

Guide Laboratory Courses (MP 156/MP 157)

Two dedicated lab research modules (MP 156 and MP 157) with practical orientation are offered in the master program Insect Biotechnology and Bioresources. Students acquire modern laboratory techniques and autonomous lab work in specific topics within different work groups. Students can choose one of the following six fields.

Workload

Each module comprises a total workload of 180 hours (6 CP) including 80 hours of practical training. Possible dates for the beginning and the exact timing depends on available projects. Lab work (80 h) can either be conducted as a block project during the non-lecture period or spread over a longer period of time depending on the chosen project. This is coordinated with the respective contact person. Students have to plan this module depending on personal interests and their free capacities.

Module Registration

It is not possible to register for these two modules via Stud.IP. For concrete enquiries or more information please send a meaningful email to the contact persons given below. The email should contain information about your pre-qualifications (practical and theoretical experiences) and interests.

Examination Registration

For these modules no examination registration in Flex is necessary. The lecturer fills in the examination protocol which will be forwarded to the examination office after completion of the module. In the examination office the grade is entered into FlexNow.

Topics

Insect pest control systems

As prerequisite for participating in this topic students need to be familiar with integrated pest management (MK 089). An understanding in insect biotechnology strategies and molecular techniques is also helpful (e.g. MP 090).

- practical insight into insect pest rearing and control systems for integrated pest management.
- lab training and autonomous lab work in special topics of integrated pest management
- presentation, discussion of literature and lab work is part of the lab module
- topic specific literature research and presentation

Contact: Dr. Sabine Otto, sabine.otto@uni-giessen.de

Location: JLU Gießen, Winchesterstr. 2, 35394 Gießen

Molecular techniques

As prerequisite for participating in this topic students need to be familiar with molecular techniques (e.g. MP 149). An understanding in insect biotechnology strategies is useful (e.g. MP 090).

- practical insight into main molecular techniques for cloning, insect transformation, and/or genome modification
- lab training and autonomous lab work in special topics of molecular techniques
- presentation, discussion of literature and lab work is part of the lab module
- topic specific literature research and presentation

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Chemistry of specialized metabolites

As prerequisite for participating in this topic students need knowledge about natural products (e.g. MK 87, MK 90). Interest in compound separation (HPLC, LC-MS) structure elucidation (NMR) is helpful.

Our lab applies tools from bioinformatics, analytical chemistry, molecular and microbiology including state-of-the-art genomics and metagenomics.

Students

- get an overview of origin, biosynthesis, ecophysiological role, and practical importance of natural products
- know the most important classes of natural products
- perform sampling, isolation, separation, clean-up, and analysis of natural products by state-of-the-art chromatographic and instrumental-analytical techniques, including thin-layer chromatography, HPLC, GC, GC/MS, and LC/MS
- perform biological activity assays of crude extracts and isolated compounds, e.g. antibacterial

Contact: Prof. Dr. Till F. Schäberle; till.f.schaeberle@agrar.uni-giessen.de

Location: JLU Gießen, Heinrich-Buff-Ring 26-32, 35392 Gießen

Natural Products from Microorganisms: Discovery and Application

For this topic, students should be familiar with molecular and microbiological techniques (e.g. MP 149). Interest in new natural product production is an asset.

Our lab applies tools from bioinformatics, analytical chemistry, molecular and microbiology including state-of-the-art genomics and metagenomics.

- hands-on training in microbial-based drug discovery including standard microbiological methods, molecular techniques and screening for biological activities
- theoretical insights into the application of natural products (focus on antibiotics)
- genetic manipulation of different microorganisms
- insights into analytical tools for natural product identification or insights into molecular biology tools for the discovery of biosynthetic gene clusters

Contact: Prof. Dr. Till F. Schäberle; till.f.schaeberle@agrar.uni-giessen.de

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Pharmaceutical Biotechnology

Lab training and autonomous lab work in special topics of pharmaceutical biotechnology, especially in the fields of process development in up- and downstream of biologicals and in pharmaceutical technology integrated into current application orientated scientific projects.

Students

- have a basic knowledge in the field of concepts for process development for topics of relevance in biopharmaceutical industry
- gain basic literature-based insight into a special topic, potentially applicable for a master thesis project
- have insights into tools and methods applied in process development as used in pharmaceutical biotechnology serving as a basis for a potential master thesis project

Contact: Prof. Dr. Peter Czermak; peter.czermak@kmub.thm.de

Location: THM University of Applied Sciences, Wiesenstraße 14, 35390 Gießen

Industrial Biotechnology

Lab training and autonomous lab work in special topics of industrial biotechnology, especially in the fields of process development in cell and bacterial culture systems integrated into current application orientated scientific projects.

Students

- have basic knowledge in the field of concepts for bioprocess development for topics of industrial relevance
- gain basic literature insight into a special topic, potentially applicable for a master thesis project
- have insights into tools and methods applied in process development as used in industrial biotechnology serving as a basis for a potential master thesis project

Contact: Prof. Dr. Peter Czermak; peter.czermak@kmub.thm.de

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