PERSONAL INFORMATION

Name	**Florian P. Schiestl**, born on 07 September 1969
profile	google scholar: https://scholar.google.com/citations?user=J22mbxgAAAAJ&hl=en ORCID: https://orcid.org/0000-0001-7637-6918
e-mail	florian.schiestl@systbot.uzh.ch

ACADEMIC EDUCATION

04/05	Habilitation in Evolutionary Ecology, ETH Zürich.
12/99	PhD in Evolutionary Biology with distinction, University of Vienna.
12/95	Magister in Biology with distinction, University of Vienna.

EMPLOYMENT

03/17-21	Director, Institute of Systematic and Evolutionary Botany, UZH
12/18	Promotion to Full Professor
05/12	Promotion to Associate Professor
06/07	Assistant Professor with tenure track, University of Zürich
01/01	Oberassistant, Geobotanical Institute, ETH Zürich
12/99	Postdoctoral Fellow, ANU, Canberra

RESEARCH GRANTS (LAST 10 YEARS)

03/17	SNF grant (Sfr. 700'000): chief investigator "An integrated approach to plant adaptation"
09/16	URPP grant (Sfr. 240'000) chief investigator, with Ueli Grossniklaus: "Molecular mechanisms of fast-evolving mating system in plants"
01/12	URPP (Sfr. 72'500) chief investigator: "Investigating the importance of epigenetics in adaptation and coevolution"
01/12	SNF ProDoc grant (Sfr. 200'000) chief investigator: "Plant reproductive isolation: from mechanisms to evolution"
01/12	European Research Council (ERC) consolidator grant (Euro 1'400'000) chief investigator: "Evolution and consequences of floral signaling in plants"
04/11	European Science Foundation (ESF) grant (Sfr. 389'000)

STUDENT AND POSTDOC SUPERVISION

Current	Luca Arrigo (PhD candidate), Xeniya Rudolf (PhD candidate), Thomas Dorey (PhD candidate), Xiao ZhenZhu (PhD candidate), Juan Traine (PhD candidate), Qunit Rusmann (PostDoc), Lea Frachon (Oberassistant)
past	PostDocs: Lea Frachon, Jörg Vogt, Kelsey Byers, Cai Jing (now Professor University Macau), Martin von Arx (now scientific staff at SNF) Heather Kirk, Philipp Schlüter (now Professor Univ. Hohenheim), Nicolas Vereecken (now Professor Université Libre de Bruxelles, Begium) Alok Gupta (now Professor, Shri Ram College, Muzaffarnagar, India), Jim Mant. PhD students: Sergio Ramos (now PostDoc Univ. Pittsburg), Anina Knaur (now Postdoc Agroscope CH), Roman Kellenberger (now PostDoc Univ. Cambridge), Daniel Gervasi, Zu Penjuan (now PostDoc MIT), Mimi Sun, Karin Gross (now Lecturer Univ. Salzburg), Charlotte Salzmann, Marc Wälti, Fabrizio Steinebrunner, Nicolas Vereecken, Shuqing Xu (now Prof. University Münster), Alok Gupta, Khalid Seedek. Master students: Nicolas Vereecken, Nadine Bürchler, Yavanna Aartsma, Jahel Hämmerli, Moe Bakhtiari, Anina Knauer, Brian Osterwalder, Joëlle Mühlemann, Daniela Büsser, Franz Huber, Christoph Brändli, Daniel Gervasi, Manuel Rey, Guido Fässler, Alexander Eichenberger

UNIVERSITY TEACHING

2019-	BIO121: Plant Diversity
2017-	BIO221: Flowers and Pollinators, block course
2007-	Research practica "chemical ecology" and "evolution"

