



Universität  
Zürich <sup>UZH</sup>

ETH zürich



Universität  
Basel

Zurich-Basel Plant Science Center

# ANNUAL REPORT



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## Our Mission

- » *Promote research in plant sciences, at scales from molecules to landscapes.*
- » *Facilitate cooperation and enhance research synergies at national and international levels.*
- » *Initiate and support inter- and transdisciplinary research, thereby exploring new horizons.*
- » *Apply the results of research in plant sciences and create added value to ecosystem management, sustainable agriculture and protection of environment.*
- » *Guarantee future competence in the field of plant sciences by providing excellent teaching and training programs.*
- » *Advance the curricula in plant science education with innovative learning concepts, materials and courses.*
- » *Intensify co-operation with business, politics, and government.*
- » *Encourage dialogue with the public by contributing a scientific point of view to social, economic and political topics.*

# Editorial

We face emergent environmental and societal challenges. Climate change is increasingly influencing the Earth's natural systems. The consequences are noticeable at multiple scales from a local, regional and global level. Understanding the interactions between plants and environmental changes are at the heart of the center's research activities. The 45 professors and 53 group leaders combine their individual research excellence to create an interdisciplinary profile in plant science research. Research focuses on the appearance and structure of plants, their vital processes, their origin and distribution, their behaviour and their interactions among themselves and with their environment. This year's topic of the PSC Symposium explored plant-related networks. Ranging from molecular to environmental levels those interactions are indispensable for plant growth, plant reproduction, nutrient exploitation and disease resistance. Currently, computational advances and high-throughput technologies bring us new paths to study plant-based networks. Systems approaches are widespread in the analysis of organisms and applications of plant science research. However, technology-driven innovations need to co-evolve with socio-economic transitions. Social transformation through research and innovation is a key element in the discussion as to how the global community can respect environmental and economic constraints in a resource-limited world. In response, scientists play an emerging role in the science-society dialogue. Many of the PSC fellows deal with this challenge. With its fellowship programs, PSC offers graduate students and post-doctoral fellows a broad-based background from which they can smoothly move into academia or non-academic careers – raising the impact of plant sciences in society.

Thank you very much to all of you for making this possible and 2020 a successful year for the PSC.

Sincerely, Manuela Dahinden, Melanie Paschke & Bruno Studer (PSC chair)



# 1 PSC Impact

The Zurich-Basel Plant Science Center (PSC) is an internationally recognized competence center, promoting excellence in plant science. More than 600 scientists at the center are recognized for their contributions to the research community, both nationally and internationally.

PSC gives plant science research a strong voice in Switzerland and abroad, with PSC serving as lead organization for several national and international research and training initiatives.

PSC has demonstrated capacity to enable research synergies through solicitation and implementation of innovative fellowships, combined with impactful teaching and outreach approaches. The research projects cover a broad scope of plant sciences, from basic research to application and translation into society.

PSC has created new opportunities for plant science research, education and outreach by successfully securing third-party funding of more than 31 MCHF since 2003, mainly through highly competitive programs from the European research framework programs FP7 and Horizon 2020, in collaboration with industry and international renowned foundations.

## Research

PSC has funded **144 PhD and postdoctoral fellowships** so far; many of these projects represent interdisciplinary, collaborative and policy-relevant research. A total of 56 fellowships have been at University of Zurich, 54 at ETH Zurich, 17 at University of Basel and 17 hosted internationally. **PSC Fellowship Programs** attract excellent international researchers that apply inter- and transdisciplinary approaches at various scales – from studies on molecular level to ecosystem research. Fellows are working on technical and social innovations and solutions tackling eminent global challenges such as food security and sustainable agriculture, adaptation and mitigation to climate change, resource efficiency and conservation of ecosystem services and biodiversity, land use changes, energy sciences and digital transformation.

PSC members have access to **service-oriented research management structures** throughout the life cycle of the fellowships, including organization of peer-reviewed candidate selection processes, research contract administration, EU-project management, financial management, reporting and impact analysis. PSC promotes plant science-related calls and funding opportunities among its members and coordinates one to two large-scale proposal submissions per year.

PSC has built up a network of +50 partner organizations, including Industry, Public and Civil Society, NGOs, IGOs and GOs. PSC is also supporting young researchers in their national and international mobility.

PSC members are active in different scientific advisory boards and councils dedicated to providing **science-based evidence** to the EU Parliament and to national and European policy and decision makers, e.g., the European Academies' Science Advisory Council (EASAC), the Intergovernmental Panel on Climate Change (IPCC), Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

PSC provided input to the Biology Roadmap for Swiss Research Infrastructures 2025–2028 defining emerging infrastructural needs of our plant science community.

## Education

Through thoughtfully designed curricula, PSC guarantees future competence in the plant sciences. PSC coordinates the **PhD Program in Plant Sciences** and the **PhD Program in Science & Policy** and has built accredited structured curricula and mentoring offers in Frontiers of Plant Sciences, Responsible Research and Innovation (RRI), Science and Policy, Innovation Management, Open Data Management and Data Science.

PSC has core infrastructure and personnel to manage and implement training for 500 participants per year. In-house teaching expertise in transferable skills further assures the quality of training. The **PSC Summer Schools** foster critical thinking and take a systemic perspective in all areas of plant sciences and training competencies from the Education in Sustainability Development (ESD) curriculum.

PSC offers eight different **Science & Policy training workshops and workbooks**. The training increases students' capacity to act as socially engaged scientists and undertake science diplomacy beside their technical specializations. Students acquire a portfolio of competencies and skills for implementing RRI and for evidence-based policy-making.

PhD students and postdoctoral fellows have access to **mentoring** that complement the scientific supervision of the PI and thesis committee. Topics include science-policy dialogue, science communication and public engagement. PSC promotes **internships** in policy organizations and facilitates the work on policy outcomes for the channels of the policy partners.

Since 2018, PSC coordinates the *feminno* mentoring program that offers **career development** in Life Sciences for female scientists to develop their ideas at the science-innovation interface. So far, 77 PhD students and postdocs took advantage of this opportunity. The six-months program offers training in innovation management and leadership as well as company visits.

## Outreach

PSC sees itself as a mediator of socially relevant research topics and thus actively contributes knowledge to public and political discourse.

The annual PSC Symposium highlights and discusses advances in plant and environmental sciences. The broad diversity that our center brings, across scientific areas and perspectives, supports our work of fostering interdisciplinary stewardship.

PSC has implemented various outreach formats, including public round tables, expert conferences, school class programs, online tutorials and science holiday camps. By combining creative and inquiry-based learning methods, PSC sets benchmarks for Switzerland's science communication and education. Three SNSF-funded Agora projects reached out to more than 4,000 children and 60 school classes so far.

PSC contributes to large science fairs such as Scientifica, Zukunftstag, DigitalSwitzerland, Festival Stadt Natur, OLMA and the International Fascination of Plants Day.

The **Climate Garden 2085** public art & science experiment is uniquely positioned to contribute solutions for Education for Sustainable Development (ESD). Installed four times as a large public experiment in Zurich, Bern, Rapperswil and San Francisco as well as in 15 schools, the *Climate Garden* has attracted more than 25,000 visitors. The *Garden* has proven to be a useful platform for students' own experiments and shared understanding of climate change.

Biannual **PSC Newsletters** feature scientific highlights and talented fellows. The PSC Managing Office publishes peer-reviewed publications, press articles, media releases, books, movies and Open Educational Resources (OERs). PSC maintains a website and several blogs and social media accounts.



## 2 PSC Services

### Advocating

#### Research visibility

Newsletters, websites, dossiers, blogs, videos, exhibitions

#### Strategic roadmaps and white papers

Input to national and international agenda and evidence-based policymaking

#### Participation formats for public and stakeholders

Expert conferences, public round tables, public fora and dialogue formats

#### Capacity building and knowledge exchange

Building of research consortia and organization of international symposia

### Education

#### Coordination of PhD programs

- Plant Sciences
- Science and Policy

#### Organization of summer schools

- Transdisciplinary, systemic perspectives and sustainable development

#### Course and curricula development

- Plant Sciences
- Science and Policy
- Responsible Research and Innovation
- Open Data
- Innovation Management
- Data Sciences
- Transferable Skills

#### Mentoring and career development

- Training courses
- Industry visits
- Internships in policy organizations
- Design of meaningful outreach formats
- *feminno* career and innovation program for female scientists

#### International PhD recruitment

- With two deadlines per year

### Research Management

#### Fundraising

##### For:

- PhD and postdoc fellowships
- Research collaboration projects
- Bottom-up initiatives
- Public-private partnerships
- Participative research projects

##### Funding sources:

- EU-research framework programs
- SNSF, SUK, Federal Offices
- Foundations
- Sponsorships

#### Project management

- International evaluation of research proposals
- Legal agreements and counseling for ethical compliance and intellectual property rights
- Financial administration
- Reporting and quality assurance
- Organization of training and networking events
- Outreach and impact generation

### Outreach

#### Science engagement

- Climate Garden 2085
- Citizen science

#### Science education

- School class workshops and project weeks
- Holiday science camps
- Continuing education for teachers

#### Scientainment and exhibitions

- Science nights at museums
- Participation in science festivals and fairs

## 3 PSC Members

PSC is one of the largest competence centers in Switzerland. By the end of 2020, 45 professorships were involved as full members: 24 from ETH Zurich (ETHZ), 18 from University of Zurich (UZH) and three from University of Basel (UBASEL). In addition, 53 group leaders\*, +150 postdoctoral fellows, +160 PhD students\*\* and +50 staff members in education and lab management are part of the center. Additionally, seven associated professorships received a fellowship from PSC.

\* List of affiliated group leaders: [www.plantsciences.uzh.ch/en/aboutus/groupleaders.html](http://www.plantsciences.uzh.ch/en/aboutus/groupleaders.html)

\*\* 115 PhD students were registered in our PhD programs as of 31.12.2019 and approx. 50 PhD are members in PSC groups and registered within other PhD programs.

