Guidelines for a Doctorate at the Department of Biology TU Darmstadt

The relevant provisions for a doctorate can be found in the doctoral regulations (General Doctoral Regulations of Technische Universität Darmstadt as of January 12, 1990 (ABl. 1990, p. 658) as amended in the 8th amendment of December 21, 2017 (PO/AT)) and the Specific Regulations of the Department of Biology from September 6, 2019.

All forms necessary can be found at: https://www.bio.tu-darmstadt.de/studieren/studienangebot/promotion/promotionsstudium.de.jsp

1. Before starting the doctorate

You have found an appropriate topic for your doctoral thesis and a supervisor from the Department of Biology at the TU Darmstadt. Now you need a co-supervisor for further support during your doctorate.

Who is entitled to act as a supervisor or a co-supervisor?
Generally the professors of the TU Darmstadt or of other universities. More information is provided in §11 of the TU Darmstadt doctoral regulations. Certain young researchers, apl. professors or associate lecturers are entitled to independently act as supervisors. In that case, however, the co-supervisor has to be a full professor at the department of Biology.

In case of doctorates in cooperation with external research institutions or with an industrial company, the rules are somewhat different (see §11 doctoral regulations). In such a case it is necessary to ensure that the supervisor has the necessary qualifications (e.g. being a professor at a different university). Information in individual cases can be requested from the doctoral board.

Now the formal part of the doctorate begins. You need to submit your application to become a doctoral candidate to the Department of Biology. The doctoral board (for its composition see §3 doctoral regulations) checks your qualifications. As a rule you qualify for a doctorate with a completed master’s degree in Biology or in a related natural science with a final grade better than 2.5 (or equivalent in other grading systems). In case you have completed „Staatsexamen LAG“ or studies at an University of Applied Sciences, the doctoral board will carry out an aptitude test („Eignungsfeststellungverfahren“). This test is established to prove the competence and ability to independently carry out scientific work. If necessary, requirements are imposed - certain courses necessary for the doctorate may have to be passed during the first year of the doctoral work. Those requirements are bound to be completed successfully in addition to other courses and lectures of a structured training program (see below).

Application as a doctoral candidate with the Department of Biology

In order to start your doctorate formally, you need to register and apply for being accepted as a doctoral candidate at the department of Biology – if possible at the beginning of your thesis work. The registration (not to be confused with an
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enrollment/matriculation at TU Darmstadt! and the application for being accepted as a doctoral candidate are obligatory.

1. First of all, please fill the form “Antrag_Annahme_Doktorand_Betreuungszusage”
2. Then register online for doctorate, see § 2 under:
3. Now submit your application to Dezernat Internationales (International Admission), see § 3 under:
   The Dezernat Internationales will examine your degrees for equivalence and communicate the results to the Department of Biology.
4. Finally, submit the following papers to the dean’s office of the Department of Biology:
   a. Printout of the application form from MoveIn or the registration form (printed Excel-document) - see § 3 under:
   b. “Antrag_Annahme_Doktorand_Betreuungszusage” (see above; document confirming supervision, signed by a supervisor of the department of Biology (according to § 10) and a co-supervisor (according to § 11).
   c. the university or college certificates that qualify you for a doctorate
   d. in case of an external dissertation at a research institute outside the university or at a different university: a short statement outlining the doctoral project as well as the confirmation of the external supervisor in writing

After you receive the confirmation that you are admitted, you may (this is optional!) enrol with TU Darmstadt as a (doctoral) student.

2. During the doctorate

The department offers a structured training program for all doctoral candidates. This includes:

Supervision agreement: At the beginning of the doctorate the candidate and the supervisor sign an agreement, which defines the respective rights and duties. The aim is to support candidates and supervisors in developing the scientific project, so that it can be completed successfully within the specified time frame.

Thesis advisory committee (TAC): Doctoral candidates are supported not only by their supervisor but in addition by a committee of experienced scientists. This committee can be composed of the supervisor, the co-supervisor and up to two more members – who may be full professors, (post-doctoral) scientists of the department as well as of other TU Darmstadt departments or of external scientific organizations. The first meeting of the TAC (meetings are organized by the candidate) should occur within 6 months after
you are accepted for a doctorate at the department. Further meetings should take place once a year. One week before the meetings, the candidate needs to send a short report to the TAC. After the TAC meeting, an updated version with feedback of the committee members will circulate. In case the TAC meeting is not considered to be satisfactory, it will be convened again within the following 6 months. Should the meeting again be unsatisfactory, the TAC recommends to end the doctorate.

