - A paragraph describing the proposed research – this will appear on our web pages, so confidential and sensitive information should not be included. Get your supervisor's approval! (Form: "ISB Website, Abstract Submission")
    - Names of at least three thesis committee members.
    - A copy of the study plan filed with the home university and prepared in consultation with the thesis committee (see Chapter 10).

  

New students will arrange a thesis committee meeting within two-three months after joining ISB. The doctoral student will present a revised version of the thesis project and demonstrate that an in-depth literature search on the subject has been made, and present the study plan. The thesis committee has a duty to see that the new student is performing as would be expected, helping to solve any problems that may be retarding progress.

Towards the end of each year the doctoral student will submit a written research report and arrange a thesis committee meeting (see Chapters 5 & 6).

## Obligations of all continuing students

All continuing doctoral students in the doctoral program are responsible for the following:

Each doctoral student agrees to provide materials as requested by the ISB in a timely matter. Each doctoral student is required to maintain yearly records of the following merits for reporting to the Academy of Finland when new funding is applied for, and for reports to their thesis committee:

- All poster presentations
- All oral presentations
- Record of attendance at ISB Spring and Winter Schools
- National and international activities: courses (including university courses), workshops, research visits and conferences
- All publications, patents, copyrights, computer programs

Doctoral students can forward details of publications to ISB at any time to be included on our web pages.

Doctoral students will be contacted by E-mail when information is specifically requested and a deadline will be given at that time.

All doctoral students are obligated to participate in the yearly ISB Spring School and ISB Winter School.

Full-time doctoral students must focus their time on their research and academic studies that will lead to a Ph.D. Supervisory thesis committees will be responsible for determining if satisfactory progress is being made.

When the defense is scheduled, please let the ISB coordinator know so that it can be advertised from our web site. Send one copy of the printed dissertation to the coordinator at ISB for our records.

## Obligation to arrange the yearly thesis committee meetings

Towards the end of each year the doctoral student will submit a short written research report and arrange a thesis committee meeting (see Chapter 5 & 6). In brief,

  

- The doctoral student will arrange for a meeting of the thesis committee in the Fall of each year.
- The doctoral student will present the research results and future plans.
- It is very important that the thesis committee reviews the doctoral students progress concerning course credits and other activities.
- A discussion will follow.
- A short summary of the meeting, signed by all participants will be delivered to the doctoral program's coordinator before December 20 of each year.

Exceptions to are granted to doctoral students that are in the process of writing their Ph.D. thesis – the supervisor should simply inform the coordinator of ISB prior to December 20.

  

# 4. Obligations and roles of supervisors

## General obligations

New supervisors are obligated to provide ISB with an abstract of the research for the web pages within one month (see Chapter 7).

Research supervisors are responsible for their doctoral students and are the main influence on the direction of their research and day-to-day research education and training.

Research supervisors should plan for their doctoral students to complete the Ph.D. thesis within a period of four years. Problems in maintaining this schedule should be identified early and remedied, making use of the thesis committee if needed.

Research groups should seek to retain doctoral students so that they complete their Ph.D.

Supervisors have the responsibility to do their best to ensure continuity in funding for doctoral students accepted into the laboratory and into our doctoral program for the duration of their Ph.D.

Supervisors should not place students in ISB if they cannot fund the student for 4 years.

Active participation in ISB, especially at our yearly meetings and by placing doctoral students within ISB, is essential.

Research supervisors have the responsibility to ensure that their doctoral students follow the enclosed guidelines.

If a supervisor finds herself/himself in a position where difficulties arise with a doctoral student, as occasionally happens, we strongly recommend that the thesis committee be used to help find a fair and satisfactory solution for all parties.

  

# 5. Thesis supervisory committees

## Each doctoral student has a thesis committee

Each doctoral student will have a supervisory thesis committee with at least three members each with a doctoral degree (supervisor plus a minimum of two other members). Thesis committees play a vital role in the quality assurance process the doctoral studies and and in providing guidance and mentoring to the doctoral student.

- New students will select a thesis committee in consultation with their research supervisor. The names of committee members will be reported to ISB within one month of a doctoral student joining ISB.
- The committee should be selected with care; the committee should provide the doctoral student with valuable guidance, constructive criticism, and advice.
- At least one member of the supervisory committee will be from another research department and preferably from a different university.
- We encourage participation of members from industry and international research collaborators on the committee, but it is wise to elect an additional member in the case where long-distance travel cannot be made to Finland every year.
- The doctoral student will arrange a meeting with the thesis committee at least once per year, preferably towards the end of the year.
- New students will meet with the thesis committee within two months of joining ISB (see Chapter 3).

## Role and obligations of the thesis committee

The thesis committee is obligated to:

- Monitor the progress of the doctoral student
- Assist in creation of the official study plan
- Ensure that the requirements of the study plan are fulfilled

  

- Advise and assist the doctoral student in research and study goals, and future career plans.
- Provide ISB with an evaluation of the doctoral student's progress each year.
- Intervene when a doctoral student is clearly not fulfilling the research training and education goals that will lead to a Ph.D.
- Intervene early on when it is clear that a student will not achieve a degree within a reasonable time.
- Act as intermediaries if problem situations develop, e.g. between a doctoral student and the supervisor or with some other organization.
- Determine when the doctoral student can begin writing the doctoral thesis and plan for the oral defense and provide suggestions for referees and opponent.
- One committee members may function as a reviewer of the thesis provide no conflicts of interest exist.

## Obligations of the doctoral student

The doctoral student is obligated to:

- Organize the yearly meeting with the thesis committee.
- Provide the thesis committee with a written copy of the short research report (see Chapter 6) in advance of the meeting.
- Give an oral summary of the research report to the committee (progress, plans, problems, etc.) followed by a discussion.
- Together with the thesis committee prepare a brief written summary of the meeting, signed by all participants.
- Deliver to ISB a copy of the research report and a signed, written summary of the meeting by December 20.

  

# 6. Research reports

## Research reports for thesis committees

The research report can be brief and need not be longer than 5 pages of text, excluding references.

The report is delivered to the thesis committee in advance and is a focus of the formal meeting.

A copy should be E-mailed to the ISB coordinator as a pdf file no later than December 20.

Please be specific and informative, and avoid redundancies. The writing of the report is not a mere formality: a well-done report is a required part of doctoral studies preceding the dissertation. The research report should include sufficient information needed for evaluation of the project, independent of any other document and include the following (Note: the following are only rough guidelines):

- Title
- Summary (1 paragraph) Clear and concise.
- Specific aims and timetable (1/2 page) A list of the broad, long-term objectives of the research is sufficient, proposed publications, and the approximate date to achieve the objectives.
- Background and significance (1/2 page) Very briefly sketch the background leading to the present research. This section is intended to introduce the reader to the field of research, including the main problems as they are presented in the literature.
- Current state of the project (1-2 pages) Summarize the results obtained since the last report, including preliminary results and problems that have been encountered.
- Future plans for the project (1 page) Describe ongoing studies, and discuss forthcoming studies, and any foreseen problems.
- National and international activities (1/2 page) Updated list of courses, workshops, conferences, and research visits taken and those that are planned. How have the requirements of the official study plan been fulfilled?
- Timetable for the thesis When do you expect to complete your Ph.D. studies? Are you encountering any problems that might delay completion?
- Publications, patents and computer programs arising from the research
- References

  

# 7. Submission of abstracts

## New doctoral students

New doctoral students are required to submit a title and short abstract on their proposed research for the Ph.D.

This is due during the first month after joining the school.

This information is for the public and will be posted on our web page, so please do not include sensitive and confidential information within it. Please obtain your supervisor's permission before submitting the abstract to ISB.

Please complete the form "ISB Website, Abstract Submission" and E-mail to: isb@abo.fi.

## New supervisors, senior scientists and postdocs

New members are required to submit a title and short abstract on their research.

This is due during the first month after joining the school.

This information is for the public and will be posted on our web page, so please do not include sensitive and confidential information within it.

Please complete the form "ISB Website, Abstract Submission" and E-mail to: isb@abo.fi.

## ISB Winter and Spring Schools

Titles and abstracts are required for presentations (oral and poster) made at our yearly ISB Winter School.