### ETH Zurich – Department of Environmental Systems Science

#### Institute of Agricultural Sciences



**Nina Buchmann**  
Grassland Sciences  
<https://gl.ethz.ch>



**Stefano Mintchev**  
Environmental Robotics  
<https://erl.ethz.ch>



**Bruno Studer**  
Molecular Plant Breeding  
<https://mpb.ethz.ch>



**Consuelo De Moraes**  
Biocommunication  
<https://biocommunication.ethz.ch>



**Christian Schöb**  
Agricultural Ecology  
<https://agroecol.ethz.ch>



**Achim Walter**  
Crop Science  
<https://kp.ethz.ch>



**Emmanuel Frossard**  
Plant Nutrition  
<https://www.ias.ethz.ch>



**Johan Six**  
Sustainable Agroecosystems  
<https://sae.ethz.ch>



**Rachael Garrett**  
Environmental Policy  
<https://usys.ethz.ch/forschung.html>



**Benjamin Stocker**  
Computer Assisted Ecosystem  
Sciences  
<https://computationales.ethz.ch>

#### Institute of Integrative Biology



**Jake Alexander**  
Plant Ecology  
<https://plantecology-alexander.ethz.ch>



**Bruce McDonald**  
Plant Pathology  
<https://path.ethz.ch>



**Tom Crowther**  
Global Ecosystem Ecology  
<https://gee.ethz.ch>



**Alex Widmer**  
Plant Ecological Genetics  
<https://peg.ethz.ch>

#### Institute of Terrestrial Ecosystems



**Andrea Carminati**  
Physics of Soils and Terrestrial  
Ecosystems  
<https://pose.ethz.ch>



**Jaboury Ghazoul**  
Ecosystem Management  
<https://ecology.ethz.ch>



**Sebastian Dötterl**  
Soil Resources  
<https://soilres.ethz.ch>



**Loïc Pellissier**  
Landscape Ecology  
<https://landecology.ethz.ch>

#### Institute of Microbiology



**Julia Vorholt**  
Microbial Physiology  
<https://micro.biol.ethz.ch/research/vorholt.html>

## ETH Zurich – Department of Biology

## Institute of Molecular Plant Biology



**Kirsten Bomblies**  
Molecular Plant Sciences  
<https://impb.ethz.ch/research/research-evo.html>



**Antia Rodríguez Villalón**  
Plant Vascular Development  
<https://impb.ethz.ch/research/research-pvd.html>



**Samuel C. Zeeman**  
Plant Biochemistry  
<https://impb.ethz.ch/research/research-pbc.html>



**Wilhelm Grissem**  
Plant Biotechnology  
<https://impb.ethz.ch/research/research-pb.html>



**Clara Sánchez-Rodríguez**  
Plant Cell Biology  
<https://impb.ethz.ch/research/research-pcb.html>

## University of Zurich

## Institute of Plant and Microbial Biology



**Sylvain Bischof**  
Plant Development  
<https://www.botinst.uzh.ch/en/research/epigenetics/people/sb>



**Marcel van der Heijden**  
Plant-Soil Interactions  
<https://www.botinst.uzh.ch/en/research/agroecology.html>



**Cyril Zipfel**  
Molecular and Cellular Plant Physiology  
<https://www.botinst.uzh.ch/en/research/plantsensing/zipfel.html>



**Leo Eberl**  
Microbiology  
<https://www.botinst.uzh.ch/en/research/microbiology/eberl.html>



**Beat Keller**  
Molecular Plant Biology  
<https://www.botinst.uzh.ch/en/research/genetics/bkeller.html>



**Ueli Grossniklaus**  
Plant Developmental Genetics  
<https://www.botinst.uzh.ch/en/research/development/grossnik.html>



**Anne Roulin**  
Plant Evolutionary Genomics  
<https://www.botinst.uzh.ch/en/research/evogenomics/roulin.html>

## Department of Geography



**Alexander Damm**  
Remote Sensing of Water Systems  
<https://www.geo.uzh.ch/geolean/en/department/Staff/?content=alexanderdamm>



**Maria J. Santos**  
Co-Evolution of Social-Ecological Systems  
<https://www.geo.uzh.ch/geolean/en/units/ess/staff/?content=mariajsantos>



**Meredith C. Schuman**  
Spatial Genetics  
<https://www.geo.uzh.ch/en/units/sg.html>

## Department of Systematic and Evolutionary Botany



**Elena Conti**  
Evolutionary Plant Biology  
<https://www.systbot.uzh.ch/de/Personen/ProfessorenundDozenten/ElenaConti.html>



**Florian Schiestl**  
Plant Pollinator Interactions  
<https://www.systbot.uzh.ch/de/Personen/ProfessorenundDozenten/FlorianSchiestl.html>



**Tobias Züst**  
Plant Insect Interactions  
<https://www.systbot.uzh.ch/de/Personen/ProfessorenundDozenten/Tobias-Zuest.html>

## Department of Evolutionary Biology and Environmental Studies



**Jordi Bascompte**  
Mutualistic Networks  
[https://www.ieu.uzh.ch/en/staff/member/bascompte\\_jordi.html](https://www.ieu.uzh.ch/en/staff/member/bascompte_jordi.html)



**Anna-Liisa Laine**  
Plant Pathogen Interactions  
[https://www.ieu.uzh.ch/en/staff/member/laine\\_anna\\_liisa.html](https://www.ieu.uzh.ch/en/staff/member/laine_anna_liisa.html)



**Lukas Keller**  
Animal Evolutionary Biology  
[https://www.ieu.uzh.ch/en/staff/member/keller\\_lukas.html](https://www.ieu.uzh.ch/en/staff/member/keller_lukas.html)



**Kentaro Shimizu**  
Evolutionary Functional Genomics  
[https://www.ieu.uzh.ch/en/staff/member/shimizu\\_kentaro.html](https://www.ieu.uzh.ch/en/staff/member/shimizu_kentaro.html)

## Institute of Evolutionary Medicine



**Verena Schünemann**  
Paleogenetics  
<https://www.med.uzh.ch/de/UeberdieFakultaet/fakultaetsmitglieder/schuenemannverena.html>

## University of Basel

## Department of Environmental Sciences



**Ansgar Kahmen**  
Physiological Plant Ecology  
<https://duw.unibas.ch/de/personen/ansgar-kahmen/>



**Klaus Schläppi**  
Plant Microbe Interactions  
<https://duw.unibas.ch/en/persons/klaus-bernhard-schlaeppli/>



**Yvonne Willi**  
Plant Ecology and Evolution  
<https://duw.unibas.ch/de/willi/>

## 4 PSC Governance

### General Assembly

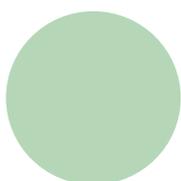
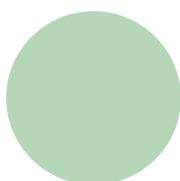
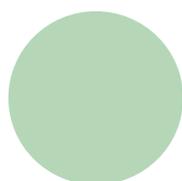
The PSC General Assembly is composed of all affiliated professors and one additional representative from each research group (nominated by the professor). The PSC General Assembly meets once a year.

### Steering Committee

The PSC Steering Committee is composed of at least one representative of each partner institute. It is responsible for management and strategic development of the competence center. Steering Committee members elect a colleague as chair for two-year terms.

#### PSC Steering Committee

<b>Prof. Bruno Studer</b>	ETH Zurich	Since 2019, Chair since 2019
<b>Prof. Samuel C. Zeeman</b>	ETH Zurich	Since 2011, Chair 2012-2018
<b>PD Dr. Thomas Städler</b>	ETH Zurich	Since 2012
<b>Prof. Ueli Grossniklaus</b>	University of Zurich	2005-2020, Chair 2008-2011
<b>Prof. Elena Conti</b>	University of Zurich	Since 2010
<b>Prof. Stefan Hörtensteiner</b>	University of Zurich	2013-2020
<b>Prof. Maria Joao Santos</b>	University of Zurich	Since 2020
<b>Prof. Kentaro Shimizu</b>	University of Zurich	Since 2013
<b>PD Dr. Günter Hoch</b>	University of Basel	Since 2016
<b>Prof. Yvonne Willi</b>	University of Basel	Since 2016



## Management Office

The PSC Management Office initiates and facilitates collaborative research, education and outreach activities of the competence center and supports the Steering Committee in the fulfillment of its functions.



**Manuela Dahinden**

[Managing Director](#) –  
Head of Research and Outreach  
*20 years expertise in research management and science communication, PhD in Molecular Biology*



**Melanie Paschke**

[Managing Director](#) –  
Head of Education and Mentoring  
*20 years expertise in research management and higher education curriculum design, PhD in Ecology*



**Sylvia Martinez**

[Coordination Basel](#)  
*20 years expertise in research coordination, environmental consultation and Access and Benefit Sharing, M.Sc. in Biology*



**Luisa Last**

[PhD Program Coordinator](#)  
*10 years expertise in PhD education and project coordination, PhD in Agricultural Science*



**Romy Kohlmann, M.Sc.**

[EU Program Coordinator](#),  
*10 years expertise in EU project management and financial administration, M.Sc. in Political Science and Government*



**Juanita Schläpfer**

[Outreach Manager](#)  
*20 years expertise in exhibition design and art & science communication, PhD in Transdisciplinary Research*



**Ulrike von Groll**

[Outreach Project Assistant](#)  
*20 years expertise in science outreach, event management and marketing communication*



**Dubravka Vrdoljak**

[Project Assistant](#)  
*2 years experience in PhD program administration and science education, trainer in citizen dialogue for a sustainable food system, M.Sc. in Food Science*



**Daniela Gunz**

[feminno Program Coordinator](#)  
*6 years expertise as career coach and mentor for innovation and career development, PhD in Biology*

### Internships and former members

<b>Dr. Ute Budlinger</b>	<i>feminno Program Coordinator</i>	2017–2020
<b>Dr. Alexandra Rosakis</b>	<i>Outreach Assistant</i>	2018–March 2021
<b>Christina Vaccaro, M.Sc.</b>	<i>Outreach Assistant</i>	October 2020–June 2021
<b>Karolina Borg</b>	<i>Outreach Assistant</i>	October 2020–March 2021

## 5 Activity Report of PSC Fellowship Programs

### RESPONSE Doctoral Program

The RESPONSE Doctoral Program (RESPONSE DP) co-funded by the European Commission (MSCA-CO-FUND-H2020) contributes to the EUs' coordinated efforts for stewardship in transformation to sustainable food and energy systems and to ensure sustainable land use. RESPONSE DP combines excellent inter-sectoral research with the empowering of 35 new PhD students to interact with stakeholders, policy-makers and the public to make sure that research is responsive to the needs of society.

» *Sustainable food systems*

» *Sustainable transitions in the energy sector*

» *Sustainable land use decisions*

#### Science

RESPONSE DP addresses challenges in the fields of sustainable food system, sustainable transitions in the energy sector and sustainable land use decisions. PhD students benefit from the research environment of ETHZ, UZH and UBASEL and the support of three competence centers: the PSC, the World Food System Center and the Energy Science Center of ETH Zurich.

#### Training

The PhD students will collaborate with a partner organization at the science/policy/society interface or with enterprises. In addition, they will spend a mandatory secondment of 3–12 months. With their partner organization and stakeholders, PhD students will co-create societally relevant and novel research and innovation outcomes. Each PhD student will contribute to one Stakeholder Meeting and one Citizen Consensus Conference.

PhD students will be enrolled in the *PSC PhD Program Science and Policy*. They will be trained in different fields such as: communication of scientific evidence to policy-makers and the public; involvement of different stakeholder groups in a participative process to co-produce knowledge; policy development and endorsement in Europe and at global level; and establishing contacts to policy-implementing organizations, industry, national and international NGOs, GOs and IGOs.

