



Exploration of Ecological
Interactions with Molecular
and Chemical Techniques

5 PhD positions in Molecular and Chemical Ecology and Evolution

***International Max Planck Research School:
“The Exploration of Ecological Interactions with Molecular and Chemical
Techniques”***

The International Max Planck Research School (IMPRS) "The Exploration of Ecological Interactions with Molecular and Chemical Techniques" in Jena, Germany, invites applications for **5 PhD positions** beginning in October 2019 – January 2020. The overarching research topic is the use of molecular, chemical and neurobiological techniques to experimentally explore ecological interactions under natural conditions. The main focus is on the relationship between plants, microbes and herbivores, and their environment, as well as the evolutionary and behavioral consequences of these interactions. We offer **12 exciting projects** focusing on different organisms and approaches. The complete list of projects offered including project descriptions is available on our website (http://imprs.ice.mpg.de/ext/index.php?id=420#header_logo).

We are looking for enthusiastic PhD students with strong interests in the above-described central topic. Applicants should have or be about to obtain a Masters or equivalent degree in one of the following fields: entomology, neurobiology, molecular biology, biochemistry, analytical chemistry, plant physiology, genetics, ecology, evolutionary biology, bioinformatics, and mathematics and computer science. All our projects are highly integrative and require willingness to closely collaborate with researchers of different backgrounds.

The Research School is a joint initiative of the Max Planck Institute for Chemical Ecology and the Friedrich Schiller University. We offer state-of-the art equipment, an excellent research environment, supervision by a thesis committee and a structured training program including scientific courses, training in transferable and outreach skills and participation in research symposia. Successful candidates will receive a Max Planck support contract. There are no tuition fees and the working language is English.

Application deadline is May 24th, 2019.

For detailed information on the IMPRS, projects offered and application requirements, please visit our website: <http://imprs.ice.mpg.de/>.

Please apply online from April 8, 2019, at: <https://imprs-reg.ice.mpg.de/>.

Projects offered in 2019

Please find below a list of projects we offer for this year's recruitment. All projects are highly integrative and require the collaboration between different research groups. Applicants can identify up to three projects of interest. It is possible to change project preferences during the recruitment in Jena.

[Project 1](#): Surfing the surface: Hydrophobins on fungal hyphae

Supervisors: [Prof. Dr. Erika Kothe](#), Institute for Microbiology, Friedrich Schiller University Jena; [Prof. Dr. Jonathan Gershenzon](#), Department of Biochemistry, Max Planck Institute for Chemical Ecology; [Dr. Aleš Svatoš](#), Research Group Mass Spectrometry, Max Planck Institute for Chemical Ecology

[Project 2](#): Towards GC-MS: Adapting SIRIUS and CSI:FingerID for Electron Ionization fragmentation

Supervisors: [Prof. Dr. Sebastian Böcker](#), Chair of Bioinformatics, Friedrich Schiller University Jena; [Prof. Dr. Georg Pohnert](#), Chair of Instrumental Analytics, Friedrich Schiller University Jena; [Dr. Aleš Svatoš](#), Research Group Mass Spectrometry, Max Planck Institute for Chemical Ecology

[Project 3](#): Molecular basis of balanced color polymorphisms in grasshoppers

Supervisors: [Prof. Dr. Holger Schielzeth](#), Institute of Ecology and Evolution, Friedrich Schiller University Jena

[Project 4](#): Communication in plant communities via a hyphal network connecting the roots of neighboring plants

Supervisors: [Prof. Dr. Ralf Oelmüller](#), Plant Physiology, Matthias Schleiden Institute, Friedrich Schiller University Jena; [Priv. Doz. Dr. Axel Mithöfer](#), Department of Bioorganic Chemistry, Max Planck Institute for Chemical Ecology

[Project 5](#): Tapping into signaling interactions between nematodes and aphids

Supervisors: [Prof. Dr. Nicole M. van Dam](#), Molecular Interaction Ecology, German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig & Friedrich Schiller University Jena; [Dr. Grit Kunert](#), Chemical Communication in Plant-Aphid Interactions, Max Planck Institute for Chemical Ecology

[Project 6](#): Convergent evolution of metabolic pathways: The biosynthesis of benzoxazinoids in dicotyledonous plants

Supervisors: [Prof. Dr. Sarah O'Connor](#), Department of Natural Product Biochemistry, Max Planck Institute for Chemical Ecology; [Dr. Tobias Köllner](#), Department of Biochemistry, Max Planck Institute for Chemical Ecology

*[Project 7](#): The role of the transcription factor FLC in growth habit, fruit dimorphism and plant defense of *Aethionema arabicum**

Supervisors: [Prof. Dr. Günter Theißen](#), Genetics, Matthias Schleiden Institute, Friedrich Schiller University Jena; [Prof. Dr. Jonathan Gershenzon](#), Department of Biochemistry, Max Planck Institute for Chemical Ecology; [Prof. Dr. Ralf Oelmüller](#), Plant Physiology, Matthias Schleiden Institute, Friedrich Schiller University Jena