Registration and abstracts will take place several months before the scheduled meetings.

Please follow the instructions of the organizing committee for online registration and submission for both the Winter and Spring Schools, as requested.

  

# 8. ISB applications – prospective doctoral students

## Deadlines are two times per year

Students that wish to apply to ISB may do so through one route. Applications to join ISB are processed two times per year, with closing dates of March 15 and September 1. Note that applications may be submitted at any time but they will be processed only after the next closing date.

- Electronic applications must be received by 1600 Finnish local time on the closing date.
- Supporting materials and signatures on paper copies (for our records only) are accepted for 7 days after the closing date. Applicants will be informed of decisions usually within 1-2 months.

## General comments – applications for positions supported from other sources

Funding may come from several possible sources, but is generally the responsibility of the proposed supervisor(s).

Supervisors must do their utmost to ensure that continuous funding for a minimum of 48 months doctoral study is provided to the student.

## Applications to ISB must undergo review and approval of the board of ISB

The ISB Board will review ALL applications to ensure quality control. ALL applications are handled in an identical manner during the entire process.

The ISB Board is obliged to render a decision on applications within a reasonable period of time.

Applications considered to be “excellent” applicants will be accepted into ISB; however the board of ISB is not obligated to accept all students that apply through a supervisor, but reasons for refusal will be transmitted to the applicant.

The board of ISB will consider the previous achievements of the applicant, as well as the supervisor’s ability to cover the costs of the applicant and likelihood that a student will complete studies successfully within a reasonable time under the supervisor’s guidance.

  

## General application instructions

Applications are sent to ISB by an applicant via a supervisor belonging to ISB (see www.abo.fi/isb for a listing of participating laboratories, universities and other institutions). Applicants will be interviewed by the potential supervisor.

Applicants are encouraged to apply if they are close to completing their M.Sc. degree.

Students need to apply through a chosen supervisor (this assures that the student is acceptable to a laboratory and that the applicant has been thoroughly pre-screened by the supervisor).

ISB uses an application procedure that reduces paper use as much as possible. Detailed instructions are attached to the form "Application For Ph.D. Studies" (available at www.abo.fi/isb) used for applications and summarized here:

- Applications are in English. Please read the ISB Handbook, 6th Edition as described in section A3 of the application form. Applications are prepared together with the proposed supervisor. Please contact a supervisor within ISB before proceeding further with the application. Incomplete applications cannot be processed.
- Eligibility. Applicants do not need to have an M.Sc. degree to apply to ISB, but documented proof of the degree must be received by ISB before doctoral studies may begin, and in the applicant must begins doctoral studies within 6 months of being accepted into ISB.
- Non-discrimination policy. ISB has a policy of non-discrimination with respect to gender, age, nationality, etc.

Note especially the following, which is strictly enforced:

- If you exceed the specified word limits, your application will not be sent to the reviewers.
- If you do not supply two letters of recommendation, your application will not be sent to the reviewers. Separate letters from proposed supervisors are not accepted since supervisors have space to comment within this form.
- If there is any copying or paraphrasing of text and ideas of another applicant or another source (from the web, books, etc.) and the material is not clearly indicated and referenced to the original source, then we will consider this plagiarism and we will automatically submit the application materials to the universities/institutions involved and begin a formal plagiarism investigation.

## Required materials and how to submit the application

When completed, (1) please E-mail pdf files to isb@abo.fi:

- Completed application form obtained from www.abo.fi/isb. The CV contained within the application (maximum 1 page) must include the date of birth, nationality, description of education and positions held, description of M.Sc. (title, research topic, supervisor, university

  

and department, completion date), work experience and any other relevant details that the applicant wishes to include.

- Scanned copy of M.Sc. degree, official document (university stamp), if the degree has been completed. If not completed, include a statement from the department indicating the likely estimated date of completion of the degree. DO NOT SEND passports or original copies of important documents to us; then we cannot lose them.

- Scanned official copy (university stamp) of university grades

and (2) mail the original signed form and one copy of the official documents to:

ISB
c/o Department of Biosciences (Biochemistry)
Åbo Akademi University
Artillerigatan 6A
FI-20520 Åbo/Turku, FINLAND

## Letters of recommendation – required!

Two knowledgeable individuals (not the potential supervisors) should be requested to send an evaluation of the applicant by post and E-mail directly to ISB. Please pass on these instructions and our address, above, to the evaluators.

Instructions for the evaluators: Dear evaluator, please give us your candid and honest opinion about the capabilities of the applicant who is applying to begin a 4-year doctoral program within our doctoral program. Letters should address the applicant's past achievements and the potential of the applicant to successfully complete the doctoral degree. Thank you!

- In particular, students will be under severe pressure to complete within 4 years – in your opinion, is the applicant self-motivated and capable of working the long hours required for a successful outcome?

- How long have you known the applicant and in what capacity (e.g. advisor? teacher? masters degree supervisor?).

- How would you rate the applicant overall with respect to a successful outcome in a doctoral program using the following scale? Fractional scores may be used, e.g., 3.5.

  1 (will have extremely difficulty in completing doctoral studies)
  2 (will have some difficulty in completing a doctorate)
  3 (good prospects and should complete doctorate on schedule)
  4 (excellent prospects and is capable of completing doctoral studies in 4 years)

Finnish law requires that we provide applicants with statements written about them if requested, but in such a case we will blank-out any identifying information.

Because of the tight schedule arranged for reviews and decisions, statements should be received within 7 days after the closing date. Please (1) Fax (+358 2 230 5018) or E-mail (isb@abo.fi) a pdf file of your comments to ISB and (2) post the signed original to ISB at the address above. Thank you!

## Instructions for supervisors

It is very important that supervisors wishing to sponsor an application select the best student for submission – supervisors should spend some effort on recruiting excellent students. The supervisor should organize an in-depth interview and explore the capabilities of the students wishing to join the research group.

If a supervisor comes into contact with a student of superior ability but is unable to sponsor the student, the supervisor should assist the student in making contact with another supervisor within ISB.

We are under pressure to reduce the time needed for the Ph.D. to within 4 years although this is generally difficult to achieve because of the publication requirements for the degree.

Foreign students holding a valid M.Sc. can be members of ISB and some of our best performing students have been from abroad – it is important that supervisors thoroughly vet both local and foreign applicants.

The supervisor should take part in formulating the research project submitted as part of the application. The supervisor is to complete and sign §B of the application form. Supervisors should not assist the applicant in any way with regard to completing the exam in §G. Please take note of the comments in §E3 (Eligibility) . If you have any questions, please contact Fredrik Karlsson (+358-2-215-4019) or Mark Johnson (+358-2-215-4014).

## Student “exam” under supervision of a third party

Section G “the exam” of the application is to be completed under supervision of a senior member of an institute’s staff, but NO assistance in any way is to be given. Search engines may NOT be used, nor any other electronic or paper materials. Two hours maximum time may be used for the exam.

Please indicate the name, position, institute and phone number of the supervising party and forward the exam as part of the electronic application to ISB. This is a unique opportunity in the application for the applicant to present themselves and their interests to the evaluators.

Applicants: Use your own words. If there is any copying or close paraphrasing of text and ideas of another applicant or another source (from the web, books, etc.) and the material is not clearly indicated and referenced to the original source, then we will consider this plagiarism and we will automatically submit the application materials to the universities/institutions involved and begin a formal plagiarism investigation. We will not accept excuses such as “I have a photographic memory” since if this is true then you certainly will not have forgotten where the material came from.  See the application form for the exam topics.

  

## Other considerations

Individuals close (within 6 -10 months) to completion of the M.Sc. are encouraged to apply – applicants need to supply a statement from the major department on the estimated completion date, state of the thesis (is it written?), and numbers of courses that still must be completed.

Although an M.Sc. degree is not required at the time of application to ISB, the degree is a requirement of the Ministry of Education and Culture for a position to be activated – students may not study for the Ph.D. nor receive funding unless they have completed their M.Sc.

ISB requires an official certificate proving that the M.Sc. degree has been completed and awarded.

International applicants: an M.Sc. degree is a requirement to study for the Ph.D. in Finland.

## Selection process

ALL applications undergo competitive evaluation by a minimum of 4 and typically up to 10 reviewers.