[www.plantsciences.uzh.ch/en/research/fellowships/response.html](http://www.plantsciences.uzh.ch/en/research/fellowships/response.html)



RESPONSE DP is funded by the H2020 Marie Skłodowska-Curie Actions Innovative Training Networks – GA No. 847585



**Katharina Jung**

*Wheat responses in changing climates studied by Asian varieties as underexploited genetic and genomic resources*

PI: Prof. Kentaro Shimizu, Department of Evolutionary Biology and Environmental Studies, UZH

Partner: Masahiro Kishii, Senior Scientist, International Maize and Wheat Improvement Center (CIMMYT)



**Linda Frattini**

*Developing a source-to-sink value chain for Swiss industrial carbon dioxide via a holistic approach*

PI: Prof. Marco Mazzotti, Department of Mechanical and Process Engineering, ETHZ

Partners: Dr. Cornelia Schmidt-Hattenberger, Senior Research Scientist, Group Leader Geological Storage, Deutsches GeoForschungsZentrum GFZ Potsdam; Dr. Jan-Justus Andreas, Policy Manager Industry, Bellona Europa (Brussels, Belgium)



**Dabwiso Sakala**

*The role of biodiversity in sustainable energy transitions for charcoal*

PI: Prof. Maria Joao Ferreira dos Santos, Department of Geography, UZH

Partner: Clovis Grinand, Researcher / Project Manager, Nitidae France



**Yuanyuan Liang**

*Towards improved crop resilience – discovering essential factors that control chloroplast development*

PI: Prof. Samuel C. Zeeman and Dr. Barbara Pfister, Department of Biology, ETHZ

Partner: Dr. Klára Panzarová, PSI (Photon Systems Instruments), Czech Republic



**Danli Fei**

*Plant reproduction: chromatin-based controls in the reproductive lineage*

PI: PD Dr. Célia Baroux, Department of Plant and Microbial Biology, UZH

Partner: Dr. Peter Majer, Bitplane AG, Zurich



**Dusan Denic**

*EpiBreed: Unlocking epigenetic variation to breed sustainable crops in a changing climate*

PI: Prof. Ueli Grossniklaus, Department of Plant and Microbial Biology, UZH

Partner: Marc W. Schmid, Director, MWSchmid GmbH (MWS), Zurich



**Fei Wu**

*Role of bioenergy in sustainable energy systems*

PI: Prof. Anthony Patt and Dr. Stefan Pfenninger, Department of Environmental Systems Science – Climate Policy, ETHZ  
Partner: Dr. Adrian Müller, Research Institute of Organic Agriculture (FiBL), Frick



**Reah Gonzales**

*Towards improving forage productivity under future climates*

PI: Prof. Bruno Studer, Department of Environmental Systems Science, Institute of Agricultural Sciences, ETHZ  
Partner: Stephane Charrier, Station Manager / Breeder, Royal Barenbrug Group, France



**Laurent Giguere**

*Developing climate ready apple production systems in Switzerland*

PI: Prof. Rachael Garrett, Department of Environmental Systems Science & Department of Humanities, Social and Political Sciences, ETHZ  
Partner: Swiss Fruit Association, Switzerland



**Manuel Belanche Guadas**

*Quality-enhanced power semiconductor devices for reliable energy conversion (QEPSREC)*

PI: Prof. Ulrike Grossner, Department of Information Technology and Electrical Engineering, Advanced Power Semiconductor Laboratory, ETHZ  
Partner: Florian Krippendorf, mi2-factory GmbH, Jena, Germany



**Bessie Noll**

*Energy transition and the transport sector – assessing the impact of European and national policies on future drive technology mixes, energy use, and emission pathways*

PI: Ass. Prof. Tobias Schmidt, Department of Humanities, Social and Political Sciences – Energy Politics, ETHZ  
Partner: Nils Epprecht, General Manager, Schweizerische Energiestiftung (SES), Zurich



**Alberto Linares**

*ChromoBreed: From chromatin to plant breeding*

PI: Prof. Sylvain Bischof, Department of Plant and Microbial Biology, UZH  
Partner: Dr. Etienne Bucher, epibreed AG, Basel



**Linda Brodnicke**

*Engineering the policy-enabled transition to sustainable multi-energy microgrids*

PI: Prof. Giovanni Sansivini, Department of Mechanical and Process Engineering, ETHZ

Partner: Swiss Federal Office of Energy, Switzerland



**Yutang Chen**

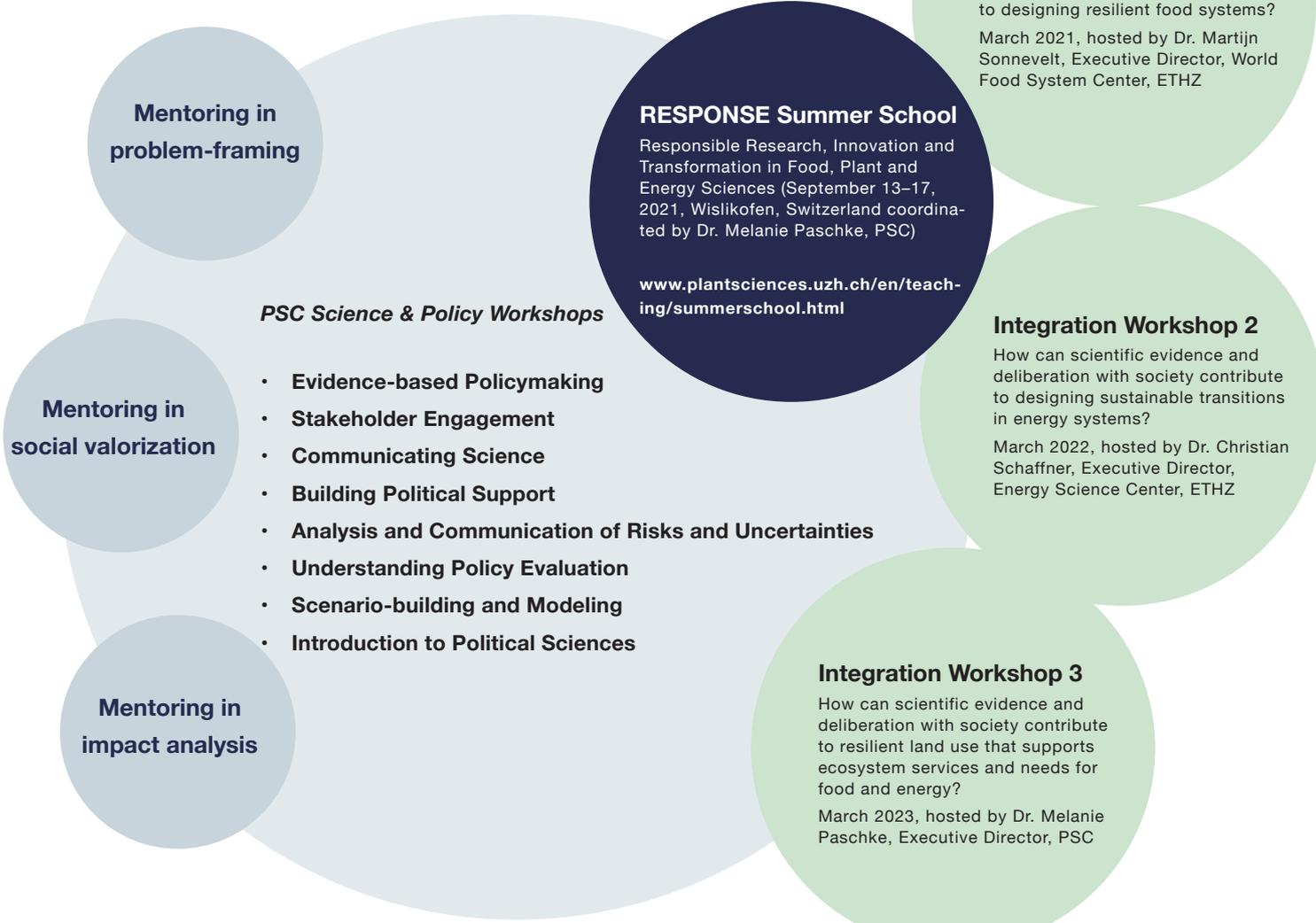
*Exploitation of genomic resources to spike forage breeding programs*

PI: Prof. Bruno Studer, Department of Environmental Systems Science, Institute of Agricultural Sciences, ETHZ

Partner: DLF Seeds A/S, Denmark

+ 20 fellows starting in 2021

**Modules of the RESPONSE Training and Mentoring Framework**



## PSC-JRC Collaborative Doctoral Program

The PSC-JRC Collaborative Doctoral Program is hosted by ETH Zurich, University of Zurich and the Joint Research Center (JRC) in the topics *Soil and land use change* and *Bio-economy and forests*. JRC's mission is to support EU policy and decision-making. The doctoral program started in 2019 and four PhD students are already part of it. The PhD students are enrolled in the *PSC PhD Program Science and Policy*.

[www.plantsciences.uzh.ch/en/research/fellowships/jrc.html](http://www.plantsciences.uzh.ch/en/research/fellowships/jrc.html)

### Soil and land use change

The Institute for Environment and Sustainability (IES) is one of the seven JRC institutes and provides scientific and technical support to EU strategies for the protection of the environment and sustainable development.

JRC is the leading institution in Europe for the development of policy relevant soil data and information systems. It provides necessary scientific data, information and knowledge for supporting the numerous EU policies relevant to soils and land use. JRC scientists have expertise in soil sciences, modeling, spatial analysis, geography and agronomy.

JRC is leading European and global scientific networks on soil data science such as: The Intergovernmental Technical Panel on Soils (ITPS) of the Global Soil Partnership (GSP) and The Land Degradation and Restoration Assessment of the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES). Furthermore, JRC is hosting the secretariat of the European Soil Bureau Network (ESBN), the European Soil Partnership (ESP) and the European Soil Data Centre (ESDAC).

### Bioeconomy and forests

The Bioeconomy Unit provides scientific support to several EU policies related to sustainable production, as well as the use of biological resources and their conversion to value added products, such as construction material, food, feed, bioenergy and bio-based products. The Bioeconomy Unit focuses on:

(1) Sustainable management of forests and forest resources including the development of novel methods to monitor forest resources and carbon emissions.

In the tropics, these methods focus on deforestation and forest degradation. In Europe, JRC investigates, among others, how climate change and biotic disturbance agents (e.g., pests), affect resilience in European forest ecosystems, by researching both the early detection of their effects, as well as longer term scenarios. JRC develops remote sensing methodologies across a range of spatial and temporal scales.

