



University of  
Zurich <sup>UZH</sup>

**ETH** zürich



University  
of Basel

Zurich-Basel Plant Science Center

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**Guide to the**

**PSC      PhD      Program      Plant      Sciences**  
**2019**

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## Table of Contents

<b>1 Why a PSC PhD Program in Plant Sciences?</b>	<b>3</b>
<b>2 Admissions, Registration and Regulations</b>	<b>4</b>
2.1 Admission to the PSC PhD Program	4
2.2 Registration for the PSC PhD Program	4
2.3 Institution-specific regulations during PhD studies	5
2.4 Admission to Courses	7
2.5 PSC PhD Certification	7
2.6 Confidentiality	8
<b>3 Curriculum and Course Catalog</b>	<b>9</b>
3.1 Curriculum	9
3.2 Research and Transferrable Skills Developed in the PhD Program	10

# 1 Why a PSC PhD Program in Plant Sciences?

Welcome to the PSC PhD Program in Plant Sciences. The Zurich-Basel Plant Science Center (PSC) offers training in techniques at the forefront of plant sciences and a qualification framework for building up transferable skills and competencies for a successful career in academia and beyond. These guidelines should help you plan your PhD studies and tailor your training to your needs. The guide outlines what professional skills we expect you to develop during your PhD studies (Section 3). In the training overview and course catalog, we present the wide range of workshops designed to help you attain these skills (Section 4).

As a PhD student, you make research your absolute priority. You are also expected to develop into an independent researcher, able to publish, present and communicate your work to a variety of audiences, including the public. You need to be able to write successful grant proposals. You must learn to be aware of your responsibilities as a researcher. You need skills to collaborate with other researchers and to build up your own scientific network.

You will need assistance in developing all these challenging skills. PSC trainings provide an introduction to conceptual and technical approaches in research and also up-to-date methodological knowledge from research frontiers in plant sciences. Our workshops aim to enhance your interdisciplinary research competence in the field of plant sciences and we offer training in the development of transferable skills following the competence matrix laid out in Section 3.

What if you plan to leave the academic world after your PhD studies? Our workshops provide training in a range of transferable skills that will prove valuable outside of academia as well. Completion of a structured PhD program is expected by many potential future employers, both inside and outside academia.

To be awarded the PSC PhD Program Certification, you must complete 12 ECTS during your 3-year PhD study period (Section 2).

An excellent way to develop many of the skills outlined above is by participating in the organization of our bi-annual international PSC PhD symposium (next in 2018). As part of the organization committee you will ensure a high-quality scientific program with invited speakers from all over the world in this highly interdisciplinary symposium.

Within the PSC PhD Program in Plant Sciences, you are embedded in a lively and international community of about 600 researchers.

## 2 Admissions, Registration and Regulations

### 2.1 Admission to the PSC PhD Program

The PhD Program is open to you if your research group has a membership within the PSC (overview of affiliated groups: [www.plantsciences.uzh.ch/aboutus/people.html](http://www.plantsciences.uzh.ch/aboutus/people.html)).

All PSC PhD students must be enrolled at the University of Zurich, ETH Zurich or at the University of Basel. The candidate is conditionally accepted to the PhD Program after requirements are fulfilled. Final acceptance depends on the formal admission requirements of the University of Zurich, ETH Zurich or University of Basel.

To ensure equal treatment of Track I (recruitment via LSZGS) and Track II (direct application to PI) candidates, and in accordance with the rules of the LSZGS, group leaders are required (as of January 2013) to organize a formal admission interview with their future PhD students if recruited via Track II. The interview should be conducted in presence of at least one other PI or faculty member, and the supervisor should fill out an interview protocol to be submitted to the program office. Please contact your supervisor if you are a Track II student.