Our past experience has shown that there is a remarkable consistency among the reviewers' opinions and the large number of reviewers allows us to identify extreme views and weight them appropriately.

Applications will be ranked during discussions of each application and funding allocations made on the basis of the final ranking. At least six ranked applications will be assigned to the waiting list for available funding should it be available.

The submitted applications and discussions that take place during the selection process are confidential.

Reviewers never participate in evaluations and discussions when a conflict of interest exists with an applicant. Such conflicts are declared.

Because all applicants have been pre-screened by the sponsoring supervisor, all applicants should be acceptable to ISB if funding were available, but final decisions and quality assurance rests with the Board of ISB.

Decisions are based on the materials that have been submitted to ISB. Decisions approved by the Board of ISB are final. Decisions will be posted on the ISB web site and applicants will be informed of the decisions of the Board of ISB by E-mail and letter.

Funding awards from ISB are made to the applicant, not the supervisor.

## Evaluations and evaluation criteria

A Panel that includes the Board of ISB makes evaluations of submitted applications.

- The director of ISB is encouraged to employ additional expertise in the Panel for the evaluation process.

  

- All conflicts of interest will be orally declared and no panel member may participate in discussions concerning applicants proposed by them or where collaboration has or will take place.
- Applicants whose proposals are ranked “excellent” are invited to join ISB.

In making decisions, the Panel will consider

- The overall review of the application and essay exam.
- The research proposal and the relevance of the proposed research to the aims of the doctoral program, which are to promote excellence in education and research training in the fields of structural biology, biophysics, and bioinformatics in Finland according to our “Mission Statement”.
- The academic record of the student will be considered in the knowledge that good academic performance alone is not a guarantee of success in research.
- Published results from the Master Thesis research are not required.
- The Panel should aim to balance the representation within the research areas of prime interest to ISB.
- The funding situation.

The Panel will select a minimum of six applicants for a waiting list. They have priority on funding from ISB that might become available.

All applications are strictly confidential. All discussions by the panel are strictly confidential. It is unethical to disclose such confidential information.

Offers of funding are awarded to the applicant (not the supervisor). Thus, doctoral students may transfer their studies to another laboratory if that becomes necessary, after discussions with the thesis committee and approval of the Board of ISB.

Written acceptance of conditions set by ISB is a requirement of all doctoral students.

Proof of the M.Sc. must be delivered to ISB before any funding can be arranged.

ISB has a strict policy of non-discrimination.

The reviewer evaluation form used by ISB is as follows:

isb
National Doctoral Program in Informational and Structural Biology

# ISB Application Evaluation

Please return form by email to the coordinator at isb@abo.fi. Thank you. Please review the original application instructions, the submitted application, and other materials including letters of recommendation.

1. Name of applicant and selected supervisor(s)

2. Please indicate whether you have a conflict of interest? ☐ Yes ☐ No

If your answer is "YES", please do not review the application. Contact the ISB coordinator so that a replacement reviewer can be found if needed.

3. Do the research, education, and career goals fit to ISB? ☐ Yes ☐ No

Indicate "NO" if the majority of the project appears to be outside of ISB's areas of interest.

4. Please evaluate the submitted application (first enter a number on a scale of scale 1-5, with 5 = "excellent", and follow with any comments that you wish to make.

4a. Evaluation of applicant and the applicant's ability to graduate within a reasonable period of time.

4b. Evaluation of the proposed project: scientific aspects, multidisciplinary component.

5. Essay evaluation. (first enter a number on a scale of 1 to 10, with 10 = "excellent", and follow with any comments that you wish to make.

6. Overall evaluation (summed score of items 4 & 5 for a maximum score of 20) and general comments.

7. Date, referee code number (to protect anonymity and free expression of opinions)

Distribution: ISB Board; Validity: from 2006; revised 2009, 2010; Confidential

# 9. Application instructions for supervisors, senior scientists and postdocs

## General comments and application instructions

ISB encourages both experienced and recently established research groups and postdoctoral researchers to join the doctoral program. For senior scientists yet to form an independent research group and postdoctoral researchers, membership can help pave the way towards a future supervisory role. Researchers may belong to one or more doctoral schools.

Please see our ”Mission Statement” that defines the scope of ISB’s activities and interests and governs the choice of members accepted into the program.

Our doctoral program has been rated “excellent” by the Academy of Finland each time that ISB has been evaluated and we aim to maintain this excellent rating.

Interested in joining ISB? Applications from supervisors and senior scientists are processed with a closing date of March 15 and September 1. Deadline of 1600 local time.

Postdoctoral applications are accepted two times per year, 1600 local time on March 15 and September 1. Deadline of 1600 local time.

Please send the following materials as one or more pdf files to isb@abo.fi and mail one signed copy to ISB.

- The membership status applied for: supervisory, senior scientist or postdoctoral; very brief justification
- A short statement of research aims, including the relevance of the research to the aims of ISB in research training and education
- A very short description of the research group
- If you are a member of any other local and/or network doctoral program, please mention this. Why are you then applying to ISB?
- A short (3 page maximum) CV

  

- List of publications

## Definitions

Supervisor: The Academy of Finland and the Ministry of Education and Culture have stated that a supervisor is at a minimum a docent. However, some docents do not have independent research groups and some established principle investigators are not docents. ISB's working definition of a supervisor is a principle investigator having an independent research group, meaning that the group has both additional research personnel and independent sources of funding. Ph.D. students may apply to research groups of supervisors in ISB.

Senior scientist – independent researcher without independent funding for research and without research personnel. Senior scientists may act as co-supervisors and sit on thesis committees.

Postdoctoral researcher – researcher having the Ph.D. and funded to work within the group of a principle investigator. Postdoctoral researchers may assist supervision of students and participate on thesis committees.

## Evaluation procedure

Applicants will be informed of decisions usually within 1-2 months.

The board of ISB reviews all applications with respect to (1) fitting ISB's mission statement and (2) whether the potential supervisor has a research group and is an independent researcher.

The coordinator collects opinions and circulates them for comments among the board members until a consensus of opinion is obtained.

For some applicants, we have accepted them as associated senior scientists or postdoctoral members, depending on their situation – this allowed them to participate in the program and its functions, and if their situations change they could become fully-fledged supervisors in the program.

Nearly all supervisors are professors or docents, but we also have successful foreign researchers with large active groups that are not docents

## Discontinuation of membership

Members of ISB need only to inform the coordinator to discontinue being a member of ISB.

ISB members that do not actively participate in ISB for an extended period may be asked by the board of ISB to reapply for membership.

Inactivity means a prolonged period of little or no participation in ISB. Participation includes e.g. participation in the Winter School, placing students in ISB, and acting on a thesis committee. For a supervisor, participation limited to having an ISB-funded student in the doctoral program is insufficient.

  

# 10. Preparation of study plans

## General instructions

Below are some general guidelines for preparation of the Study Plan. These details are from the requirements of the Mathematics and Sciences Faculty of Åbo Akademi University. The corresponding requirements of your own particular university may vary somewhat.

(Since 1 August 1997, every student who wants to submit a Study Plan for the Ph.D. degree should have a mark of ”good (god/hyvä)” in the major of their M.Sc. and at least cum laude approbartur for their master thesis. If not, then special procedures are required.)

- Fit the Study Plan to a single page.
- The Study Plan for the Ph.D. degree consists of a plan of 240 study points (sp) worth of study and activity.
- A title for the thesis is required (it may be changed later).
- All courses should be at the intermediate or advanced level (can be changed later).
- The name of your supervisor(s) must be indicated.
- Your Study Plan must be approved and signed by the examiners of your major and minor topic(s).
- Type your name and address.
- Sign the form.