(2) Enhancement of knowledge about biomass supply, demand, and flows (including waste) both at EU and global levels. JRC is in charge of assessing and modeling EU forests and the forest-based sector in support of the EU Bioeconomy Strategy and is also responsible of the EU greenhouse gas (GHG) inventory for the forest sector. In this context, JRC studies the interactions with agriculture and other biobased sectors (e.g., bioenergy, bio-based industry) and develops methods to assess the sustainability of forest-based supply chains.

(3) Assessment of environmental benefits and burdens associated to the production and consumption of products along supply chains. Ongoing JRC projects related to Life Cycle Assessment (LCA) embrace several scales: from micro (e.g., goods, services, organizations) and meso (e.g., industrial sectors) to macro scale (e.g., EU-wide policy options).

In addition, JRC is supporting the development and improvement of the Environmental Footprint methodology and is involved in research activities related to the assessment of environmental impact of EU consumption in key areas such as food, mobility, housing, including their evaluation against planetary boundaries.

*As the European Commission's science and knowledge service, the Joint Research Centre supports EU policies with independent scientific evidence throughout the whole policy cycle.*



**Clara Antonia Klöcker**

*Modelling biodiversity impacts in LCA*

PIs: Prof. Stefanie Hellweg and Dr. Stephan Pfister, Inst. of Environmental Engineering (IfU), Ecological Systems Design, ETHZ; Prof. Loïc Pellissier, Landscape Ecology at the Institute of Terrestrial Ecosystems, ETHZ; Dr. Serenella Sala, Scientific officer, Bioeconomy unit of the Directorate D – Sustainable Resources, European Commission, Joint Research Centre, Ispra, Italy



**Maëva Labouyrie**

*Soil biodiversity and ecosystem functioning assessment across Europe*

PIs: Prof. Dr. Marcel van der Heijden, Department of Plant and Microbial Biology, UZH & Plant-Soil Interactions Agroscope Reckenholz, Zurich; Dr. Alberto Orgiazzi, Project officer, European Commission, Joint Research Centre, Ispra, Italy

Other project team members: Dr. Ferran Romero, Postdoctoral researcher, Plant-Soil Interactions group at Agroscope Reckenholz, Zürich; Dr. Arwyn Jones & Dr. Panos Panagos, Scientific officers, European Commission, Joint Research Centre, Ispra, Italy; Prof. Dr. Leho Tedersoo, Professor in Mycorrhizal Studies, University of Tartu, Institute of Ecology and Earth Science, Estonia



**Anna Muntwyler**

*Modelling phosphorus cycle in EU agricultural soils and assessing land impact and land mitigation options*

PIs: Prof. Stefanie Hellweg and Dr. Stephan Pfister, Inst. of Environmental Engineering (IfU), Ecological Systems Design, ETHZ; Dr. Panos Panagos and Dr. Emanuele Lugato, D3 – Land Resources, European Commission, Joint Research Centre, Ispra, Italy; Dr. Adrian Müller, Research Institute of Organic Agriculture (FiBL)



**Caspar Roebroek**

*Constraining historical and future estimates of land cover and land management effects on climate*

PIs: Prof. Sonia Seneviratne and Dr. Edouard Davin, Institute for Atmospheric and Climate Science (IAC), ETHZ; Dr. Alessandro Cescatti and Gregory Duveiller, Senior researchers, European Commission, Joint Research Centre, Ispra, Italy



This program receives funding from the European Union under the Collaborative Doctoral Partnership Agreement No 35317 (ETH Zurich) and Agreement No 35594 (University of Zurich) with the European Commission Joint Research Centre.

## PlantHUB Fellowship Program

PlantHUB – Boosting technology transfer and responsible research and innovation (RRI) in plant sciences – was an European Industrial Doctoral Programme (EID) funded by the H2020 PROGRAMME Marie Curie Actions – People, Initial Training Networks (H2020-MSCA-ITN-2016) from December 2016 until November 2020. The research projects addressed different angles of innovation in plant breeding and production. Research and Innovation (R+I) was performed in association mapping, marker-assisted breeding, high-throughput sequencing and imaging technologies, non-invasive phenotyping, data processing, intelligent lighting systems and isotope analytics.

The PlantHUB students were enrolled in the *PSC PhD Program in Plant Sciences* with training in technical and research skills, technology transfer, innovation management, entrepreneurship, stakeholder & public engagement, Open Data management and bioethics.

PlantHUB published recommendations on RRI in plant sciences research and education at the EU RRI Toolbox.

### Publications

Vogt, M., Yates, S., Sykes, T., Luesink, W., Koch, M., Studer, B. (2020). Developing heterotic groups for successful hybrid breeding in perennial ryegrass. *Agronomy* 10, 1410. <https://doi.org/10.3390/agronomy10091410>

Cropano, C., Place, I., Manzanares, C., Do Canto, J., Lübberstedt, T., Studer, B., Thorogood, D. (2021). Characterisation and practical use of self-compatibility in outcrossing grass species. *Annals of Botany* 127 (7), 841. <https://doi.org/10.1093/aob/mcab043>

Diop, S.I., ..., Szövényi, P. (2019). A pseudomolecule-scale genome assembly of the liverwort *Marchantia polymorpha*. *The Plant Journal* 101 (6), 1378. <https://doi.org/10.1111/tpj.14602>

Li, F.W., ..., Szövényi, P. (2020). *Anthoceros* genomes illuminate the origin of land plants and the unique biology of hornworts. *Nature Plants* 6, 259. <https://doi.org/10.1038/s41477-020-0618-2>

Szövényi, P., Gunadi, A., Li, F.W. (2021). Charting the genomic landscape of seed-free plants. *Nature Plants* 7, 554. <https://doi.org/10.1038/s41477-021-00888-z>

Rich, M.K., ..., Szövényi, P., Bucher, M., Delaux, P.-M. (2021) Lipid exchanges drove the evolution of mutualism during plant terrestrialization. *Science* 372 (6544), 864. <https://doi.org/10.1126/science.abg0929>

Sabrina Flütsch, S., Nigro, A., Conci, F., Fajkus, J., Thalmann, M., Trtílek, M., Panzarová, K., Santelia, D. (2020). Glucose uptake to guard cells via STP transporters provides carbon sources for stomatal opening and plant growth. *EMBO Reports*, 21, 8. <https://doi.org/10.15252/embr.201949719>

Chiang, C., Olsen, J.E., Basler, D., Bänkestad, D., Hoch, G. (2019). Latitude and weather influences on sun light quality and the relationship to tree growth. *Forests* 10 (8), 610. <https://doi.org/10.3390/f10080610>

Chiang, C., Bänkestad, D., Hoch, G. (2020). Reaching natural growth: The significance of light and temperature fluctuations in plant performance in indoor growth facilities. *Plants* 9, 1312. <https://doi.org/10.3390/plants9101312>

[www.plantsciences.uzh.ch/en/research/fellowships/PlantHUB.html](http://www.plantsciences.uzh.ch/en/research/fellowships/PlantHUB.html)



PlantHUB received funding by the H2020 Marie Skłodowska-Curie Actions Innovative Training Networks – GA No. 722338



**Boosting technology transfer and responsible research and innovation (RRI) in plant sciences**



**Mercedes Thieme**  
*Exploiting genetic variation in barley for crop quality improvement*



**Boosting technology transfer and responsible research and innovation (RRI) in plant sciences**



**Anton Hochmuth**  
*Using advanced imaging and profiling technologies to map starch biosynthesis in barley endosperm*



**Boosting technology transfer and responsible research and innovation (RRI) in plant sciences**



**Claudio Cropano**  
*Self-fertility for powerful grass hybrids*



**Boosting technology transfer and responsible research and innovation (RRI) in plant sciences**



**Maximilian Vogt**  
*Exploiting reproductive traits for hybrid breeding in grasses*



**Boosting technology transfer and responsible research and innovation (RRI) in plant sciences**



**Giacomo Potente**  
*Efficient capturing and third-generation sequencing of complex genomic regions*



**Boosting technology transfer and responsible research and innovation (RRI) in plant sciences**



**Issa Seydina Diop**  
*Large-scale isolation and sequencing of full chromosomes*



**Boosting technology transfer and responsible research and innovation (RRI) in plant sciences**



**Camilo Chiang**  
*Dynamic control system for multi-channel LED illumination systems to enable near-natural plant growth*



**Boosting technology transfer and responsible research and innovation (RRI) in plant sciences**



**Florian Cueni**  
*Dynamic isotope model to trace the geographical origin of agricultural products*

PIs: Prof. Samuel C. Zeeman, ETHZ & Dr. Ilka Braumann, Carlsberg Group, Carlsberg Research Laboratory (CLAB), Denmark | Prof. Bruno Studer, ETHZ & Dr. Michael Koch & Dr. Nic Boerboom, Deutsche Saatveredlung AG, Germany | Prof. Elena Conti & Dr. Peter Szövényi, UZH & Dr. Daniël Duijsings, BaseClear BV, The Netherlands | PD Dr. Günter Hoch, UBASEL & Daniel Bank-estad, Heliospectra AB, Sweden | Prof. Ansgar Kahmen, UBASEL & Dr. Markus Boner, Agrosolab GmbH, Germany

## PSC-Mercator Fellowships – Bridging Plant Science and Society

The Mercator Foundation Switzerland supported four PhD fellowships between 2015 and 2020. PSC facilitated the 4-years transdisciplinary training and mentoring framework for research and knowledge sharing at the interface of plant science and policy. The research projects addressed socially relevant issues from the perspective of two academic disciplines and in collaboration with at least one practice partner. Together, the partners integrated different methods, perspectives and solutions. The outcomes include stakeholder workshops, public round tables, a citizen science project and several blog contributions. The fellows were enrolled in the *PSC PhD Program Science and Policy*. They acquired competencies in stakeholder engagement and evidence-based policy making.

