

Module title		Abbreviation
Plant Immunobiology and Pharmaceutical Biology		07-MS31PIP-152-m01
Module coordinator		Module offered by
holder of the Chair of Ecophysiology and Vegetation Ecology		Faculty of Biology
ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
<p>This lecture addresses topics of pathogen recognition and signal transduction in plants, molecular and organismic defence and the pharmaceutical relevance of plant-derived bioactive compounds. Plant immunobiology: interactions between plants and pathogens comprise evolutionary dynamic and complex systems. Different strategies of the pathogens - bacteria, fungi and viruses - as well as defence mechanisms of the host plants will be discussed. The molecular mechanisms of pathogen recognition, signal transduction, regulation of gene expression and activation of local and systemic defence responses are in the focus of this lecture. Differences and similarities between plant and human immune systems will be pointed out. Understanding plant-pathogen-interactions and molecular mechanisms determining susceptibility and defence is fundamental for the development of strategies in plant protection. Evolution, function and pharmaceutical relevance of plant secondary metabolites: Secondary metabolites are part of effective plant defence strategies against microorganisms and herbivores and are often essential for survival. The evolution of secondary metabolism will be discussed and general as well as specific defence strategies will be explained. Pharmacological mechanisms of action and molecular targets of important classes of plant bioactive compounds will be presented. A high proportion of currently used drugs have been developed from plant secondary metabolites that have been used as lead structures to generate potent drugs with improved pharmaceutical properties. Examples of therapies with very potent plant pharmaceuticals (evidence-based medicine) as well as possibilities and limitations of phytotherapy (traditional medicine) will be discussed.</p>		
Intended learning outcomes		
Students are able to understand the interaction between plants and the environment on a molecular level and to discuss the topic in the context of the scientific state of the art.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2) + S (1) Module taught in: German and/or English		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) Language of assessment: German and/or English		
Allocation of places		
--		
Additional information		
--		
Workload		
300 h		
Teaching cycle		
--		

Referred to in LPO I (examination regulations for teaching-degree programmes)

--

Module appears in

Master's degree (1 major) Biology (2015)
 Master's degree (1 major) Biosciences (2016)
 Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)
 Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)
 Master's degree (1 major) Biosciences (2017)
 Master's degree (1 major) Biosciences (2018)
 Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
 Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
 Master's degree (1 major) Biosciences (2021)
 exchange program Biosciences (2022)
 Master's degree (1 major) Biosciences (2023)
 Master's degree (1 major) Biosciences (2024)