Training program: For supporting the qualification process of the doctoral candidate, the individual work on a scientific project will be accompanied by a training program. This program comprises approx. 40 working hours in the course of the doctorate and it contains the following points:

a) at least two courses from the Ingenium Program of TU Darmstadt; with the approval of the supervisor other courses may be attended
b) attending at least 10 talks from the Biological Colloquium of the department or other equivalent scientific talks
c) presenting the work at least once at the departmental’s doctoral symposia
d) additional courses which were defined as additional requirements in the proficiency test (Eignungsfeststellungsverfahren)
e) in the final doctoral certificate, the following achievements will be mentioned:
   a. participation in (international) conferences
   b. poster presentations or talks
   c. internships at other labs
   d. courses attended (with certificates)

Self organization/doctoral candidates representative: The doctoral candidates elect two representatives, who act as contact persons for the department, who will represent the concerns of the candidates, who cooperate constructively in developing the training program and act as mediators in case of conflicts that might arise. The representatives are elected by a general assembly of the doctoral candidates for a period of two years.

Student’s guest lecturer program: Every semester the doctoral candidates invite an external speaker for a talk at the Biological Colloquium. With the support of experienced scientists, the candidates organize the visits including individual meetings with interested doctoral candidates, postdocs and group leaders. The department will provide travel/accommodation funds for this purpose.

Change of supervisor: Should a change of the supervisor or co-supervisor become necessary in the course of the doctorate, this is possible via a request to the doctoral board (“Antrag_auf_Gutachterwechsel”). For this process, it is necessary to inform the former and the future supervisors and to provide their written approval. In case of possible conflicts, all parties involved are given the opportunity to present their viewpoint before the doctoral board makes a decision.

3. Writing the doctoral thesis

After finishing the scientific work, you have two possibilities to submit the doctoral thesis to the department:
Monograph: The name already suggests that this kind of thesis mostly consists of an introduction, a materials and methods section, results, and discussion. The whole work is completed by a summary and the literature list. Variations are possible, e.g. different chapters with a similar structure may be combined. It is important, that this kind of thesis only contains your own results and that any research results provided by others are marked as such. If figures are copied from other works, the transfer of rights has to be granted by the author/publisher.

Cumulative dissertation: This type of dissertation is a compendium of publications authored by the candidate. If during the doctorate at least three publications of original research results are published in peer-reviewed journals or are accepted for publication, they can be joined together and submitted as a cumulative thesis. It is important that the works arose in the context of the dissertation and that you are (co-)first author in at least two of the publications.

If these requirements are fulfilled, a request ("Antrag auf kumulative Promotion") for cumulative dissertation has to be filed with the doctoral board before the thesis is submitted. Here, it has to be guaranteed that your own contribution to all the included publications is marked explicitly and that legal compliance is ensured. This is why the doctoral regulations demand a statement, where you outline your contribution for each publication in detail (see Appendix 1). This statement has to be signed by all authors of the respective publication and it forms part of the examination file. It is not enough to attach an email of a co-author, but rather a personal handwritten signature is required.

Other unpublished works can be attached as additional chapters of the cumulative dissertation, they may, however, only contain contributions of the doctoral candidate that were drafted independently by him/her. Furthermore, when writing a cumulative dissertation, a comprehensive introduction, discussion and summary must be included to outline the overall framework of the dissertation and how the individual studies related to each other.

The dissertation may be in German or in English language. A summary in both languages is needed for publication at the university publication server.

The title page of the thesis must comply with the requirements listed in the title page specifications ("Dissertation-Titelblatt"). In addition, the dissertation needs to contain a legally binding declaration ("Ehrenwoertliche_Erklarung") that it was composed independently – except for the explicitly mentioned aid. For legal reasons this declaration has to be in German – an English translation may be attached.

4. Doctoral examination

When you submit your thesis, the last phase of the doctorate begins. You apply for the doctoral examination by sending the corresponding form to the dean of the department ("Antrag auf Zulassung zur Prufung"). The following documents have to be submitted in addition:

a) the completed form "Antrag auf Zulassung zur Prüfung"
b) six copies of the thesis (for the Dean's office, the supervisors and the examiners)
c) a proof that you payed the PhD fee of €100 to the following account:
Doctoral candidates of other research institutions with an external supervisor may also start the procedure at this point. In such a case the department assures an evaluation rather than a supervision. The structured training program is not possible at this point, however, the requirements mentioned under registration for doctorate apply. In case of external doctoral theses usually the supervisor at the respective research institution acts as one of the reviewers. In that case, the other reviewer is bound to be a full-time professor at the department of Biology.