*Solutions to complex societal challenges, such as those embedded in the Sustainable Development Goals (SDGs), cannot to be generated based solely on disciplinary research but require a paradigm shift in research practice.*

OECD Global Science Forum - Addressing societal challenges using transdisciplinary research (2020) [publicdisplaydocuments.pdf/?cote=DSTI/STP/GSF\(2020\)4/FINAL&docLanguage=En](https://publicdisplaydocuments.pdf/?cote=DSTI/STP/GSF(2020)4/FINAL&docLanguage=En)

### Publications

Schaub, S., & Finger, R. (2020). Effects of drought on hay and feed grain prices. *Environmental Research Letters*, 15 (3), 034014. <https://iopscience.iop.org/article/10.1088/1748-9326/ab68ab/pdf>

Schaub, S., Buchmann, N., Lüscher, A., & Finger, R. (2020). Economic benefits from plant species diversity in intensively managed grasslands. *Ecological Economics*, 168, 106488. <https://doi.org/10.1016/j.ecolecon.2019.106488>

Schaub, S., Finger, R., Leiber, F. Probst, S., Kreuzer, M., Weigelt, A., Buchmann, N., Scherer-Lorenzen, M. (2020). Plant diversity effects on forage quality, yield and revenues of semi-natural grasslands. *Nature Commun* 11, 768. <https://doi.org/10.1038/s41467-020-14541-4>

Schaub, S., Buchmann, B., Lüscher, A., Finger, R. (2019). Economic benefits from plant species diversity in intensively managed grasslands. *Ecological Economics* 168. <https://doi.org/10.1016/j.ecolecon.2019.106488>

Vorkauf, M., Kahmen, A., Körner, C., Hiltbrunner, E. (2021). Flowering phenology in alpine grassland strongly responds to shifts in snowmelt but weakly to summer drought. *Alpine Botany* 131, 73. <https://doi.org/10.1007/s00035-021-00252-z>

Vorkauf, M., Marty, C., Kahmen, A., Hiltbrunner, E. (2021). Past and future snowmelt trends in the Swiss Alps: the role of temperature and snowpack. *Climatic Change* 165, 44. <https://doi.org/10.1007/s10584-021-03027-x>

[www.plantsciences.uzh.ch/en/research/fellowships/mercator.html](http://www.plantsciences.uzh.ch/en/research/fellowships/mercator.html)



[www.youtube.com/watch?v=Z7CM9j7d4es](https://www.youtube.com/watch?v=Z7CM9j7d4es)





**Maria Vorkauf**

*Changing snow loads and summer drought press alpine plants and force economy*

PIs: Prof. Ansgar Kahmen & Dr. Erika Hiltbrunner, UBASEL, Plant Physiology; Prof. Bruno Abegg, University of Innsbruck, Economic Geography; Dr. Christop Marty, WSL Institute for Snow and Avalanche Research (SLF), Davos, Climatology

Practice Partners: Sport AG Andermatt Sedrun, Korporation Ursern (Andermatt), Interacademic Commission for Alpine Studies (ICAS)

[https://blogs.ethz.ch/Science\\_and\\_Policy/2021/04/09/die-okologischen-und-okonomischen-konsequenzen-des-klimawandels-in-den-alpen-und-den-schweizer-skigebieten/](https://blogs.ethz.ch/Science_and_Policy/2021/04/09/die-okologischen-und-okonomischen-konsequenzen-des-klimawandels-in-den-alpen-und-den-schweizer-skigebieten/)



**Sergei Schaub**

*Values of species diversity in grassland production – An ecological economic assessment*

PIs: Prof. Nina Buchmann, ETHZ, Grassland Sciences; Prof. Robert Finger, ETHZ, Agricultural Economics and Policy

Practice Partners: Agridea; Arbeitsgemeinschaft zur Förderung des Futterbaus (AGFF); Federal Office for Agriculture (FOAG)

[https://blogs.ethz.ch/Science\\_and\\_Policy/2021/02/26/the-value-of-species-diversity-in-grasslands/](https://blogs.ethz.ch/Science_and_Policy/2021/02/26/the-value-of-species-diversity-in-grasslands/)



**Tiago Meier**

*Papaya: History of its agricultural use and improvements to adapt to a changing climate*

PIs: Prof. Ueli Grossniklaus, UZH, Plant Development; Prof. Dr. Jean-Philippe Vielle-Calzada, Langebio Cinvestav, Plant Genetics; Prof. Jorge Manuel Santamaria, Centro de Investigación Científica de Yucatán (CICY), Mexico, Biotechnology

Practice Partner: Mexican network for papaya production, propapaya.org

<https://video.ethz.ch/events/psc/imagefilm/edcca2fa-14a8-4c8c-bcc3-87336e60140f.html>



**Kevin Vega**

*Maintaining plant biodiversity in cities*

PIs: Prof. Christoph Kueffer, ETHZ and HSR Rapperswil, Urban Ecology; Prof. Dominik Siegrist, HSR Rapperswil, Landscape Architecture

Practice Partner: Grün Stadt Zürich

[https://blogs.ethz.ch/Science\\_and\\_Policy/2020/09/16/maintaining-plant-biodiversity-in-cities/](https://blogs.ethz.ch/Science_and_Policy/2020/09/16/maintaining-plant-biodiversity-in-cities/)

## PSC-Syngenta Fellowship Program

In March 2003, the ETH Zurich, the University of Zurich, the University Basel and Syngenta Crop Protection AG agreed to a long-term research collaboration that has been prolonged to 2023. The research projects are allocated through annual announcements. An Advisory Committee that consists of representatives of the three universities as well as Syngenta Crop Protection AG, was created for the selection of the projects. Applications for PhD and postdoc fellowships can be submitted by November 1. The funds are intended to promote innovative research in plant sciences. Research co-operation within PSC is an important criterion in the project selection. The calls are reserved for PSC professors and group leaders.

### Symposium

In November 2020, the 7<sup>th</sup> PSC-Syngenta Symposium (+60 participants, online) took place. Presentations by Syngenta fellows were complemented by four keynote talks: Anke Buchholz, Syngenta Crop Protection AG; Prof. Klaus Schlöppi (UBASEL); Prof. Sebastian Dötterl (ETHZ); Prof. Meredith Schuman (UZH).

[www.plantsciences.uzh.ch/en/research/fellowships/syngenta/symposia.html](http://www.plantsciences.uzh.ch/en/research/fellowships/syngenta/symposia.html)

### Publications

Ma, X., Wiedmer, J., Palma-Guerrero, J. (2020). Small RNA bidirectional crosstalk during the interaction between wheat and *Zymoseptoria tritici*. *Frontiers Plant Sciences*. <https://doi.org/10.3389/fpls.2019.01669>

Schaefer, L.K., Parlange, F., Buchmann, G., Jung, E., Wehrli, A., Herren, G., Müller, M. C., Stehlin, J., Schmid, R., Wicker, T., Keller, B., Bourras, S. (2020). Cross-kingdom RNAi of pathogen effectors leads to quantitative adult plant resistance in wheat. *Frontiers in Plant Science*. <https://doi.org/10.3389/fpls.2020.00253>

Skalska, A., Stritt, C., Wyler, M., Williams, H., Vickers, M., Han, J., Tuna, M., Savas Tuna, G., Susek, K., Swain, M., Corke, F., Doonan, J., Roulin, A.C., Hasterok, R., Mur, L.A.J. (2020). Genetic, epigenetic and transcriptomic analyses of Turkish *Brachypodium distachyon* accessions differentiates two geographically distinct subpopulations. *Int. J. Mol. Sci.* 21, 6700. <https://doi.org/10.3390/ijms21186700>

Tsuchimatsu, T., Kakui, H., Yamazaki, M., Marona, C., Tsutsui, H., Hedhly, A., Meng, D., Sato, Y., Städler, T., Grossniklaus, U., Kanaoka, M.M., Lenhard, M., Nordborg, M., Shimizu, K.K. (2020). Adaptive reduction of male gamete number in the selfing plant *Arabidopsis thaliana*. *Nature Communications* 11, Art. no. 2885. <https://doi.org/10.1038/s41467-020-16679-7>

Wyler, M., Stritt, C., Walser, J.C., Baroux, C., Roulin, A.C. (2020). Impact of transposable elements on methylation and gene expression across natural accessions of *Brachypodium distachyon*. *Genome Biology & Evolution*, evaa180 <https://doi.org/10.1093/gbe/evaa180>



The poster for the PSC & Syngenta Symposium 2020 features a background image of a field with colorful, glowing plant structures. At the top, logos for the University of Zurich, ETH Zurich, and the University of Basel are displayed alongside the Zurich-Basel Plant Science Center. The title 'PSC & Syngenta Symposium 2020' is prominently featured. Below the title, a 'PROGRAM' section lists the following events:

- 13:00–13:10** WELCOME by Prof. Bruno Studer (PSC chair)
- KEYNOTES**
  - Chair: Prof. Bruno Studer
  - 13:10–13:25** How different 'source to sink' constellations in crop plants affect the performance of a modern aphicide. Anke Buchholz, Syngenta
  - 13:25–13:40** Plant responsiveness to microbiota feedbacks. Prof. Klaus Schlöppi, Department of Environmental Sciences, University of Basel
  - 13:40–13:55** Soil resources and global change. Prof. Sebastian Dötterl, Department of Environmental Systems Science, ETH Zurich
  - 13:55–14:10** Plants in space. Prof. Meredith Schuman, Remote Sensing Laboratories in the Departments of Geography and Chemistry, University of Zurich
- FELLOW PRESENTATIONS**
  - Chair: Prof. Klaus Schlöppi
  - 14:20–14:35** Plant life history influences the criteria used to reward mutualistic AMF. Sören Weber, University of Zurich
  - 14:35–14:50** Improved measurements of plant transpiration for sustainable agricultural water use. Dr. Eugénie Paul-Limoges, University of Zurich
  - 14:50–15:05** Influence of plant genes on microbial abundance in *Arabidopsis* phyllosphere. Jana Mittelstrass, University of Zurich
  - 15:05–15:20** Mycorrhiza-facilitated interactions in intercropping systems in dryland agriculture. Santiago Perez, University of Basel
  - 15:20–15:35** Action of essential bacterial effectors on conserved plant receptor kinases: towards strategies for durable and broad-spectrum disease resistance. Laura Herold, University of Zurich
  - 15:35–15:50** Effects of microbial endosymbionts on the transmission of plant pathogens by aphid vectors. Patricia Sanchez, ETH Zurich
- FINAL REMARKS** Willy Rueegg (Syngenta)

**WEDNESDAY, November 4<sup>th</sup>, 2020 ONLINE VIA ZOOM**  
Registration: [www.plantsciences.uzh.ch/en/research/fellowships/syngenta/symposia.html](http://www.plantsciences.uzh.ch/en/research/fellowships/syngenta/symposia.html)