### 2.2 Registration for the PSC PhD Program

All necessary documents can be downloaded on our webpage:  
[www.plantsciences.uzh.ch/teaching/phdplantscience/procedures.html](http://www.plantsciences.uzh.ch/teaching/phdplantscience/procedures.html)

All students: Register for the PSC PhD Program in Plant Sciences by filling in the registration form provided on our webpage within 3 months after start of your PhD. We will then send you a welcome package with all necessary documents.

Upon registration, we will open an account on the following online database:  
<https://www.dissgo.uzh.ch/login>. Once open, you will be notified in an email on the login to use. At this database you need to upload all the documents for certifying the progress of your studies (doctoral agreements, thesis committee meeting protocols, certificates of courses).

**UZH MNF:** All PhD students must register for a structured PhD program. The PSC office must sign the "Acceptance confirmation Structured Doctoral Program" letter that is part of your matriculation documents (for information about the matriculation see:  
<http://www.uzh.ch/en/studies/application/doctoralstudies>

**PSC can only sign the form after admission interviews have been conducted, and after we have received the signed interview protocol and the signed registration form. Registration is necessary within 3 months of beginning your PhD.**

Furthermore, PhD students must register to the UZH Faculty of Science by using the following link: Registration Doctoral Studies <http://www.mnf.uzh.ch/en/studium/phd/ anmeldung.html>. For more information on the Graduate Schools and Doctoral Studies at the Faculty of Science (MNF), please visit the following website <http://www.mnf.uzh.ch/en/studium.html>.

**ETHZ D-USYS and ETHZ D-BIOL:** PhD students must register to the ETH Admission for Doctorate by using the following link: <https://www.ethz.ch/en/doctorate/registration-admission.html>.

They need to fill the form to complete their application to the ETH:  
[https://www.ethz.ch/content/dam/ethz/main/doctorate/files/application\\_form\\_doc.pdf](https://www.ethz.ch/content/dam/ethz/main/doctorate/files/application_form_doc.pdf).

**University of Basel:** PhD students must register to the University of Basel, Philosophisch-Naturwissenschaftliche Fakultät by using the following link:  
<https://philnat.unibas.ch/de/forschung/promotionphd/immatrikulation-ab-hs-2016-registered-fall-semester-2016-or-later/>.

### 2.3 Institution-specific regulations during PhD studies

You must carry out your PhD studies in accordance with the regulations of either the University of Zurich, the ETH Zurich or the University of Basel, depending on the academic affiliation of the host laboratory where the research work is carried out (= home institution). Please refer to Doctoral regulations of your home institution and of your home department/faculty.

Here we present a brief summary of some of the relevant regulations at the three partner institutions:

#### **University of Zurich, MNF:**

**Teaching requirements:** PhD candidates must complete the “Planning teaching hours” form from the Department (Fachbereich) of Biology for the fulfillment of a minimum of 100 teaching hours and maximum of 420 hours. Please consult the following website for in-depth explanations of the teaching requirements: <https://www.biologie.uzh.ch/de/Studium/Doktorat.html>.

Planning teaching activities have to be filled in this document:  
[http://www.biologie.uzh.ch/Studium/Doktorat/Planning\\_teaching\\_activities\\_Nov\\_2017.pdf](http://www.biologie.uzh.ch/Studium/Doktorat/Planning_teaching_activities_Nov_2017.pdf).

**Thesis Committee:** The PSC PhD student and the supervisor select the thesis committee 6 months after the beginning of the project. The composition of the committee has to be as following: at least three members, including the supervisor. Two members of the committee (including the chairperson) are from the MNF with “Promotionsrecht” (Professors with the right to confer a PhD). Members with “Promotionsrecht” can be consulted on the following website:  
<https://www.mnf.uzh.ch/en/fakultaet/fakultaetsangehoerige/promotionsrechtler.html>.

The thesis committee composition **must be communicated to the program office** as part of the Doctoral Agreement.