[Project 8](#): Chemical defense strategies of plants and evasion strategies of feeding insects – A systems biology approach

Supervisors: [Prof. Dr. Stefan Schuster](#), Bioinformatics, Matthias Schleiden Institute, Friedrich Schiller University Jena; [Prof. Dr. Jonathan Gershenzon](#), Department of Biochemistry, Max Planck Institute for Chemical Ecology

[Project 9: Detoxification of diterpene resin acids by the pine weevil \(Hylobius abietis\)](#)

Supervisors: [Prof. Dr. Jonathan Gershenzon](#), Department of Biochemistry, Max Planck Institute for Chemical Ecology; [Prof. Dr. Erika Kothe](#), Institute for Microbiology, Friedrich Schiller University Jena
[Dr. Axel Schmidt](#), Department of Biochemistry, Max Planck Institute for Chemical Ecology

[Project 10: Bimodal navigation in desert ants: The role of vision and olfaction](#)

Supervisors: [Dr. Markus Knaden](#), Department of Evolutionary Neuroethology, Max Planck Institute for Chemical Ecology; [Dr. Hannah Rowland](#), Research Group Predators and Prey, Max Planck Institute for Chemical Ecology

[Project 11: Tiny beetle with a chemical weapon: Do flea beetles use mustard oils against predators and pathogens?](#)

Supervisors: [Dr. Franziska Beran](#), Research Group Sequestration and Detoxification in Insects, Max Planck Institute for Chemical Ecology; [Prof. Jonathan Gershenzon](#), Department of Biochemistry, Max Planck Institute for Chemical Ecology

[Project 12: A bird's eye view of warning signals](#)

Supervisors: [Dr. Hannah Rowland](#), Research Group Predators and Prey, Max Planck Institute for Chemical Ecology; [Prof. Uwe Mayer](#), Center for Mind/Brain Sciences, University of Trento



Exploration of Ecological
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5 Doktorandenstellen in molekularer und chemischer Ökologie und Evolution

International Max Planck Research School: “The Exploration of Ecological Interactions with Molecular and Chemical Techniques”

Die Doktorandenschule am Max-Planck-Institut für chemische Ökologie schreibt **5 Doktorandenstellen** aus, die im Zeitraum Oktober 2019 – Januar 2020 besetzt werden sollen. Zentrales Forschungsthema unserer Schule ist die experimentelle Untersuchung ökologischer Wechselbeziehungen unter Zuhilfenahme molekularer, chemischer und neuroethologischer Methoden. Im Mittelpunkt stehen die Beziehungen zwischen Pflanzen, Herbivoren, Mikroben und ihrer Umwelt sowie der Einfluss dieser Wechselbeziehungen auf Entwicklung und Verhalten der beteiligten Organismen. Wir bieten **12 interessante Projekte** an, die sich auf verschiedene Organismen und Methoden konzentrieren. Die vollständige Liste aller Projektangebote inklusive der Projektbeschreibungen findet man auf unserer Website (http://imprs.ice.mpg.de/ext/index.php?id=420#header_logo).

Wir suchen hochmotivierte Bewerber mit großem Interesse an den oben beschriebenen Themen. BewerberInnen sollten einen Master bzw. Diplomabschluss in einem der folgenden Felder haben: Ökologie, Evolutionsbiologie, Bioinformatik, analytische Chemie, Entomologie, Neurobiologie, Molekularbiologie, Biochemie, Pflanzenphysiologie und Genetik. All unsere Projekte sind breitgefächert und es wird vorausgesetzt, dass die Studierenden gewillt sind, eng mit Wissenschaftlern aus verschiedenen Forschungsbereichen zusammenzuarbeiten.

Die IMPRS geht aus einer Zusammenarbeit des Max-Planck-Instituts für chemische Ökologie und der Friedrich-Schiller-Universität in Jena hervor. Wir bieten eine moderne Ausstattung, ein hervorragendes Forschungsumfeld, individuelle Betreuung durch ein Promotionskomitee und ein strukturiertes Weiterbildungsprogramm, das wissenschaftliche Kurse, Softskillkurse und interne Konferenzen und Veranstaltungen beinhaltet. Erfolgreiche Bewerber erhalten einen Max Planck Doktorandenvertrag. Es gibt keine Studiengebühren und die Studiensprache ist Englisch.

Bewerbungsschluss ist der 24. Mai 2019.

Für mehr Informationen zur IMPRS, den Projektangeboten und Bewerbungsvoraussetzungen besuchen Sie bitte unsere Website: <http://imprs.ice.mpg.de/>. Sie können sich unter folgendem Link ab dem 8. April 2019 online bewerben: <https://imprs-reg.ice.mpg.de/>.

Projekte 2019

Es folgt eine Übersicht aller ausgeschriebenen Projekte (Titel Englisch). Alle Projekte sind interdisziplinäre ausgerichtet und erfordern Bereitschaft zu fächerübergreifender Zusammenarbeit. Bewerber können bis zu 3 Projekte auswählen. Während des Bewerbungsverfahrens in Jena kann die Projektpräferenz bei Bedarf noch angepasst werden.

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