## PSC-Syngenta Fellowships

	Project Titles	Principal Investigators	Fellows	Scientific Fields
	<i>Action of essential bacterial effectors on conserved plant receptor kinases: towards strategies for durable and broad-spectrum disease resistance</i>	Prof. Cyril Zipfel, UZH Dr. Giovanni Broggin, ETHZ	Laura Herold PhD, 2020–2023	Plant Protection
	<i>Effects of microbial endosymbionts on the transmission of plant pathogens by aphid vectors</i>	Prof. Mark Mescher, ETHZ Prof. Clara Sánchez-Rodríguez, ETHZ Prof. Consuelo De Moraes, ETHZ	Patricia Sanchez PhD, 2020–2023	Plant Protection
	<i>Identifying the plant genes that shape the leaf metabolome and microbiome</i>	Dr. Matt Horton, UZH Prof. Julia Vorholt, ETHZ	Jana Mittelstrass PhD, 2019–2021	Microbiomics
	<i>Improved measurements of plant transpiration for sustainable agricultural water use</i>	Prof. Alexander Damm, UZH Prof. Nina Buchmann, ETHZ Prof. Johan Six, ETHZ	Dr. Eugénie Paul-Limoges Postdoc, 2019–2020	Remote Sensing
	<i>Mycorrhiza-facilitated bio-irrigation in intercropping systems in dryland agriculture as a new tool to stabilize and increase yields of small holder farmers</i>	Prof. Ansgar Kahmen, UBASEL Dr. Mathimaran Natarajan, UBASEL PD Dr. Astrid Oberson, ETHZ	Santiago Pérez-Bernal PhD, 2019–2021	Plant Physiology
	<i>How does the plant-AMF mutualism scale from pairwise interactions to complex networks? An analysis combining theory and experiments</i>	Prof. Pascal Niklaus, UZH Prof. Jordi Bascompte, UZH Prof. Ansgar Kahmen, UBASEL	Sören Weber PhD, 2018–2020	Modeling of Plant Microbial Networks
	<i>Shaping signaling landscapes during organ formation</i>	Prof. Joop Vermeer, UZH PD Dr. Bruno Müller, UZH	Milica Nenadic PhD, 2018–2020	Cell Biology and Plant Development
	<i>Impact of intra-specific TE variations on gene expression, local epigenetic states and spatial genome organization in <i>Brachypodium distachyon</i></i>	Prof. Anne Roulin, UZH PD Dr. Célia Baroux, UZH Prof. Beat Keller, UZH	Michele Wyler PhD, 2017–2020	Epigenetics

## 6 PSC Education

PSC has core infrastructure and personnel to carry out and manage training for +500 participants per year. Established training formats range from workshops, colloquia and lectures to summer schools, and face-to-face events to blended learning and e-learning formats that make our education highly scalable in number of participants. Didactic formats include case-study work, cognitive apprenticeship models, role play scenarios, simulations but also hands-on training in tools and methodology and experimentation that make our education highly successful in targeting learning objectives to the different target groups and demands of a multi-faceted academic education. PSC offers two structured doctoral programs for 167 PhD students of the departments and faculties (i.e., D-BIOL, D-USYS, D-HEST, D-MTEC, D-BAUG, D-ITET, D-GESS, D-MAVT of ETH Zurich; Faculty of Science, University of Zurich; Department of Environmental Sciences, University of Basel).

### PhD Program in Plant Science

The *PhD Program in Plant Science* (120 registered participants in 2020) remains one of the largest PhD Programs in its field, offering students access to (1) transferable skills and competencies to enhance employability and career perspectives, as agreed in the Lisbon strategy and following the Research Development Framework (Vitae 2010) competency matrix as well as (2) research training from molecular biology to ecosystem research and at the forefront of plant science research methods and technologies.

PSC has continuously developed the curriculum of its PhD programs, integrating new technological developments and responding to the demands of the plant science community. Approx. 40% of our curricula are devoted to taking a systemic perspective in all areas of plant sciences and training competencies from the Education in Sustainability Development (ESD) where students learn how to make technologies more environmental, social and economically sustainable. Main training activities include: 1 summer school every two years (2 ECTS), 1 seminar on Sustainable Plant Systems in fall term (1 ECTS), 1 seminar Sustainable Technology – Change and Socio-economic Implications in the Plant Sciences (1 ECTS), 2021 to be implemented.

[www.plantsciences.uzh.ch/en/teaching/phdplantscience.html](http://www.plantsciences.uzh.ch/en/teaching/phdplantscience.html)

### PhD Program Science & Policy

The *PhD Program Science and Policy* (47 registered participants in 2020) is a unique training program for researchers in the life sciences that can work and deal with the science-policy interface. It has trained a significant cohort of early-stage scientists familiar to carry out science-policy and science-society dialogue.

PhD students finalizing the program are able (1) to communicate scientific evidence towards policymakers, the public; (2) to involve different stakeholder groups in a participative process and to co-produce knowledge; (3) to understand the general process of policy development and endorsement in Europe and on global level; (4) to establish contacts to policy-implementing organizations, industry, national and international NGOs, GOs and IGOs; and (5) to develop a high standard of scientific responsibility and responsiveness towards the needs of the public.

**Training workbooks.** So far, seven out of eight workbooks in the series Engaging in the Science-Policy Dialogue are published as open access teaching and learning material. These inform and support PhD students about major aspects and tools of working at the science and policy interface. Numerous lecturers, program participants, PIs, APs and the PSC are involved in putting together relevant contents, important tools and methods, interesting case studies as well as first-hand experiences.

[www.plantsciences.uzh.ch/en/teaching/phdsciencepolicy.html](http://www.plantsciences.uzh.ch/en/teaching/phdsciencepolicy.html)

### Summer school

Since 2010, PSC has organized eight summer schools with 90 participants. The next one will be in 2021. As a vibrant part of PSC education, the summer schools stimulate critical thinking among the participants. The students work one week with case studies. Results presented as policy briefs or fact sheets together with contributions of summer school speakers are published as proceedings.

[www.plantsciences.uzh.ch/en/teaching/summerschool](http://www.plantsciences.uzh.ch/en/teaching/summerschool)

# Engaging in the science-policy dialogue

## 4 Risk and uncertainty communication

Publisher  
Zurich-Basel Plant Science Center

Editors  
Melanie Paschke  
Manuela Dahinden



### PSC Workbook series and training courses

- 1\_Evidence-based policy making
- 2\_Stakeholder engagement
- 3\_Communicating science through the media
- 4\_Risk and uncertainty communication
- 5\_Building models & scenarios
- 6\_Building political support
- 7\_Generating impact chains
- 8\_Collective inquiry

[www.plantsciences.uzh.ch/en/publications.html](http://www.plantsciences.uzh.ch/en/publications.html)

Students registered in the PhD Program Plant Sciences, as of Dec 31, 2020

TOTAL	UZH	ETHZ	UBASEL	Other	Female	Male	National	International
120	50	62	7	1	67	53	34	86

Students registered in the PhD Program Science & Policy, as of Dec 31, 2020

TOTAL	UZH	ETHZ	UBASEL	Other	Female	Male	National	International
47	16	27	3	1	29	18	18	29

Number of courses carried out in PSC PhD Programs and number of course participations

TOTAL Courses	UZH Participations	ETHZ Participations	UBASEL Participations	Other Participations	TOTAL Participations
30	159	219	28	7	410

## Frontiers in Plant Sciences

Between 2015 and 2020, the PSC received funding for a series of workshops at the frontiers in plant sciences by the swissuniversities (SUK “Interuniversity Program”). These workshops were dedicated to applications, i.e., concepts but also tools in advanced areas. Some of these courses were developed in collaboration and integrate competencies from experts within the University Research Priority Program Evolution in Action (UZH). The following courses were offered in 2020:

### **Protein-coding evolution and detecting natural selection.**

Dr. Maria Anisimova (ZHAW), 22–24 Jan 2020. This course offered a brief introduction to computational molecular evolution, phylogeny inference and statistical hypothesis testing in phylogenetics with a focus on evaluating natural selection. These methods are nowadays routinely applied in genomic analyses. Exercises will include data analysis using software packages PhyML and PAML.

### **How can you make Open Data work in your own research projects?**

Violeta Mezeklieva (Open Data Institute, ODI), Stefanie Strebel (UZH), André Hoffmann (UZH), Dr. Melanie Paschke (PSC), 9–11 Mar 2020. Students familiarized with a list of key considerations for putting together an Open Data strategy for their research results. This includes putting together a data management plan, data ecosystem mapping and consultancy for creating data ecosystems for agricultural programs, building and working with data sharing agreements, data inventories and data trusts.

### **Population genomics of diversity and adaptation.**

Prof. Dr. Karl Schmid and Dr. Mireia Vidal- Villarejo, (University of Hohenheim), 22–24 Sep 2020. The course introduced the study of plant genetic diversity and adaptation using population genomics approaches. Instructors provided hands-on introduction to data handling, data exploration with summary statistics and data analysis with state-of-the-art methods for demographic analysis, population differentiation and selection detection of plant populations.

### **Get going with statistics in functional genomics.**

Prof. Dr. Anne Roulin (UZH) and Dr. Jean-Claude Walser (GDC, ETHZ), 5–7 Oct 2020. In the field of genomics, it is paramount to handle larger amounts of data efficiently, securely, and reproducibly. For this reason, the main objective of this course was to provide students the most basic and most crucial sets of skills to work with genomic datasets. The students learnt to manage data, run analysis and documented their workflow in an easy but reproducible way. The course also covered different aspects of basic statistical analysis for genomics.

### **Introduction to Genome-wide Association Studies (GWAS).**

Dr. Matthew Horton (UZH) & Dr. Ümit Seren (GMI, Vienna), 18–20 Nov 2020. In this course, a pre-eminent tool for identifying genes that underlie natural phenotypic variation was discussed: Genome-wide Association Studies (GWAS). Originally developed by human geneticists to fine-map genes that underlie human disease, GWAS have the capacity to revolutionize all of the biological sciences. Plant biologists, in particular, have already taken advantage of improvements in sequencing technology in order to characterize genetic variation across the genomes of several species.

## Training in Scientific Integrity

Since 2009, PSC is offering the course **Responsible Conduct in Research**. Every year the course is rated by the participants as very good. The course aims to increase the knowledge of our Master’s and PhD students about the specific rules, regulations and guidelines of responsible conduct in their research fields. This course also offers guidance for the process of developing a well-reasoned response to a moral problem in scientific conduct (Bebeau 1995).

The accompanying seminar is offered each spring term at ETH Zurich.

*Access using Uni, ETH, FH, or PH Login:*

**[moodle-app2.let.ethz.ch/course/view.php?id=470](https://moodle-app2.let.ethz.ch/course/view.php?id=470)**

PSC offers online training platforms for **Scientific Writing** that can be used for self-studies or are embedded in several courses of the Bachelor’s and Master’s curricula of our partner universities.

*Access using Uni, ETH, FH, or PH Login:*

WiSch (bachelor’s level):

**[moodle-app2.let.ethz.ch/course/view.php?id=132](https://moodle-app2.let.ethz.ch/course/view.php?id=132)**

SkriPS (master’s level):

**[moodle-app2.let.ethz.ch/course/view.php?id=134](https://moodle-app2.let.ethz.ch/course/view.php?id=134)**

## Colloquium: Challenges in Plant Sciences

The colloquium is a core event of the PSC PhD programs and MSc module. The colloquium introduces participants to a broad spectrum of disciplines in plant sciences. The topics offer integrated knowledge about plant sciences, they range from the molecular level to the ecosystem level, and from basic to applied science while making use of the synergies between different PSC research groups.

2020: 34 participants.