## 240 credits from the thesis work and courses

Total Credits: 240 credits

1. Thesis: 180 credits

2. Major subject: 30-35 credits

- Book exam (of own choosing, but must be approved by your professor) and other workshops or courses: 10-15 credits
- Conferences and congresses with posters or oral presentations: up to 8 credits

  

- Seminars: 4 credits
- Essay: 8 credits

3. Minor subject(s): 25-30 credits

- You can have one or several minor subjects

## Example study plan

To : Faculty of Natural Sciences and Technology

Name
Street address
Post code, City

STUDY PLAN FOR THE DOCTORAL DEGREE

Studies within the subject of Biochemistry in the Department of Biosciences

Doctoral thesis : "Title …." **180 credits**

**Major subject : Biochemistry**

| | |
|---|---|
| Membrane biochemistry | 6 credits |
| Structure-based drug design | 4 credits |
| Protein folding | 5 credits |
| Physical biochemistry | 6 credits |
| Introduction to protein crystallography | 2 credits |
| Final book exam | 8 credits |
| Conferences | 5 credits |
| **Total** | **36 credits** |

**Minor subject : Computer sciences**

| | |
|---|---|
| Bioinformatics programming | 4 credits |
| Programming language concepts | 5 credits |
| Linux and systems programming | 5 credits |
| Evolutionary algorithms | 5 credits |
| External courses on computational methods | 3 credits |
| Advanced academic writing in English | 2 credits |
| **Total** | **24 credits** |

Åbo/Turku, 23 June 2010

_____ _____ _____

Supervisor Examiner for the the major Examiner for the minor

Åbo/Turku, 26 June 2010 _____

Your name/signature

  

# 11. Funds for mobility, researcher training and education

## Activities

The Academy of Finland and the Ministry of Education and Culture has in the past promoted mobility national and international mobility. We have funds for mobility until the end of 2015. Our NordForsk funding for mobility has been extended until the end of 2013.

As a doctoral student in ISB you needed to be active and mobile – you have a unique opportunity of customizing your education through courses, workshops, and symposia held anywhere in the world, on topics important for you, and there are plenty of funding sources to cover the costs.

Funding should never be a problem, so only the universities' "efficient" travel systems stand in the way of your mobile education and research training.

ISB announces its own activities on its web site (www.abo.fi/isb), by E-mail; Activities of the Nordic Network of National Graduate Schools in Biological Informatics are also listed at www.abo.fi/nnbi.

If you see a need for a particular course or workshop, please let us know!

## Applying for funding to host a course

ISB participates with other organizations, especially FinBioNet and Turku BioNet to combine funding and organization to host more and better events.

Funding is also available to any member(s) of ISB that are planning courses relevant to ISB and where the course is open to ISB doctoral students and to doctoral students from our Nordic Network.

You only need to contact us with you idea/plan and we can see what the possibilities are for support.

## Activities supported through ISB funding

ISB applies for and obtains funding from the Academy of Finland to support the activities of ISB.

Additional funds have been obtained from a NordForsk grant (Network of National Graduate Schools in Biological Informatics), which is coordinated by ISB, and includes the National Doctoral Program in

Informational and Structural Biology (ISB, Finland); NorStruc, the National Graduate School in Structural Biology (NorStruc, Norway); the Research School in Systems Biology (SysBio, Norway) and the National Graduate School in Genomics and Bioinformatics (GenBio, Sweden).

By courses, we refer to all of the following: courses, workshops, symposia, and the like. Funding is budgeted every year for:

- the ISB Winter School
- the ISB Spring School
- Other courses organized by ISB members or by ISB together with other doctoral programs, e.g. Tartu exchange, NordForsk Network, FinBioNet and Turku BioNet.
- Other activities, national and international, which doctoral students wish to attend.


## ALL of ISB's students are eligible for activity support

Funding is available to all doctoral students in ISB for national and international activities. ISB does not cover daily allowances but will provide a fixed amount of funding towards travel, accommodations and meals. The NordForsk Network funding is limited to use within Northern Europe. Both ISB funding and NordForsk funding can be used to cover the costs of the same activity.

Doctoral students can request funding for costs associated with:

- ISB sponsored or co-sponsored courses

  

- University courses (elsewhere than the home university)
- CSC-organized courses
- Other national and international courses
- National and international scientific symposia (if an oral or poster presentation is made, or a written conference paper is submitted)
- Research visits are especially supported

For some NordForsk activities, all costs will be paid. ISB funds are generally limited to 300 € (Europe) and 500 € (USA, Australia, Japan, etc.). Thus, it is likely that we cannot fund the entire amount that you might need. Often by combining a modest sum from several sources, sufficient funding can be accumulated. Thus, in addition to us, you should also consider:

- University foundations, research programs
- Grants from private foundations and charities
- Your research advisor
- Your department or institute
- Industry
- You can apply for funding from some organizations to attend their events, e.g. the Protein Society Annual Meetings

## Applying for funding – doctoral students

Funds are limited and available on a first-come, first-served basis, but we typically have some funding left over at the end of the year.

ISB, with rare exception, will not fund attendance at a conference or symposium unless a poster, oral or written presentation is made.

Funding is available to all doctoral students in ISB for national and international activities.

In order to obtain funding from ISB, please complete the form "ISB Graduate Student Activity Support" found on the ISB web pages.

Please describe (very briefly, i.e. a few words) the event

- Purpose
- Funding requested
- Budget – estimate the costs and your plan to obtain the remaining funding

You may apply for both ISB and NordForsk funding on the same form. We generally make a decision within a few days.

  

# 12. Non-discrimination policy

Since the founding of ISB in 1998, the program has had a strict policy of non-discrimination, including but not limited to age, gender, race and nationality.

ALL applications to ISB are treated in an identical manner.

  

# 13. Professional and scientific ethics

## Education at ISB

ISB regularly organizes courses on ethics and scientific malpractice, as part of activities jointly organized with FinBioNet, Turku Bionet or within the ISB Spring School.

(Plagiarism is a continuous problem at universities and promoted in part by the ease of the internet for locating information. This topic is covered in detail in Chapter 15 “Plagiarism – No tolerance policy”.)

## Ethics and scientific malpractice – official guidelines

Professional and scientific ethics are an extremely important part of every doctoral student’s and every scientist’s education and training. The Academy of Finland and the Ministry of Education and Culture repeatedly stress that ethics “training” must be a formal part of doctoral education. ISB promotes good ethical practices in science and education.

In cases of scientific fabrication, misrepresentation, plagiarism, and misappropriation in science, we adhere to the policies and recommendations of the National Advisory Board on Research Ethics.

NATIONAL
ADVISORY BOARD
ON RESEARCH ETHICS

Details are contained in the following publications available from: www.pro.tsv.fi/tenk.

- **Good Scientific Practice and Procedures for Handling Misconduct and Fraud in Science** (2002; http://www.tenk.fi/ENG/HTK/htkeng.pdf)
- **Guidelines for the Prevention, Handling and Investigation of Misconduct and Fraud in Scientific Research** (1998; http://www.tenk.fi/ENG/HTK/guidelines_1998.pdf)

You may contact the National Advisory Board on Research Ethics directly if you need some advice, but they ask that you either phone or come in person, as confidentiality cannot be maintained with E-mails since they are considered to be official documents.

Similar procedures are followed in cases of academic fraud, which includes cheating on exams, plagiarism, and misappropriation of another’s work.

  

In accord with these practices and procedures, all suspected cases of academic and scientific malpractice would be reported to and handled by the rector of the relevant university or universities or by the director of independent institutions. Misappropriation of funds is a criminal offense and should be handled by the police.

It is unethical and irresponsible to make malicious accusations against individuals or institutions that are false or based on speculation. Bullying, threats, harassment, and intimidation cannot be tolerated from anyone.

The individual research groups belonging to ISB will adhere to ethical practices in biotechnology, medicine, and gene technology. We refer all doctoral students and supervisors to the National Advisory Board on Research Ethics for further information. See also, the Ministry of Education and Culture web site located at www.minedu.fi.

Ethical practices will be applied in handling of sensitive information (e.g., applications submitted to the doctoral program and discussions of such applications by review panels are strictly confidential; no personal data of any individual will be placed on the ISB web site; personal information (contact details) will be distributed only to members of the school; others details to the Academy of Finland and the Ministry of Education and Culture only as required by them).

Biological ethics (e.g., use of embryos for stem cell studies; use of primates or other animals for testing purposes) may be a tricky issue that is affected by the changing views of society. Some issues are clear such as the concept that testing on humans is forbidden unless strict procedures are followed and that the test subjects are in favor of the testing. Some issues are less clear and depend on one's own personal views and conscience. Clearly a subject that requires discussion and careful consideration.