PANELS, BOARDS, REVIEWER

10/19	ERC evaluation panel LS8 for starting grant
11/18	UZH, head search committee Prof. in Systematic Botany
01/16	UZH, member search committee for Prof. in Ecology.
05/11	UZH, member of search committee for "Professorship in Evolutionary Adaptation to Environmental Change"
03/12	UZH, member of promotion committee for Prof. Greta Patzke
11/12	UZH, member of promotion committee for PD Dr. Christoph Ringli
01/13	Stiftung zum Schutz und zur Erhaltung wildwachsender Orchideen, Member
01/15	Ass. Prof. in Plant Evolutionary Biology, URPP
11/16	Professor in Ecology, UZH
Journal review	**I regularly review articles and proposals for different journals, including but not limited to:** Proceedings of the Royal Society, Series B, Oecologia, Functional Ecology, American Journal of Botany, Naturwissenschaften, Annals of Botany, Evolution, Ecology, Biological Reviews, American Naturalist, BMC Biology, BMC Evolutionary Biology, New Phytologist, Trends in Plant Biology, Current Biology, Nature, PNAS, Science, PLOS One, Ecology Letters, Nature Communications, Nature Ecology and Evolution.
Grant review	SNF (Swiss National Research Funds), NRF (National Research Foundation South Africa), ETH, DFG (German National Research Foundation), Austrian National Science Funds FWF; Dutch Science Foundation, NSF USA, European Research Council (ERC), Marsden Fund, New Zealand.
PhD theses review	ETH Zürich (2008, 2011), University of Granada, Spain (2011), L'Université Toulouse III-Paul Sabatier (France; 2011), University of Lisbon (2011), University of Basel (2012), Wageningen University (2015); ETH Zürich (2015); University of California/Davis (2017); University of Potsdam (2019); Harvard University (2019), University of Tasmania (2020)

SOCIETY MEMEBERSHIP

Swiss Botanical Society, Botanical Society Zürich, Swiss Zoological Society, European Society of Evolutionary Biology, International Society of Chemical Ecology

CONFERENCE ORGANISATION

2019	Chair 43rd New Phytologist Symposium on Networks and trait evolution, Zürich.
2018	Chair of the 2nd International Symposium on the Ecology and Evolution of Flowers, Zürich.
2018	Co-chair at GRC Plant Volatiles, Barga (Italy)
2017	PSC Symposium: Dymanics of Plant Development and Evolution, Zürich
2015	ESEB Lausanne: symposium on "Evolution of floral signals"
2011	ESEB Tübingen: symposium on "Mimiry"
2007	Gordons Research Conferences (GRC) Plant Volatiles Les Diablarets: Symposium of "Ecology of floral volatiles"

Important scientific contributions by Florian P. Schiestl

Most of my work has been carried out with students and collaborators. In the work I describe below, I have served as leading researcher or as main scientific advisor with major intellectual contributions.

Pollinator-driven evolution in plants. Most of my scientific work is in this research field. My older work focusses on orchids, where I have worked on mechanisms and evolution of floral mimicry and pollinator-driven speciation. My research in this field has culminated in a monography on floral mimicry, published 2016 by Oxford University Press (*1*). My more recent work focusses on Brassicaceae, where I have developed rapid cycling *Brassica rapa* plants as model system for experimental evolution with semi-natural selective environment (real interacting insects, and abiotic parameters such as soil). I and my group have been using this experimental greenhouse system in comparison with work done in wild populations. Whereas in orchids with highly specific pollination, specificity in pollination is a key driver of speciation (*2*), and floral isolation is sometimes the only reproductive barrier among closely related species (*3, 4*), Brassicaceae are typically generalized in pollination. Yet, using experimental evolution, we could demonstrate that different pollinators also lead to rapid divergent evolution in plant architecture, floral traits as well as in mating system (*5*) and that generalized pollination leads to unique evolutionary trajectories (*6*). In the *Brassica* system we have also worked out heritability and molecular bases of key traits (*7-9*) and used the G-matrix together with selection estimates to successful predict pattern of phenotypic evolution with observed values of selection (*10*).

Trade-offs between mutualists and antagonists in floral evolution. Besides pollinators, antagonists such as herbivores impact the evolution of flowers through the trade-offs they impose on plants. Very little is still known about how trade-offs impact selection, and the relative importance of antagonists and mutualists in floral evolution. In my research I have targeted this fascinating question by showing that herbivory can lead to reduced floral attractiveness through reduced floral scent emission, an effect that on the other hand increases the attractiveness of plants for parasitoids (*11*). We have also quantified non-additive selection imposed by pollinators and herbivores on flowers (*12*), and assessed the impact predators of herbivores such as crab spiders (*13*). Using the experimental evolution system, we have shown that herbivory strongly interacts with pollinator-driven evolution, e.g. leading to reduced attractiveness of flowers to bees, reducing herkogamy and elevated autonomous selfing (*14, 15*). This research also shed light on the evolution of herbivore-mediated phenotypic plasticity, which was, unexpectedly, to a large degree driven by the selection mediated by bee pollinators (*16*).