The first committee meeting should be held 6 – 12 months after the beginning of the PhD. Subsequent meetings are held every 12 months. If at the yearly meeting the thesis committee finds that the progress of the PhD candidate is not sufficient, it can request that the Dean of Studies disqualify the candidate. At least three members of the thesis committee (including thesis supervisor) have to be present. Participation of external members can also be arranged by using Skype, etc. It is the responsibility of the PhD student to set up the composition of the thesis committee, arrange the yearly thesis committee meetings, and document the activities. The signed thesis committee meeting

protocol is to be sent back to the program office within 4 weeks after the meeting took place.

All templates are available at:

<https://www.plantsciences.uzh.ch/en/teaching/phdplantscience/procedures.html>.

For details see: <http://www.mnf.uzh.ch/en/studium/reglemente.html#4>

### **ETH Zurich, D-USYS and D-BIOL:**

**Research Plan:** A written research proposal, including the research plan, is to be defined 12 months after registration. The research plan needs verification through the representative of the doctoral board and the thesis committee. Should a thesis be carried out outside the ETH domain, it should be specified in the research plan. Doctoral students who are requested to take qualifying exams may only submit their research plan once they have completed those exams.

Information on the research plan:

<https://www.ethz.ch/services/en/teaching/administration-doctorate/informationen-departemente/forschungsplan.html>.

Submission of the research plan for D-BIOL: <https://www.biol.ethz.ch/en/doctoral-studies/research-proposal.html>; and for D-USYS: <https://www.usys.ethz.ch/en/doctorate.html>.

**Thesis Committee:** The PSC PhD student and the supervisor select the thesis committee 6 months after the beginning of the project. For D-BIOL: The committee has min. three members: the official thesis supervisor (professor at the Department), the immediate supervisor (if applicable), two additional professors or senior scientist of which one is independent from the institute of the official supervisor. For D-USYS: Direct supervisor plus at least one co-examiner (should not be from own group and not be a co-author with the candidate on papers or manuscripts up to the point of the PhD defense).

The thesis committee composition must be communicated to the PSC program office in the Doctoral Agreement. The first committee meeting should be held 6 – 12 months after the beginning of the PhD. Subsequent meetings are held every 12 months. It is the responsibility of the PhD student to set up the thesis committee, arrange the yearly thesis committee meetings, and document the activities. Participation of external members can also be arranged by using Skype etc. The signed thesis committee meeting protocol is to be sent back to the program office within 4 weeks after the due date of the thesis committee meeting.

All templates are available at:

<https://www.plantsciences.uzh.ch/en/teaching/phdplantscience/procedures.html>.

D-BIOL: <https://www.biol.ethz.ch/en/doctoral-studies.html>

D-USYS: <https://www.usys.ethz.ch/en/doctorate.html>

## University of Basel, Philosophisch-Naturwissenschaftliche Fakultät:

**Thesis Committee:** The composition of the doctoral committee consists in the first supervisor, second supervisor, external experts and other experts (subject to application). The thesis committee composition must be communicated to the program office in the Doctoral Agreement. The first committee meeting should be held 6 – 12 months after the beginning of the PhD. Subsequent meetings are held every 12 months.

You can find the templates on the following webpage of the Zurich-Basel Plant Science Center Doctoral: <https://www.plantsciences.uzh.ch/en/teaching/phdplantscience/procedures.html>.

For an description, please refer to:

[https://philnat.unibas.ch/fileadmin/user\\_upload/philnat/3\\_Forschung/Doktoratsstudium\\_Leitfaden\\_ENG\\_Version\\_10.2017\\_1.pdf](https://philnat.unibas.ch/fileadmin/user_upload/philnat/3_Forschung/Doktoratsstudium_Leitfaden_ENG_Version_10.2017_1.pdf).

### 2.4 Admission to Courses

We accept PhD students from LSZGS programs into our courses, provided that spaces are available. PSC students registered in the PSC PhD Programs (i.e. Plant Sciences or Science & Policy) have enrollment priority. For PhD students registered in LSZGS programs, all courses of the PSC PhD Program in Plant Sciences are fully recognized.