Input talks by:

Prof. Jake Alexander (ETHZ)

*Species interactions as drivers of species (re)distributions*

Dr. Helge Aasen (ETHZ)

*High-resolution remote sensing for plant science in the context of field-phenotyping*

Dr. Aurélien Bailly (UZH)

*Molecular interactions at the root interface: Small microbial compounds shaping the rhizosphere*

Prof. Kirsten Bomblies (ETHZ)

*The adaptive evolution of meiosis*

Prof. Mark Mescher (ETHZ)

*Plant responses to cues and signals from other organisms*

Prof. Clára Sánchez Rodríguez (ETHZ)

*Apoplast: The frontline of plant-microbe interaction*

Prof. Joëlle Schläpfer (UZH)

*Molecular mechanisms of plant-microbe interactions*

Prof. Kentaro Shimizu (UZH)

*Evolutionary functional genomics of natural and crop polyploid species*

Dr. Emily Solly (ETHZ)

*Below-ground plant growth and global change*

Organizer: Sylvia Martinez, PSC.

[www.plantsciences.uzh.ch/en/teaching/masters/colloquium.htm](http://www.plantsciences.uzh.ch/en/teaching/masters/colloquium.htm)

## PSC Certification

Both the *PSC PhD Program Plant Sciences* and the *PSC PhD Program Science and Policy* are finished with a certification. The certification is part of the diploma supplement of the doctoral certificate that is awarded by the UZH, ETHZ or UBASEL. The certification includes a transcript of record of accomplished course work carried out by the PhD student.

## Recruitment & Supervision

PSC offers **PhD admission channels**. Recruitment is organized together with Life Science Zurich Graduate School, LSZGS. Deadlines for PhD applications are July 1 and December 1.

PSC PhD programs implement the following **supervision processes**: thesis committees are established for all PhD students. The online platform “Disigo” allows PhD students to self-manage all documents necessary for their doctoral degree, e.g., ECTS, certifications of teaching commitments, as well as organizing and documenting thesis committee meetings. The program coordinator can monitor the processes and offer support where appropriate.

## 8 PSC Mentoring

PSC guides PhD students through the curricula of the PhD Programs, offers individual mentoring in carrying out science-policy dialogue, science communication, public engagement, and Responsible Research and Innovation (RRI). PSC organizes industry visits including research markets and dialogue with HR representatives, as well as career events.

### **feminno Mentoring Program**

*feminno* gives female researchers guidance on how they can start and master a successful innovation process. As an accelerator and mentoring program it offers the opportunity to specifically combine research from the perspective of academic research with innovation and industry. Together with experienced career advisors, coaches, innovation experts and executives from successful life science companies, participants work on finding ideas for innovation projects, as well as developing their career paths and connect to related professional networks. PSC started with this initiative in 2018. So far 76 women took part (37 participants at ETHZ, 24 participants at UZH, 13 participants at the UBASEL and two others, thereof 41 PhD students, 30 postdocs, 4 masters, 1 alumna). As an outcome of the program four startups (BabyLat, Digit Soil, Collabree, 1 Start-up in NGO/NPO) have been founded yet.

The *feminno* program is well known outside and inside academia and has already made a name for itself as a program in the innovation ecosystem around female founders. *feminno* starts at the ideation phase, allows participants to test their innovative ideas at a very early pre-entrepreneurial stage and to pitch it in different networks and platforms.

To accomplish this, the program consists of an initial career retreat, one soft skill training, one innovation workshop, four innovation seminars, and four company visits. The objective of the company visits is to understand the working environment in the company, visit of companies' facilities and discuss with role models and other representatives, such as Human Resources, or R&D etc. The feedbacks were generally very positive from both sides, companies and participants. In 2020, 15 training and mentoring events, including four company visits were organized.

[www.feminno.ch](http://www.feminno.ch)

#### **Project partners**

Life Science Zurich – University of Zurich and ETH Zurich

Office for Gender Equality – University of Zurich and University Basel

Career Services – University of Zurich

*feminno* was supported by the Federal Office for Gender Equality for the period 2017–2019. For 2020–2021, *feminno* receives funding from D-USYS of ETHZ, MeF of UZH, the Graduate Campus of UZH, and project sponsors.



#### **Successful Innovation – A Guideline for Female Scientists in the Life Sciences at Swiss Universities.**

Ute Budliger and Melanie Paschke (eds.).

With contributions by: Ute Budliger, Manuela Dahinden, Carl Emerson, Roger Gfroerer, Daniela Gunz, Christiane Löwe, Tanja Neve-Seyfarth, Melanie Paschke, Isabelle Siegrist, Carolin Strobl. Zurich-Basel Plant Science Center, 2020.

<https://doi.org/10.3929/ethz-b-000443822>

These guidelines are for women in life sciences who are looking for encouragement and want to make use of their drive and know-how and competences to assess the potential of their own ideas. The authors strongly believe that the conditions for female scientists to become entrepreneurs have never been better.

### Career retreat

15–17 September 2020, three full day sessions with Dr. Daniela Gunz, Career Services, UZH

### Innovation seminars

4, 11, 18 & 25 November 2020, 6–10 p.m., four 4-hour evening sessions with Michael Kropac, seecon; Dr. Andrea Degen, Eurelations AG; Dr. Cornelia Fürstenberger, Unitectra; Professor Carole Claire, Unisante, Lausanne

### Training

#### Innovation Workshop: Create a Business Model Canvas

13–14 October 2020, two full day sessions with Isabelle Siegrist, Sandborn

#### Negotiation skills for conflict situations, business deals

13–14 Januar 2021, two full day sessions with Gaby Rockmann, Rockmann Consulting

#### Company visits and exploratory workshops

October 2020–January 2021, Roche, Lonza & Accenture

#### Closing event

Presentations, Networking, Celebration: 4 March 2021

### 1:1 Counselling Sessions

(45–60 min) with Dr. Daniela Gunz (PSC)



*feminno* participants. Photo: Andreea Cretu.



«The *feminno* program is a wonderful opportunity to join a group of selected scientists with great experience and challenging ideas. It is an intensive, broad and rich programme that brings to discussion updated and imperative themes, aiming to develop skills necessary to all entrepreneurs. Moreover, the group composition being female creates a unique atmosphere, empathic and supportive. I strongly recommend the *feminno* program to either women that have already decided on their professional pathway or are searching for new professional opportunities.»

Tais Adelita, *feminno* participant

## 9 PSC Outreach



PSC offers a diversity of platforms for public outreach where cutting-edge plant science research comes to life. PSC organizes symposia, round tables, citizen fora, teacher and school class workshops, science holiday camps, family expeditions and art & science exhibitions. PSC also contributes to large science fairs such as Scientifica, Treffpunkt Science City and the International Fascination of Plant Days. The PSC newsletter is published twice per year, online and in 400 prints. PSC publishes press releases, publications in lay press, books, peer-reviewed scientific publications and proceedings. The PSC Managing Office maintains a website with ~50,000 annual visitors, four blogs, three Facebook-, two Instagram-, three Twitter- and four LinkedIn accounts.

### PSC Symposium

*2 Dec 2020: Plant interactions reloaded, online, 380 registered participants*

The Symposium presented the manifold interactions plants are engaged in. The interactions range from the molecular to the environmental level and are indispensable for development, reproduction, nutrient exploitation and disease resistance against pathogens. Interactions drive evolution and shape the natural communities. Studying plant connectivity at different levels, in a more contextual way and combining different disciplines is key to move forward in our understanding of the plant systems. This multidisciplinary research can be integrated in an ecological framework where optimal management of nature's ecological functions and biodiversity may improve agricultural system performance, efficiency and farmers' livelihoods.

**Invited speakers:** Prof. Jiri Friml (IST Austria), Prof. Christa Testerink (University of Wageningen), Prof. Susann Wick (Humboldt-University of Berlin), Prof. Heribert Hirt (KAUST), Prof. Julia Vorholt (ETHZ, PSC), Prof. Anna-Liisa Laine (UZH, PSC), Prof. Vivian Irish (Yale University), Prof. Rebecca E Irwin (NC State University), Prof. Jordi Bascompte (UZH, PSC). The conference included 29 poster presentations and three Flash Talks by young researchers: Nadine Engberseen, M.Sc. (ETHZ), Dr. Sebastian Pfeilmeier (ETHZ), Dr. Dario Sanchez Castro (UBasel).

**Organizing Committee / PhD students:** Alicia Abarca (UZH), Giacomo Potente (UZH), Henning Mühlenbeck (UZH), Laura Herold (UZH), Santiago Perez-Bernal (UBASEL), Yuanyuan Liang (ETHZ), Zhen-Zhu Xiao (UZH), PSC: Dr. Manuela Dahinden, Dr. Luisa Last, Romy Kohlman.

**PSC Symposium 2020**  
Connectivity: Plant interactions reloaded

Universität Zürich  
ETH Zürich  
Universität Basel  
Plant Science Center

**2nd December, 9:00–17:00 online**

**Specials:**  
Poster Awards  
Flash Talks

**Registration**  
[blogs.ethz.ch/psc2020](https://blogs.ethz.ch/psc2020)

**9:30–11:15**  
**Plant-plant interactions**  
Susann Wicke (HU Berlin)  
Christa Testerink (Wageningen)  
tbd

**11:45–13:30**  
**Plant-microbe interactions**  
Julia Vorholt (ETH Zurich)  
Heribert Hirt (KAUST)  
Anna-Liisa Laine (Uni Zurich)

**15:00–16:45**  
**Plant-animal interactions**  
Jordi Bascompte (Uni Zurich)  
Vivian Irish (Yale University)  
Rebecca E. Irwin (North Carolina State)

@PlantSciCenter  
@PSCSymposium2020  
#PlantInteraction

**Advisory Board:** Prof. Bruno Studer (ETHZ), Prof. Samuel Zeeman (ETHZ), PD Dr. Thomas Städler (ETHZ), Prof. Elena Conti (UZH), Prof. Ueli Grossniklaus (UZH), Prof. Stefan Hörtensteiner (UZH), Prof. Kentaro Shimizu (UZH), Prof. Maria Jaoa Ferreira dos Santos (UZH), PD Dr. Günter Hoch (UBASEL), Prof. Yvonne Willi (UBASEL).

**Poster Award. First prize:** Lea Frey (Molecular Plant Breeding, ETHZ). Poster title: Elucidating the genetic control of southern anthracnose resistance in a diverse set of red clover accessions. **Second prize:** Unnikannan Prabhullachandran, CEITEC Masarykova Univerzita, Bohumice, Czech Republic. Poster Title: Unravelling the process of thermoregulation in development of Brassica napus. **Best poster awarded by the audience:** Alicia Abarca Cifuentes (Molecular and Cellular Plant Physiology, UZH). Poster title: Unravelling the RALF peptide family.