Evolution of floral signals in plants. For a long time, the functions of complex phenotypic traits like floral scent were not well understood. In my work I have shown that often only few specific scent compounds within a complex bouquet are behaviorally active in pollinators (*17*). This insight was achieved by electrophysiological recordings from olfactory neurons of pollinators in combination with behavioral assays (*3, 18, 19*). This approach led to important breakthroughs in the understanding of mechanisms of chemical floral mimicry (*1, 20-22*). In rewarding pollination systems, we have shown that pollinator-mediated selection varies with geography, explaining part of the high variability in floral scent bouquets among plant populations (*23, 24*). In the *Brassica*-bumblebee pollination system, we have shown that a few key compounds are electrophysiologically active and form honest signals, by covarying with nectar amount on a population level (*25*). These signals are rapidly learned by pollinator bees and used in their decisions which plants to visit. We modeled the somewhat unexpected evolution of honesty in rewarding plant-pollinator systems, and could show that pollinator behavior as well as resource limitation are key factors for honest signaling in plants (*26*). I also worked more conceptually on the evolution floral signal, through reviews and metal analysis (*27-29*) that have been very well received by the scientific community.

References

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3. D. D. Gervasi *et al.*, Floral scent and species divergence in a pair of sexually deceptive orchids. *Ecology and Evolution* **7**, 6023-6034 (2017).
4. S. Xu *et al.*, Floral isolation is the main reproductive isolation barrier among sexually deceptive orchids. *Evolution* **65**, 2606-2620 (2011).
5. D. D. Gervasi, F. P. Schiestl, Real-time divergent evolution in plants driven by pollinators. *Nature Communications* **8**, (2017).
6. F. P. Schiestl, A. Balmer, D. D. Gervasi, Real-time evolution supports a unique trajectory for generalized pollination*. *Evolution* **72**, 2653-2668 (2018).
7. P. Zu, W. U. Blanckenhorn, F. P. Schiestl, Heritability of floral volatiles and pleiotropic responses to artificial selection in Brassica rapa. *New Phytologist* **209**, 1208-1219 (2015).
8. P. Zu, F. P. Schiestl, The effects of becoming taller: direct and pleiotropic effects of artificial selection on plant height in Brassica rapa. *The Plant Journal* **89**, 1009-1019 (2017).
9. J. Cai, P. J. Zu, F. P. Schiestl, The molecular bases of floral scent evolution under artificial selection: insights from a transcriptome analysis in Brassica rapa. *Scientific Reports* **6**, (2016).
10. P. Zu *et al.*, Floral signals evolve in a predictable way under artificial and pollinator selection inBrassica rapa. *Bmc Evolutionary Biology* **20**, (2020).
11. F. P. Schiestl, H. Kirk, L. Bigler, S. Cozzolino, G. A. Desurmont, Herbivory and floral signaling: phenotypic plasticity and trade-offs between reproduction and indirect defense. *New Phytologist* **203**, 257-266 (2014).
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14. S. E. Ramos, F. P. Schiestl, Rapid plant evolution driven by the interaction of pollination and herbivory. *Science* **364**, 193-+ (2019).
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21. R. Peakall *et al.*, Pollinator specificity, floral odour chemistry and the phylogeny of Australian sexually deceptive *Chiloglottis* orchids: implications for pollinator-driven speciation. *New Phytologist* **188**, 437-450 (2010).
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27. F. P. Schiestl, S. D. Johnson, Pollinator-mediated evolution of floral signals. *Trends in Ecology & Evolution* **28**, 307-315 (2013).
28. F. P. Schiestl, Ecology and evolution of floral volatile-mediated information transfer in plants. *New Phytologist* **206**, 571-577 (2015).
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