PhD students select their individual course work in agreement with their PhD supervisor or their PhD thesis committee.

### 2.5 PSC PhD Certification

Upon successful completion of the PSC PhD Program in Plant Sciences, the Zurich-Basel Plant Science Center will award a program certification based on the following criteria:

- 12 credits (ECTS) acquired during doctoral term from lectures, courses and workshops. 1 ECTS is equal to either a lecture of 1 hour per week during one semester or a full two- to three-day workshop including home-work or preparatory work (=30 learning hours).
- 6 ECTS from courses that are either organized or accredited by the PhD Program in Plant Sciences. We fully accredit the following courses: courses organized by the Zurich-Basel Plant Center ([www.plantsciences.uzh.ch/teaching/phdplantscience/courses.html](http://www.plantsciences.uzh.ch/teaching/phdplantscience/courses.html)) or the Life Science Zurich Graduate School ([www.lifescience-graduateschool.ch/index.php?id=11](http://www.lifescience-graduateschool.ch/index.php?id=11)).
- 6 ECTS may be acquired in courses outside of our own program, for example from the PhD Programs associated within the Swiss Plant Science Web ([www.swissplantsciencweb.ch/education/phd-programs/](http://www.swissplantsciencweb.ch/education/phd-programs/)) or other national and international PhD courses. Note, all ECTS acquired outside of Universities of Zurich and Basel, ETH Zurich and associated PhD Programs need a confirmed accreditation through the PSC office: fill the form at <https://www.plantsciences.uzh.ch/en/teaching/phdplantscience/procedures.html> -> Accreditation of external ECTS.
- 1 ECTS can be earned for active presentations at international conferences (presentation and posters. Please contact the coordination office to receive the adequate template to fill.
- Active participation in the colloquium "Challenges in Plant Sciences" (2 ECTS) during one semester is mandatory for the PSC PhD Certification in Plant Sciences. You are advised to participate in the colloquium at the beginning of your PhD studies. If you have already

participated in the colloquium during your Master's studies you can then choose your 12 ECTS freely from other courses organized or accredited by the PSC.

- 4 ECTS should be acquired in the area of transferable skills.
- It is possible to obtain credit points through the organization of the PSC PhD symposium (3 ECTS).

The PSC issues a program certification after all requirements have been fulfilled and the Doctoral Degree Certificate of your home university has been awarded. Required submissions (**uploaded to DissGo**):

- A copy of course participation documents
- Transcript of record: A list of all completed courses (at least 12 ECTS), signed by the PhD supervising professor
- A copy of your Doctoral Degree Certificate

The certification will be prepared and send to you within 3 weeks of submission.

**Exam Registration and Doctoral Examination:** The final degree is conferred by your home institution.

**UZH MNF:** For your registration for the examination ([www.mnf.uzh.ch/en/studies/regulations-information-sheets/doctoral-studies.html](http://www.mnf.uzh.ch/en/studies/regulations-information-sheets/doctoral-studies.html), 'Registration for the PhD Defense') you will need to include 'List of credit points' together with all copies of certifications of course participation. This document needs to be signed by the responsible faculty member.

**ETH D-USYS and ETH D-BIOL:** For your registration at the doctoral administration ([www.ethz.ch/content/associates/students/en/doctorate.html](http://www.ethz.ch/content/associates/students/en/doctorate.html)) you will need to include a completed copy of the form [Registering for the doctoral examination](#) including confirmation from the department of your credits (with original stamp and signature of the department). The doctoral student must hand in the form Registration for the Doctoral Examination and a bound thesis copy to the Doctoral Administration ETH at least 12 working days before the exam.