## What constitutes malpractice and fraud?

It is not always clear cut as to what constitutes malpractice and fraud. Several excellent resources are available to you that cover the subject in detail. The United Kingdom Research Integrity Office in their publication **"Code of practice for research. Promoting good practice and preventing misconduct"** (2009; http://www.ukrio.org/resources/UKRIO%20Code%20of%20Practice%20for%20Research.pdf) lists the most common categories of fraud and malpractice:

- *Fabrication*
- *Falsification*
- *Misrepresentation of data and/or interests and/or involvement*
- *Plagiarism*
- *Failures to follow accepted procedures or to exercise due care in carrying out responsibilities for: avoiding unreasonable risk or harm to:*
    - *humans;*

  

- *animals used in research; and*
- *the environment.*

- *Failures to follow accepted procedures or to exercise due care in carrying out responsibilities for:*
  - *the proper handling of privileged or private information on individuals collected during the research.*

The National Advisory Board on Research Ethics (Finland) in their presentation pdf file **"Research Ethics"** (2010; http://www.tenk.fi/ENG/publications.htm) describes examples of misconduct as the following:

- *Understatement of other researchers contribution to a publication*
- *Negligence in referring to earlier findings*
- *Careless and misleading reporting of research findings and methods used*
- *Negligence in recording and preserving results*
- *Publication of the same results several times as new*
- *misleading the research community about one's own research*
- *Fabrication – Presentation of fabricated data or results to the research community*
  - *Fabricated data have not been obtained in the manner or by the methods described in the report*
  - *Presenting of fabricated results in a research report*
- *Misrepresentation (falsification) – Intentional alteration or presentation of original findings in a way which distorts the result*
  - *Scientifically unjustified alteration or selection of data or results*
  - *Misrepresentation to omit results or data pertinent to the conclusions*
- *Plagiarism – Presenting someone else's research plan, manuscript, article or text, or parts thereof, as one's own*
- *Misappropriation – A researcher illicitly presents or uses in his/her own name an original research idea, plan or finding disclosed to him/her in confidence*

## Always employ good practices to avoid problems

See Chapter 14 "Good practices in research, Chapter 15 "Plagiarism – No tolerance policy" and cited sources. The following reference of the Swedish Research Council is exceptionally good: **"Good research practice – What is it? Views, guidelines and examples."** (Gustafsson, Hemerén, Petersson. 2006; http://www.vr.se/download/18.6b2f98a910b3e260ae28000469/Good+Research+Practice+20+april.pdf).

## If a problem arises

In practice, our advice is to be very careful if a problem arises.

- Think first, act later
- Consult in confidence someone that you can trust. Especially a neutral party.
- Get legal advice if necessary.
- Do not disclose sensitive topics in E-mails (see Chapter 18 “When things go wrong”) but discuss the issue in person or by phone
- One should not be intimidated from bringing forward legitimate claims of misconduct but keep in mind that everyone is innocent until proven to have committed misconduct.
- The Board of ISB, reserves the right to expel any member of ISB who has been shown to engage in serious ethical or research misconduct.

  

# 14. Good practices in research

## What are good practices?

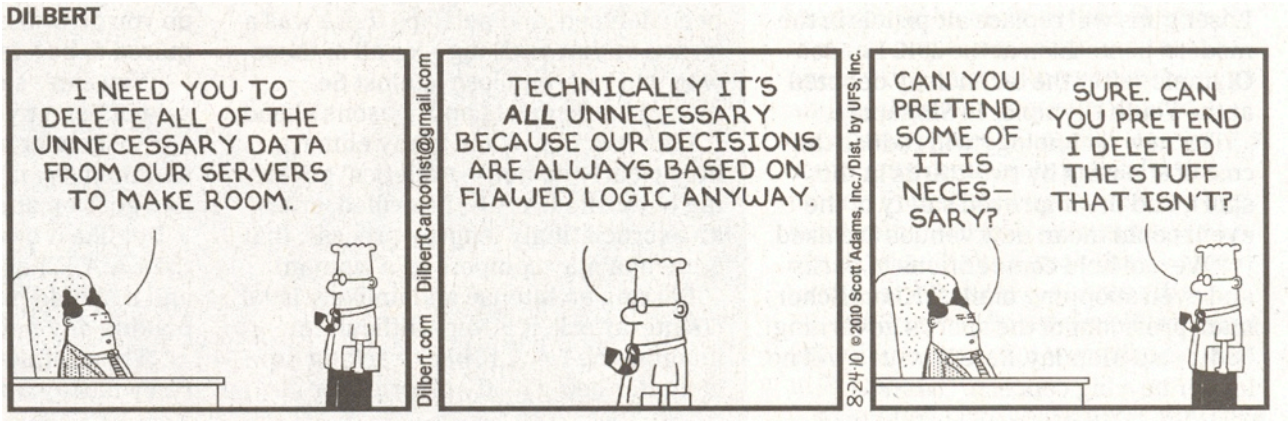


Figure above: Credits: *International Herald Tribune*, p. 10, 24 August 2010

All researchers, whether starting in their training and career or those that are experienced researchers and supervisors, must employ good practices in research. Much of what constitutes "good practices" is common sense, other aspects may not be so clearly understood. At ISB (and in Finland and elsewhere as a rule) all researchers are required to employ best practices and we advise all participants to familiarize themselves on the subject, and ISB covers this topic in its courses on research ethics.

Two publications already mentioned above are particularly good and detailed sources:

- **"Code of practice for research. Promoting good practice and preventing misconduct"** (2009. United Kingdom Research Integrity Office; http://www.ukrio.org/resources/UKRIO%20Code%20of%20Practice%20for%20Research.pdf)
- **"Good research practice – What is it? Views, guidelines and examples."** (Gustafsson, Hemerén, Petersson. 2006. Swedish Research Council; http://www.vr.se/download/18.6b2f98a910b3e260ae28000469/Good+Research+Practice+20+april.pdf).

So what are best practices aside from not taking part in any of the bad practices outlined in Chapter 13? The National Advisory Board of Research Ethics (Finland) in their presentation pdf file **"Research Ethics"** (2010; http://www.tenk.fi/ENG/publications.htm) lists the following:

- *Modes of action integrity, meticulousness and accuracy (in conducting research, in recording and presenting results, and in judging research and its results)*

- *Ethically sustainable data-collection, research and evaluation methods (variation by research discipline) and openness in publishing*
- *Taking due account of other researchers' work and achievements*
- *Planning, conducting and reporting according to standards set for scientific knowledge*
- *Status, rights, co-authorship, liabilities and obligations of the research team are determined before starting research/recruiting researcher:*
    - *ownership of data*
    - *storage of material*
    - *recording matters agreed*
- *Sources of funding and other associations are made known to those participating in research and to the public*
- *Good administrative practice and personnel and financial management*

## Responsibilities to ensure good practices are employed

The National Advisory Board of Research Ethics (Finland) in their presentation pdf file **"Research Ethics"** (2010; http://www.tenk.fi/ENG/publications.htm) lists the following:

*First and foremost it is the responsibility of the researcher him/herself but also the:*

- *research team collectively*
- *supervisor as a research director*
- *head of the research unit/organization as a developer of the working environment*
- *learned societies and journalists as mediators of research data and as promoters of science*
- *funding organizations as research policy makers*

  

# 15. Plagiarism – No tolerance policy

## The Policy at ISB

Nationally and internationally, plagiarism, especially improper use of materials from the Internet, has been a particular problem in courses, presentation files, course essays and even thesis materials.

Some plagiarism is deliberate, some due to ignorance, At ISB plagiarism will not be tolerated from anyone member. In the past, the ISB Board has rejected applications where plagiarism was detected. You need only to give credit to that which is not your doing.


This figure is a screenshot of an internet page: www.isb.fi, of Ilmajoki Salibandy.

Here, clear acknowledgement is given, and even though there is a notice of copy-right, it is likely to be considered in this case to be “fair use” for nonprofit or educational purposes.

In cases of academic malpractice, ISB follows the policies and recommendations of the National Advisory Board on Research Ethics. Details are contained in publications available from: www.pro.tsv.fi/tenk.