Both reviewers, independently from each other, write their evaluation of the doctoral thesis within eight weeks and transmit them to the dean of the department. The evaluation either recommends acceptance or rejection of the thesis. In case of acceptance, the reviewer evaluates the thesis with one of the following grades:

- excellent (ausgezeichnet)
- very good (sehr gut)
- good (gut)
- satisfactory (genügend)

If both evaluations on the thesis rate it „excellent“, this rating will be considered for the final grade. In this case, a third opinion by an external expert is necessary. The deanery informs the direct supervisor that he/she should suggest a third reviewer. The third reviewer should not be a member of TU Darmstadt and should have no conflict of interest (e.g., common publications and/or ongoing collaborations with the supervisor) and state this together with his/her evaluation. Importantly, the rating „excellent“ requires at least one publication with you being the first author published in a peer-reviewed journal or accepted for publication.

Upon receipt of the thesis evaluations, they are made available for two weeks to all the professors and entitled members of the department. During this period it is possible to present statements or special reports. At the end of this consultation period, the examination commission decides whether the thesis is accepted. The examination commission is chosen by the doctoral board and it is set together as follows:

1. a chairperson from the group of professors of the department
2. the reviewers of the doctoral thesis
3. two further professors of TU Darmstadt or other universities, entitled young researchers and group leaders of the department or leading scientists of
recognized research institutions outside the university; the requirements are specified in §11 of the doctoral regulations.

The majority of members of the examination committee must come from the group of full-time professors at the Department of Biology. In case the president is unable to assist, a member of the examination committee will assume this function. The president is chosen by the doctoral board. The two other members may be proposed by you to the doctoral board. Later changes of the commission require the consent of the doctoral board.

The examination committee decides whether the thesis is accepted, needs to be changed or is rejected; it conducts the disputation and evaluates the performance. It decides whether the disputation needs to be repeated and defines the additional requirements for publication.

If the thesis is accepted, the dean together with the doctoral candidate and the other members of the examination committee determines the date for the oral examination. The oral exam is open to the public and it starts with a 30-minute oral presentation, where you outline the topic and the results of your thesis. Afterwards there will be an examination in which you defend your work vis-à-vis the commission members. In this part, topics from a wider scientific context than your dissertation are covered. The exam may be conducted in German or in English language. After the disputation, which is not supposed to last more than one hour, the commission determines the overall grade of the doctoral exam in a non-public meeting. The rating of the presentation and the examination as well as the rating of the written expert opinions determine the overall grade. The following grades are possible:

- passed with distinction (mit Auszeichnung bestanden)
- passed with the rating very good (sehr gut bestanden)
- passed with the rating good (gut bestanden)
- passed (bestanden)
- not passed (nicht bestanden)

Possibly, changes might be required that need to be made before publication. The first supervisor is in charge of verifying that the changes have been made. The thesis should be published via the TU Darmstadt publication server within one year. More details are specified in §19 of the doctoral regulations.

5. After the exam: additional requirements and publication

After the dissertation and after you have made the requested changes, present the changed version to your first supervisor to approve the publication of this version through her/his signature on the form Declaration Relating to the Doctoral Thesis and Transfer of Rights.

Under version details please enter the file name of the final approved version that you upload with Tuprints.

Hand in this declaration form at the deanery (it will be forwarded to Tuprints).

Register with Tuprints under:
https://tuprints.ulb.tu-darmstadt.de/cgi/register

and upload the dissertation.
Appendix 1

Examples for “Authors’ contributions list”

For (co-)first author publications:

(Full publication reference with all authors)

Melanie Musterfrau performed all experiments, data analysis and manuscript writing including figure and table preparation except for:

- Text section ... written by ...
- Figure ... (part ...) contributed by ...
- Table ... (part ...) contributed by ...

I certify with my signature that I agree with the above.

<table>
<thead>
<tr>
<th>Author name</th>
<th>Signature</th>
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<td>Musterfrau, ...</td>
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For co-authorship on publications

(Full publication reference with all authors)

Melanie Musterfrau contributed:

- Text section ...
- Figure ... (part ...)
- Table ... (part ...)
- Data analysis ...
- Etc.

I certify with my signature that I agree with the above.

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Appendix 2

Types of publications accepted for cumulative thesis:

Only publications in peer reviewed international journal are accepted.

These should correspond to original research papers, where you publish experimental work or develop new theoretical models.

Methods centered publications must have biological application to be considered for the required three publications.

Review, commentary or protocol style publications can be included but do not “count” for the three publications required.

The decisions are made by the doctoral board based on the publications included in your application for a cumulative thesis.