## Plant Science @ School

In collaboration with educators at the ETHZ MINT Lernzentrum, PSC developed eight different workshops for school classes at the secondary school level. Topics include Climate Change, 3D Mikroskopy, Molecular Plant Breeding, Starch Metabolismus, Biokommunikation, Adaptive Evolution, Symbiosis and Genome Editing. In 2020, the Genome Editing workshop was offered online by Dr. Alexandra Rosakis (PSC) and Henning Mühlenbeck (UZH).

[www.plantsciences.uzh.ch/de/outreach/discovery.html](http://www.plantsciences.uzh.ch/de/outreach/discovery.html)

## Nachtaktiv

In 2020, PSC launched a new outreach program. Nachtaktiv is aimed for young people aged 16 and over. Once per month on a Friday evening, there will be a party-style evening event in various Zurich museums. Science activities will be led by students of ETHZ, UZH and UBASEL in an entertaining way. ETH spin-offs enrich the program with their inventions and the museums will focus on certain exhibitions or offer guided tours. Each event focuses on a different theme: From future forecasting to designing nature, from big data to robotics.

Participating museums: WOW Museum, Kulturama, Museum für Gestaltung, Kunsthaus, FIFA World Football Museum, Sukkulente Sammlung, FocusTerra (ETHZ), Mühlerama, Six Finanzmuseum.

[www.nachtaktiv.live](http://www.nachtaktiv.live)

Supported by the Gebert Rüt Foundation, 2020–2022.

## CreativeLabZ

CreativeLabZ is an outreach program for youth reflecting on plant-based products and technologies. Together with artists, scientists and social workers, PSC is developing workshops, camps and project weeks promoting creativity, critical thinking, problem solving and leadership in (disadvantaged) youth. The learning content is based on interdisciplinary connections of art and science, engineering – called tinkering. Tinkering mindset is direct experience, experimentation (failing) and discovery. During the lockdown, we developed 15 different online modules called Corona Creative Classes together with the Museum of Digital Art (MuDA) and 390 participants took part in them. Two exhibitions were curated with 130 visitors.

[www.creativelabz.ch](http://www.creativelabz.ch)

Supported by the Drosos Foundation, 2018–2022.



<https://tube.switch.ch/embed/f51fdc7d>



## Climate Garden 2085

In 2020, the Swiss Federal Office for the Environment (FOEN) prolonged its financial support for the *Climate Garden 2085*. This allowed us to recruit nine grammar and vocational schools in German-speaking Switzerland as well as the Anna Zemp Public Garden in Männedorf planting the *Climate Garden 2085* in spring 2021. The do-it-yourself art science experiment simulates different climate scenarios in two greenhouses and studies the effects on crops.

The greenhouses are lent to the schools and subsequently planted and cared for by the pupils. Several high school diploma (Matura) projects are planned, and schools are encouraged to open their greenhouses to neighboring schools and their community. The physical installation is supported by a framework program of PSC workshops and discussions for pupils.

[www.klimagarten.ch](http://www.klimagarten.ch)

Supported by the Federal Office for the Environment, 2018–2022 and Merck.



<https://video.ethz.ch/events/psc/klimagarten.html>



# 11 PSC Publications



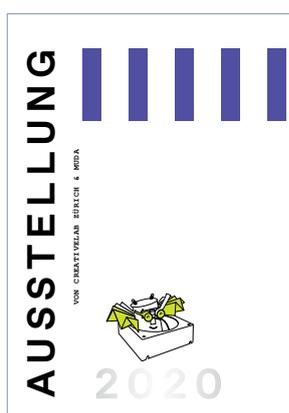
[PSC Newsletter, Spring 2020](#)

This newsletter highlighted digital applications of herbaria. Herbaria have been a vital research infrastructure in plant taxonomy and systematics since the onset of botany in the 16<sup>th</sup> century. Thanks to large-scale digitization efforts they have recently gained the interest of plant science researchers. We explored how essential such collections are to answer fundamental questions in science, and how much benefit can be gained for human society. For example, herbarium specimens may provide clues to global challenges, such as the effects of land use change or the increase in atmospheric CO<sub>2</sub> on the evolution of plants and their co-evolved symbionts or pathogens. The analysis of samples from the early days of domestication represents an exciting and novel development for crop genomics with potential implications for breeding, microbial symbiosis and favorable agronomical traits.

With contributions by Dr. David Basler (UBASEL), Dr. Alessia Guggisberg (ETHZ), Dr. Heike Hofmann (ETHZ / UZH), Dr. Colin Hughes (ETHZ), Dr. Michelle Nay (ETHZ), PD DR. Reto Nyffeler (UZH), Prof. Verena Schünemann (UZH), Dr. Jurriaan M. de Vos (UBASEL).



[PSC Newsletter, Fall 2020](#)

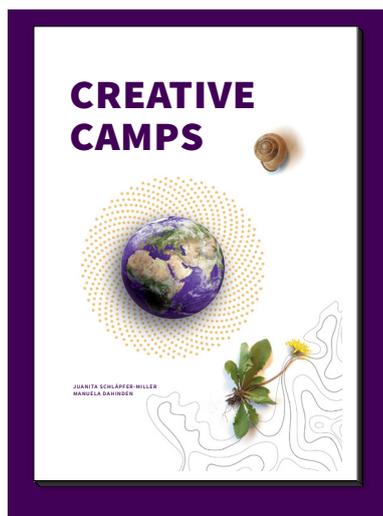


This catalog shows projects made by participants during CreativeLabZ workshops and camps in 2020. The exhibition took place at the Museum of Digital Art in Zurich. The exhibited projects showed the interplay of different working methods such as digital fabrication and tinkering, as well as the creative process.

Exhibition catalog. Juanita Schläpfer-Miller & Manuela Dähindlen (Hrsg). Zurich: Zurich-Basel Plant Science Center (2020). <https://doi.org/10.3929/ethz-b-000428640>

The *PSC Science & Policy blog* presents research outcomes of PSC members and program participants at the science and policy interface. The blog posts highlight results and also trends in the areas of agroecology, resource efficiency, land use and ecosystem changes, alternative food systems and related participatory research methods. They offer additional background for the interested public.

[blogs.ethz.ch/Science\\_and\\_Policy](https://blogs.ethz.ch/Science_and_Policy)



Juanita Schläpfer-Miller & Manuela Dahinden, Hrsg. (2020). **Creative Camps – Verknüpfung von Kunst- und Wissenschaftsvermittlung.**

Mit Beiträgen von Gianna Brühwiler, Giulia Donati, Christian Ginzler, Oskar Hagen, Sabrina Flütsch, Joyce Kalumba, Mina Karrer, Renate Lerch, Alexandra Rosakis.

ISBN: 978-3-907234-04-4

<https://doi.org/10.3929/ethz-b-000421727>

## Creative plant science experiments for youth

In collaboration with art educators from the Zurich University of the Arts (ZHdK), PSC developed workshop activities for young people aged 8–14. The workshops were offered during holiday camps but also at Treffpunkt Science City, Scientifica, spring festival at the Botanical Garden of the University of Zurich and the Fascination of Plants Day.

The SNSF-funded Agora project *Creative Camps for Youth* was designed together with different PSC research groups reflecting frontiers research on topics such as biocommunication, plant development, evolution, adaptation to climate change, modeling of future landscapes and ecosystem services. The project engaged a broad cross-section of young people in Switzerland with hands-on learning experiences and open dialogue formats. The collaboration with bachelor students of Art Education at the ZHdK allowed us to combine creative and inquiry-based approaches to learning and teaching and thus, expand young people's capacity of understanding of science. We were able to foster children's own interests and explorations by encouraging their inquiry skills in particular observing and exploring, asking questions, reasoning and making interconnections.

The PSC *Creative Camps for Youth* were supported by the SNSF Agora, 2017–2020.

<http://p3.snf.ch/project-171682>

With contributions by Prof. Consuelo de Moraes (ETHZ, Chair of the Agora project), Prof. Loïc Pellisier (ETHZ), PD Dr. Diana Santelia (ETHZ), Prof. Antia Rodriguez-Villalon (ETHZ), Prof. Samuel Zeeman (ETHZ), Prof. Johan Six (ETHZ), Prof. Ueli Grossniklaus (UZH), Prof. Joop Vermeer (University of Neuchatel), Prof. Kentaro Shimizu (UZH).

[www.plantsciences.uzh.ch/de/outreach/ferienlager.html](http://www.plantsciences.uzh.ch/de/outreach/ferienlager.html)



Beuttler, C., Paschke, M. (2020). Risk and uncertainty communication. In. **Engaging in the Science-Policy Dialogue** edited by Melanie Paschke and Manuela Dahinden.

<https://www.research-collection.ethz.ch/handle/20.500.11850/340471>

## New PSC science-policy workbook

Workbook 4 of the series "Engaging in the Science-Policy Dialogue" explains risk perception. It offers guidelines for students and scientists on how to communicate risk and uncertainties to policymakers and to the public, focusing on different areas such as public health and climate change. The authors, Melanie Paschke and Christoph Beuttler, argue for the need of deliberation at the science-society interface and provide tools and methods for the design of public engagement processes.

The *PSC Science & Policy Workbooks* are targeted towards researchers in life science wishing to communicate research findings to policymakers and society. Educators can use them as a learning resource to advance education in life sciences at the science-policy interface.

Full list of publications:

[www.plantsciences.uzh.ch/en/publications/sciencepolicyworkbooks.html](http://www.plantsciences.uzh.ch/en/publications/sciencepolicyworkbooks.html)

## 10 PSC Financial Report

PSC has shown repeated success in securing funding for research, education and outreach, making the PSC one of the most robust competence centers in Switzerland.

For 2019–2020, PSC generated an excellent return of invest for the three partner universities: with an investment of CHF 540,000 (sum of their internal institutional and individual member contributions for coordination and institutional funding for core PSC PhD education activities) generated CHF 3,511,827 third party funding.

**Return of Invest 2019–2020. PSC fundraising activities for fellowships and partner universities contribution to PSC core management activities.** An exchange rate of 1 Euro = 1 CHF was used if projects are in Euro. Only projects that started in 2019 are taken into account.

	<b>Fellowships through competitive third-party funding (2019–2020)</b>	<b>Funding of core PSC management through Universities (2019–2020)*</b>
Contribution to Research	2,438,199	423,500
Contribution to Management and Training	417,500	
<b>TOTAL</b>	<b>2,855,699</b>	<b>423,500</b>

\* Includes funding from universities central funds, departments and faculties and own contributions of PSC professors.

**Return of Invest 2019–2020. PSC fundraising activities for training and outreach and partner universities contribution to PSC PhD training activities.**

	<b>Third-party funding to PSC training and outreach (2019–2020)</b>	<b>Investment to PSC core training through universities (2019–2020)</b>
for Training	130,728	115,759*
for Outreach	525,400	
<b>TOTAL</b>	<b>656,128</b>	<b>115,759</b>

\* Through Life Science Zurich Graduate School.



**Thank you –**  
to all members, colleagues  
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