Detailed information at:

D-USYS: <https://www.usys.ethz.ch/en/doctorate.html>

D-BIOL: <https://www.biol.ethz.ch/en/doctoral-studies.html>

ETHZ: [www.ethz.ch/content/associates/students/en/doctorate.html](http://www.ethz.ch/content/associates/students/en/doctorate.html)

## 2.6 Confidentiality

It is an important goal that the participants of the PhD program exchange their scientific results between different institutes and the host institutions. Any such results shall be kept strictly confidential by all participants of the program and shall not be disclosed to persons outside of the program as long as the results are not published by the author/originator of the results. No participant of the PhD program shall use any scientific result to the detriment of one of the host institution. In particular, no participant shall impair a host institution's right to seek protection for intellectual property contained in such results by way of a premature publication or other premature disclosure of results.



## 3 Curriculum and Course Catalog

### 3.1 Curriculum

**Note: For all students that have started their PhD after February 2016 it is mandatory to visit the LSZGS introduction event “Introductory Lecture to Good Scientific Practice and Scientific Integrity” (2 hours, no ECTS).** Within the event you will sign the declaration of “Good scientific practice” that will become part of your DissGo documents. All PhD students that have or will visit a course on “Research Integrity” or “Ethics” in their PhD program don’t need to visit the introduction.

Tailor coursework to your needs within the PSC PhD Program in Plant Sciences by combining courses from the following domains (but note mandatory colloquium):

Activities	ECTS
<b>Compulsory Activity:</b> Colloquium “Challenges in Plant Sciences” [ <b>corresponding: 3.3.1</b> ]	2
<p><b>Core Elective Activity:</b></p> <ul style="list-style-type: none"> <li>• Technical Courses in all areas of Plant Sciences: Intensive workshops on skills, methods and techniques used in plant science research [<b>corresponding: 3.3.2</b>]</li> <li>• Statistical Methods [<b>corresponding: 3.3.3</b>]</li> <li>• Transferable Skill Courses (Communicating and Disseminating Science / Professional Conduct in Research / Research Management / Professional and Career Development / Finance, funding and resources) [<b>corresponding: 3.3.4</b>]</li> <li>• Workshops from the specialized PSC PhD Program in Science and Policy can be accredited [<b>corresponding: 3.3.6</b>]</li> </ul>	4 - 10
<p><b>Elective Activity:</b></p> <p>Remainder of 12 ECTS may be chosen from*:</p> <ul style="list-style-type: none"> <li>• Participation in international scientific symposium with own scientific contribution (oral or poster presentation) (max. 1 ECTS)</li> <li>• Transferable skill course can also be visited at GRACE (University of Basel), GRC or LSZGS and other continuing education offers</li> <li>• Organization of PSC PhD Symposium (max. 3 ECTS) [<b>corresponding: 3.3.5</b>]</li> </ul>	max. 6

\* with approval from principal investigator or thesis committee

The **mandatory** colloquium “Challenges in Plant Sciences” should be taken in the first half of the PhD studies (offered each autumn term). We strongly recommend that you complete additional coursework in the first half of your PhD:

- Scientific Writing I (offered each autumn term)
- Scientific Presentation Practice (offered each spring term)
- Responsible Conduct in Research” (offered each spring term)

- Courses in Statistical Methods.

PSC Summer Schools: Our summer schools allow students to engage in cutting-edge plant science topics and to meet the experts from all over the world. The summer schools address the biggest challenges currently facing science and society. Example topics from recent years:

**2018 PSC Summer School: Responsible Research and Innovation in Plant Sciences**

**2017 PSC Summer School: Understanding Risks and Resilience in Plant Systems**

**2016 PSC Summer School: Agriculture in Transformation – New Concepts for an Agriculture Production that is socially fair, environmentally safe and economically viable**