Since all members of ISB have been informed of this policy, what constitutes plagiarism (see below) and what constitutes proper acknowledgement of another's work (see below), ANY incidence of plagiarism will likely result in being expelled from ISB, loss of future funding from sources managed by ISB, but other regulations at individual universities or institutes may apply. Details will be reported to the Ministry of Education and Culture and to the Academy of Finland as is required.

In order to make it absolutely clear, we have reprinted here an early piece from our ISB Newsletter (Issue 2, 2002) that has been updated to include some more recent observations. Guidelines are also given on how you may properly use the intellectual property of others.

## Talking point: Plagiarism in scientific writing

*plagiarism 1.* ***The appropriation or the imitation of the language, ideas and thoughts of another author, and representation of them as one's original work. 2. Something appropriated and presented in this manner***

(Excerpted from **Webster's Encyclopedic Unabridged Dictionary of the English Language**, Gamercy Books, New York, 1996, p.1100)

We see it all the time: Headlines in *Nature* or in *Science* alleging that senior (and junior) scientists have faked or reused data over and over again for different purposes. These scientific "crimes" occur and those that commit these offenses are embarrassed internationally when detected and often loose their chance to continue in their scientific career.

Less often but occasionally reported are cases of plagiarism, where one person's material is passed off by another person as being her/his own. When this "crime" is detected, and there are those that have made a career of scanning published material for offenders, a similar embarrassing fate usually awaits the perpetrator.

Why do I bring this up? Over the past six months I have had nearly 10 separate encounters here in Finland where "authors" have appropriated material from others and represented it as their own. This has ranged from appropriating figures from other sources and not referencing the source – to written essays that are entirely, word-for-word the text of others, extracted from textbooks and material from the Internet. In the most extreme case, a scanner was used but the "picture-to-text" translation software did not work, making it difficult for the "author" to include the various chapters into her/his "own" work.

In another case, after being confronted about the use of large amounts of direct text from a textbook, on given a second chance, the revised text of this "author" was traced to lecture notes from several sources published on the Internet. And it is not just individuals that engage in plagiarism. Surprisingly, we have noted the use of figures and material from my own research group on publications by other

  

organizations, without permission and, in some instances, breaking copyright laws because the figure has appeared originally on the cover of a scientific journal. At least they could give us credit!

In each of these cases the person involved was surprised or otherwise unperturbed when the offense was brought to their attention. “I did not know that this was wrong.” This was even the case for the person that was twice confronted. [Later, one individual even suggested this was a problem (i.e worrying about plagiarism) of the USA and hence me – and that it was OK to copy material into the doctoral thesis and not acknowledge the authors and sources.]

Well, it is wrong. In the USA and the UK, for example, plagiarism in the university by a student is the same as cheating on an exam and typically results in expulsion from ISB if proven. Typically in FInland you are looking at 6 months banishment for the first offense; a second offense leads to permanent expulsion. For scientists, it usually ends their careers, depending on how much publicity is raised about the incident and how many other incidences of plagiarism are dug-up as their career’s work is investigated.

### This is what you CANNOT do, ever:

- You can never pass-off as you own, any materials that were produced by someone else. Materials meaning figures, text or other items, whether copyrighted or not, from the printed page or not. This should be clearly understood as wrong and is the essential mark of plagiarism.
- You may never use material from any web site unless you treat it in a similar way as with copyrighted material. If it looks as though you are trying to pass the material off to others as your own work – no quotes, no citation, and no acknowledgements – then you are engaging in intellectual theft, in plagiarism! Rules on plagiarism extend to all activities including course work, course laboratory reports, theses, etc.
- Lazy paraphrasing of another’s text without explicit acknowledgement of the extracted text. This often occurs in course essays, and even recently in 2010. Rather than read and understand the material in a book, the “writer” takes this sentence and then that sentence, changing only a word or two in the middle, or reversing the order of the sentence. Do not even think of this strategy. It is so easy to detect and the result is tears.

### This is what you are permitted to do:

- For non-profit educational materials you may use the materials of others, BUT you must clearly, very clearly, indicate what is not yours, where it came from and who it belongs to. (This includes any material whether copyrighted or not or whether from the printed page or from the Internet).
- Directly quoted text must be placed in quotes or otherwise highlighted and an explicit statement and reference should make the situation absolutely clear to the reader as to the source and ownership of the material.

  

- Figures, when reproduced entirely – this fact should be clearly stated in the figure legend along with the reference/source/web page/etc. [Give a very specific indication in the legend if you are also reproducing the text of the figure legend, too, with permission of the copyright holder, of course].
- Figures of others that are adapted (changed somewhat and redrawn) for your own use should be accompanied with a statement such as: "This figure was adapted from Figure 6 of …" giving the full reference to the original authors and figure.
- Your own figures? Indicate the fact in the legend if it is not obvious.
- When in doubt, be generous, be explicit, and you will never be wrong.

### Permissions, and responsibilities of co-authors:

- You must obtain written permission from the copyright holder for the reproduction of copyrighted material in any publication, including theses, including your own publications, unless otherwise stated by the publisher.
- Small portions of copyrighted material come under fair use agreements and are probably allowed, no explicit permission required, as long as the use is not for profit. In any event, complete acknowledgement of the original source is obviously required.
- Every co-author on a paper to be published has the responsibility to ensure that the text and results are original and that they belong to the authors.
- Proper citation using a secondary source. Note that in writing you should have read the publications that you are citing. If you have not, for example, because it is for historical background and the original material from 1747 is not generally available but was reported in a secondary reference that is available, then you should explicitly indicate this linkage to the original material via the secondary source. NOTE: Often during the public doctoral exam, an opponent asks about a particular reference cited by the doctoral candidate – "was this paper actually read?" Almost always the answer is "no", the text in the thesis was wrong or misleading, and it is embarrassing for the candidate and for the supervisor(s).

[As I (MSJ) was writing this, I was refereeing a manuscript on a topic close to our own interests. In the introduction of that paper the authors had used statements from our own published paper word-for-word and without acknowledgement. Needless to say (and due to other factors, too) - the paper was rejected.].

## Perspectives, 2010

Today, most (all) universities in Finland require that all written material is sent through a "plagiarism service", which reports back to the teacher or professor the level of copied material in the text.

These services are not foolproof:

- They indicate all instances of identical text, but have no way of knowing that the text is properly cited, or that a bibliographic reference naturally has the same text and style because they are dictated by the journals and the references are used by others in their papers. Obviously this is not plagiarism. But, if you heavily quote material from others, you may get a false, high reading from the service.

- They very frequently miss material taken from books. Some clever individuals stick to using only books with the hope of not being discovered. Thus, a low "plagiarism score" by these services may not reflect the true situation.

### How easy is it to detect plagiarism?

Very easy. The text often varies greatly in quality. From terrible, to just OK, to absolutely brilliant, with words that need to be looked-up in a dictionary because they are so rarely encountered. Often an internet search is sufficient to find a source for the superb text – often from a book, but someone else, somewhere, has probably used some of that same text in, for example, a properly acknowledged slide of a presentation file. This then identifies the primary source, the source is then obtained, and this identifies other text and even other possible sources. Typically, if you first find some plagiarized text, then you will find it all through the text. It just takes some time to dig-up the sources.

If material is taken from the internet, automated screening systems will detect it.

### How plagiarism by one in a course causes distrust of all the honest students

When one person cheats, or comes close to crossing the line, it casts doubt on all members of a class, for example. In grading e.g. essays, it then means the lecturer cannot focus on the content written by the students but first the lecturer must spend hours, even days, investigating every paragraph as to its source; trust is gone, days wasted, and the lecturer is quite angry. It distracts attention from the students that did a fine job on their own. It occurs to some degree almost every time an essay is requested as part of a course. This includes courses taken by doctoral students, too!

### Is this related to writing in a foreign language?

Writing is difficult. Writing in the english language can be quite a challenge. Writing in english as a non-native english speaker can be a daunting challenge.

Naturally, if language skills are poor, the common practice is to find a sentence that says what you want to say. This is a useful way to learn to write. The problems arise when you take the ideas and thoughts of others, written by them, and use them directly and without acknowledgement. If you have trouble in writing, consider the following:

- Keep the sentences short and simple

- Use your friends, supervisor(s), colleagues to revise the text and make it better. Ask for help.

- "Revise, revise, revise" Russell F. Doolittle, UCSD Department of Chemistry, ca. 1982

  

- No one expects you to write perfect text from the start. Use your own words, and revise the text into better shape.
- Then, “revise, revise, revise.”


  

# 16. Doctoral studies, transferable skills, career planning

## Doctoral studies

Doctoral studies are a 4-year, intensive researcher training and education program. It is not a career choice, but a preparation for a future where having a Ph.D. is a license for participation.

You are responsible for making a success of this opportunity no matter what the circumstances are. The supervisor can lead you (horse) to the lab/computer (water) but can't make you a scientist (drink?).

ISB and all other doctoral programs in Finland are now under pressure from the funding agencies to see that doctoral students complete within about 4 years. Thus, from the start it is very important for you to focus on your studies with the aim of being the best.

The main idea is this: by the end of your time in a doctoral program, you will know how to solve problems by yourself. You will know how to write a publication for international scientific journals or present your research effectively in public. You will have some experience in guiding others in research and in teaching others. You will have ideas of your own that you want to pursue in research and you will be driven to implement them. You will know your field of interest well. When all of these are true, you are ready to defend the thesis and go off to the next phase of your life, and you should be a success.

ISB is there for you to use and exploit, but is up to you under the guidance of your supervisor and other thesis committee members to plan courses, national and international, that will customize your education for your future plans. Remember, in the end, this is your Ph.D. and you – not your supervisor – are responsible for making it a success.

"International" is important! The Ministry of Education of Culture and the Academy of Finland have placed a huge importance on internationalization, in other words, that our students travel abroad for courses, workshops and in giving presentations and conferences. Consider a longer-term research visit with a collaborating group! If there is a desire it can be arranged.

  

ISB has only a limited amount of funding to arrange courses for the whole program and the focus will remain on the ISB Spring and ISB Winter Schools, support of doctoral students on research courses, workshops and research visits.


Figure above: Credits: *International Herald Tribune*, p. 14, 8 July 2010.

## Transferable skills

"Transferable skills" are the newest buzz words of the powers that be. What you will usually not hear them say is what a transferable skill specifically is.

Here is our view:

- Problem solving
- Excellent communication skills: writing, oral and poster presentations, presentations for non-experts, presentations in english
- Grant preparation and report writing
- Managing and supervising a research group: passing on your experiences to the newer students
- Course lecturing in the sciences
- Planning ahead: Guidance on career planning and opportunities in academia and industry
- Recognizing and communication societal benefits of basic and applied research
- Training in ethics and scientific good practices

These are skills that are directly relevant to a science career in academia and in industry, but will benefit one within other career paths, too.

Some of these skills are inherent to the research methods used today (i.e. problem solving), as are writing and other communication skills. ISB organizes relevant courses alone and together with other doctoral programs on transferable skill topics, covering all of the above topics. Furthermore, the ISB

WInter School has focused on constructive criticism to give feedback on oral and poster presentations. The ISB Spring School has focused, for example, on communication skills, research, grants, ethics and career planning.

## Career planning

Remember: employers want quality; whether in academia or in industry, they want excellent, productive employees (mediocre researchers will have difficulties). In academia, this means good research, publications, ability to communicate, teach others, ability to raise funds, more publications, more fund raising, etc. The Academy of Finland has support plans that aim to cover the entire career of a scientist; consult www.aka.fi for details regularly, as both the deadlines and available types of grants can change from year-to-year.

Whatever your future goals, the important things is to have a plan for your future and use the 4 years in the doctoral program wisely and in a way that prepares your way ahead towards a successful future. Think and plan at least 5 years ahead: “to get where I want to be in 5 years, what must I do now and over the next few years?” Then do it.

In Finland the progression in the academic world is: Ph.D. → Postdoc → Docent → Junior and Senior researchers → Professor. As your proceed up the career ladder there are fewer and fewer positions, so competition can be quite tough. Industry may or may not need postdoctoral training after the Ph.D. Recent discussions at the Academy of Finland have identified the bottleneck in academic careers and recommendations are now suggesting corrections whereby more positions will be made for postdoctoral researchers, especially in regular project grant applications.

In planning your career, you need to take into account the course credits and publication requirements to be completed over the four years. It is a rather large requirement and if you are not serious and focused from the beginning you may find it difficult to complete your requirements within 4 years. When planning for postdoctoral research after the Ph.D., you need to begin more than a year in advance: What lab? Finland?/abroad? How will it be funded? What project plan will be submitted along with funding applications? Etc.

The Academy of Finland regular changes its deadlines as well as what grant types are on offer. Please check the  web site (www.aka.fi) regularly in order to see what might be available. The restrictions (must have a certain degree), deadlines and other constraints can make it difficult to seamlessly migrate from one position to another using the Academy of Finland funding instruments.

Postdoctoral training abroad 1: Doing research in another country for a year or more can bring you many benefits. Firstly, it will change you forever. You will be exposed to new ideas and ways of making science. You may even realize what a good system we have here and how lucky you have been; you may like it there and decide to stay forever. A majority of the most successful scientists in Finland today have been abroad for extensive postdoctoral training.

Postdoctoral training abroad 2: Secondly, training in another country is looked upon very favorably when decisions are made on postdoctoral and other grant applications, as well as applications for

  

positions at universities. The Academy of Finland has been disappointed at the decreasing number of Ph.D.s training abroad. ISB has a good record, but participation overall in Finland has been dropping during the past years. In the past the Academy of Finland has provided excellent support to those that go out of the country for postdoctoral training, as well as helping with funding for the return to Finland; since their offerings change over the years, please check their web site for the current grant offerings.

Other sources of postdoctoral funding. The Academy of Finland is not the only source for funding. Postdoctoral researchers, both in Finland and abroad, are funded from a research group's funding, too. In any event, you will have needed to make contact with possible research groups from 1.5-2 years before your anticipated date of graduation. Remember, funding is hard to raise and it takes time, and for a foreign research group or one here in Finland it will often take more than one year to arrange funding and hear a decision. Consider going abroad and apply for support from: the Human Frontiers Organization, Sigrid Juselius Foundation, Marie Curie Postdoctoral Fellowships, EMBO, etc.

  

# 17. The Dissertation and its defense

## Timing of the dissertation

At some point the doctoral student, the supervisor(s) and thesis committee will have agreed on the timing for the writing of the final thesis work, its focus and content of published works.

Writing in itself can take considerable time, so plan well in advance, up to 9 months or so in advance.

Remember that the arrangements take a considerable amount of time. The whole process can take 3 or more months.

- The thesis material may need to be processed by the university's language center.
- The thesis may be required to be submitted through a plagiarism checker
- Reviewers must be approved at the university faculty representatives/committee and meetings may occur once per month.
- Reviewers need at least a month to evaluate the thesis material and return minor comments and corrections to the doctoral candidate and the statements to the faculty.
- The corrections are then made.
- When the faculty has obtained positive reviews, indicating permission to publish is recommended, the opponents name must be submitted for approval by the faculty representatives/committee, and the date of the oral defense can be proposed.
- Arrangements for the printing of the thesis can take several weeks. If a university or foundation is covering the cost of printing, quotes from several print houses may be required.
- The opponent requires at least a month to prepare.
- Planning postdoctoral research? Granting agencies have specific deadlines, some may require the degree before application, so expect a considerable delay. Your timing versus the grant submission date can minimize the delay.

  

Please let ISB know when the thesis defense is scheduled so that we may advertise the fact to others via our web pages. Please send a copy of the published thesis to ISB for its archive; we thank you in advance!

The Academy of Finland asks the fate of all of our doctoral students. Are they employed? In industry? Academia? ISB asks supervisors for information on past doctoral students and reports to the government agencies for use in ISB renewals and for policy making.

## General comments on thesis preparation

No thesis should be sent out for review and no public defense should be arranged if those involved are not convinced that the thesis is of the quality and content that is required for a doctoral degree according to current standards.

Monographs are generally not accepted as the final work within ISB, whereas a collection of published articles are required as is customary for the sciences.