**2015 IDP BRIDGES Summer School: Shaping our Future**

**2014 PSC Summer School: Green Revolution Reloaded - Emerging Technologies for Sustainable Crop Production**

**2013 Science & Policy Summer School: Governing the Transition to a Bio-based Economy**

**2013 SPSW Summer School 2013: Plant Volatiles: from lab bench to application**

**2012 SPSW and SystemsX.ch Summer School: Modeling Development in Plant Sciences**

**2011 SPSW Summer School 2011: Terrestrial Ecosystem Dynamics in a Changing World**

**2011 PSC-ETNA Summer School: Food Security – How can Science and Policy Contribute?**

**2010 SPSW Summer School: the global food crisis - how can plant sciences contribute?**

### **3.2 Research and Transferrable Skills Developed in the PhD Program**

All courses of the Zurich-Basel Plant Science Center have been developed to advance the acquisition of research skills and transferable skills that will serve you both in and outside of academia. Below is a list of skills we expect you to acquire during your PhD program.

Cited and adapted from Joint Skills Statement (2001):

<http://www3.imperial.ac.uk/graduateschools/transferableskillstraining/jointskillsstatement>

#### **Research Skills and Techniques – you will develop:**

1. The ability to recognize and validate research problems and to formulate and test hypotheses.
2. Original, independent and critical thinking and the ability to develop theoretical concepts.
3. Knowledge of recent advances within your field and in related areas.
4. An understanding of relevant research methodologies and techniques and their appropriate application within your research field.
5. The ability to critically analyze and evaluate your findings and those of others.
6. An ability to summarize, document, report and reflect on your research progress.

#### **Understanding the Research Environment and the Scientific Community – you will develop:**

1. A broad understanding of the context, at national and international levels, in which your research takes place.
2. Awareness of issues relating to the rights of other researchers, of research subjects, and of others who may be affected by your research, e.g. confidentiality, ethical issues, attribution, copyright, malpractice, ownership of data and the requirements of the Data Protection Act.
3. Appreciation of standards of good research practice in your institution and/or discipline.
4. An understanding of the relevant health and safety issues and responsible working practices.
5. An understanding of funding processes and evaluation of research.
6. The ability to justify the principles and experimental techniques used in your own research.

7. An understanding of the process of academic or commercial exploitation of research results.

**Research Management – you will be able to:**

1. Apply effective project management through the setting of research goals, intermediate milestones and prioritization of activities.
2. Design and execute systems for acquisition and collation of information through the effective use of appropriate resources and equipment.
3. Identify and access appropriate bibliographical resources, archives, and other sources of relevant information. Use information technology appropriately for database management, recording and presenting information.

**Personal Effectiveness – you will develop:**

1. A willingness and ability to learn and acquire knowledge.
2. An ability to be creative, innovative and original in your approach to research.
3. Flexibility and open-mindedness.
4. Self-awareness and the ability to identify own training needs.
5. Self-discipline, motivation, and thoroughness.
6. An ability to recognise boundaries and draw upon/use sources of support as appropriate.
7. Show initiative, work independently and be self-reliant.

**Communication Skills – you will learn how to:**

1. Write clearly and in a style appropriate for the purpose, e.g. progress reports, published papers, and PhD thesis.
2. Construct coherent arguments and articulate ideas clearly to a range of audiences, formally and informally through a variety of techniques.
3. Constructively defend research outcomes at seminars and in examinations.
4. Contribute to promoting the public understanding of your research field.
5. Effectively support the learning of others when involved in teaching, mentoring or demonstrating activities.

**Networking and Teamwork – you will:**

1. Develop and maintain co-operative networks and working relationships with supervisors, colleagues and peers, within the institution and the wider research community.
2. Be able to understand your behaviour and its impact on others when working in and contributing to the success of formal and informal teams.
3. Listen, give and receive feedback and respond perceptively to others.

**Career Management – you will develop:**

1. An appreciation for the need for and show commitment to continued professional development.
2. Ownership for and manage your career progression, set realistic and achievable career goals, identify and develop ways to improve your employability.
3. Demonstrated insight into the transferable nature of research skills to other work environments and the range of career opportunities within and outside academia.
4. An ability to present your skills, personal attributes and experiences through effective CVs, applications and interviews.