Your supervisors(s) should read the thesis material and provide suggestions for improvements and corrections.

Do your reviewers and opponent a favor:

- Ask a native english-speaker to help correct the grammar.
- Be consistent in your style and in all of the little details (100% versus 100 %, for example) throughout the thesis.
- Check that all abbreviations are in the list.
- Make sure that all figure legends cite appropriately the origin of all figures: original if not clear? modified from another source, or copied from a source.
- Proper citation of a primary source when only a secondary source is available referring to the original primary source material.
- Detection of plagiarism will stop the process and cause untold misery and embarrassment. Non-english speaking natives may find it very difficult to write and use examples of writing in their research area to guide them. Be extremely careful. Please take a look at “Plagiarism – No tolerance policy”. This section of the Handbook explains how you can avoid problems and how you can ”use” another author’s work is an appropriate “safe” way.

## Quality control: Reviewers, opponents, and the faculty

International peer-reviewed publications represent the first independent reviews of the thesis material.

Reviewers of the thesis form the second set of independent reviewers and consider the dissertation in its entirety, and should especially focus on the material that has not been submitted for peer review: the introduction and literature review and any manuscripts appended to the thesis. (Typically, your

  

supervisor(s), thesis committee members, and or colleagues will have read through your thesis and offered suggestions and corrections before any review takes place.)

Reviewers should be chosen with care since their opinions matter most and no thesis should reach an opponent if there are serious problems.

- Reviewers must provide independent opinions and thus no conflicts of interest can exist.
- ISB encourages the selection of foreign reviewers if timing permits.
- Because research within ISB is often multidisciplinary, reviewers should be chosen to provide expert opinions on different major aspects of the thesis.
- At ISB, one reviewer may come from the thesis committee. Independent thesis committee members (not co-authors) make excellent reviewers because they should be well informed about the project and have a direct interest in the doctoral student's career.
- When time is short, prearrangements with reviewers (and the opponent) and delivery of the articles attached to the thesis can help speed-up the process. If there is a practical deadline by which time a statement must be received, have your supervisor(s) agree on this matter with the reviewers (and opponent) in advance.

Opponent(s) of the thesis may represent the final level of review of the thesis and of the candidate for the doctoral degree.

- Like all reviewers in the process, the opponent must provide an independent opinion and have no conflicts of interest with the candidate for the degree.
- Foreign opponents of the dissertation are encouraged.
- The opponent has several goals but the most important ones are to establish that the candidate has prepared the thesis materials, that the candidate is familiar with the literature in his field of study, and that the candidate can address a broad range of questions surrounding the thesis topic.

The faculty provides the final say on the process

- Reviewers "recommend" that permission be given to print the doctoral dissertation.
- Opponents "recommend" that the public examination be passed.
- Faculty representatives, perhaps a departmental committee, provide opinions on the public defense, thesis work and take into account the statements of reviewers and the opponent.
- Foreign opponents may not be familiar with the Finnish system and thus their recommendations of a specific grade for a thesis may not be appropriate or justified.
- The faculty representatives / departmental committee will provide the final recommendation to the faculty, which will typically be accepted.

  

# 18. When things go wrong

## First, get advice

Occasionally, things can go wrong. Difficulties arise between a doctoral student and supervisor for one reason or another. A doctoral student commits a breach of our ethics policy and finds him or herself in very serious trouble. Funding ends.

If you find yourself in such a situation, whether as a supervisor or as a doctoral student, it is our recommendation that a neutral party is consulted to help sort out the problems. No one should ever make any rash decision; think and consult with others before doing anything.

During the past several years, thesis committees (the members other than the supervisor) have been used repeatedly to help resolve issues between a doctoral student and the supervisor, but other neutral persons have given valuable assistance, too.

In no event should anyone resign a post or position in haste and under pressure. Instead, it is important to consult the thesis committee or some other party.

## Do not send that nasty E-mail

Before sending that nasty letter, wait until you cool off and then reconsider what you are doing – nothing destroys any future relations and cooperation like a nasty letter, especially when it comes as an unexpected surprise. Remember several things: Humans are not mind readers and what is obvious to you another person may be blind to. Colliding objects interact with equal but opposite forces – the same happens in human relations – the “eye-for-an-eye” syndrome. So, if possible, try to bring-up issues without getting emotional and try to resolve issues early before they become real problems and get out of control.

Try to handle difficult issues openly and directly (face-to-face) with those involved. The worst thing that can happen is that you destroy your relationships with supervisors and colleagues by sending that nasty E-mail. Remember, these same individuals will probably be asked by you in the future to help you out with your career plans (e.g., letters of recommendation).

## We are here to help

If you need to consult someone in private and in confidence about a “difficult situation”, you can always contact the ISB office by phone or in person. We try to mediate and involve the thesis

  

committee or other trusted individuals from ISB where possible and we have had good success in resolving conflicts.

In the case of ISB-funded positions, funding is made to the doctoral student and not to the supervisor, and on very rare occasions ISB has assisted with the transfer of a student to another lab.

  

# 19. Quality, transparency and data protection

## Good practices

In 2004, ISB began a quality program to improve its operations and to ensure the use of common practices for all participants, following advice and recommendations of **"Quality management systems: Guidelines for the application of ISO 9001:2000 in Education"** (Finnish Standards Association. Helsinki. 2004. pp. 149).

The reasons for developing a quality program were clear: the doctoral program had grown in size to a point where we were dealing with the same issues over and over again, and it was increasingly difficult to ensure the same policies were applied each time.

Thus, our ISB Handbook was expanded substantially to include detailed guidance over the entire range of activities at ISB.

A Management Guide for the coordinator was prepared.

We simplified our procedures and devised downloadable forms.

ISB increased its dependence on thesis committees to support the supervision and oversight of the doctoral student.

The net result was a more efficient, less bureaucratic, transparent, and quite effective management of ISB.

Oversight of students and degree merits are covered in detail in chapters above.

## Transparency and data protection

All public materials are placed on the ISB web pages, as our archive, with the exception of any personal information. Information that we do publish includes membership, areas of research, past and future activities of ISB, and decisions on applications.

ISB maintains paper records in its office.

Our operations are detailed in the ISB Handbook and in the Management Guide, including procedures, policies, evaluation criteria, and so forth.

  

Our accounts are open to inspection and managed by the Åbo Akademi University central administration. Our NordForsk funds are audited each year.

ISB does not include personal information on its web pages, nor will ISB provide such information to outside parties except to the Academy of Finland on request and otherwise as required by Finnish law.

## Feedback

Doctoral students receive feedback from multiple sources over their entire period of training: from supervisors, thesis committees, in the ISB Winter and Spring Schools, referees of publications, etc.

Feedback to ISB is important for the operations of a successful doctoral program and the ISB membership has never shied away from voicing their opinions and giving constructive criticism.

The ISB Board proposes changes in our operations as they are needed and they are implemented.

ISB receives feedback at its ISB Winter School and ISB Spring School. Specific questionnaires have been used for courses hosted together with Turku BioNet and FinBioNet.

  

# 20. Key deadlines at ISB

| Deadlines | Doctoral student applications | Continuing students | Supervisors and senior scientists | Postdoctoral researchers |
|---|---|---|---|---|
| 15 March and 1 September due by 16:00 (if weekend, due on following Monday) | Applications by E-mail; papers copies by snail-mail | | Applications by snail-mail or E-mail | Applications by snail-mail or E-mail |
| Within first month of joining ISB | Deliver to ISB a copy of accepted study plan | | | |
| Within first month of joining ISB | Notify ISB of thesis committee members | | | |
| Within first month of joining ISB | Send to ISB the project title and public abstract for ISB web pages | | | |
| Within 2-3 months of joining ISB | Revise research plan; initial thesis committee meeting; minutes and report to ISB | | | |
| By 20 December, each year | | Copy of research report and thesis committee statement sent to ISB | | |
| Anytime | | Activity funding | | |
| ca. months 30-36 | | Begin planning for postdoctoral training and its financing | | |
| ca. month 40 | | Begin writing thesis draft and make preliminary plans for defense; Ensure ALL course credits are completed before defense | | |
| ca. month 48 | | Public defense | | |

  