

Module Name Plant Genetics						
Type of Module ○ Advanced Module				Module Code Plant Genetics		
Identification Number MN-B-SM (P 1)	Workload 360 h	Credit Points 12 CP	Term 2 nd term of studying	Offered Every Summer term, 1 st half	Start Summer term only	Duration 7 weeks
1	Course Types a) Lectures b) Tutorials c) Practical/Lab d) Seminar		Contact Time 20 h 14 h 144 h 5 h		Private Study 30 h 14 h 109 h 24 h	
2	Module Objectives and Skills to be Acquired Students who successfully completed this module <ul style="list-style-type: none"> • have gained in-depth knowledge in up-to-date plant research topics. As this module also includes a section on molecular plant breeding which is co-taught by a plant breeder from a commercial breeding company, students will also gain transferable knowledge. • are trained in modern techniques in advanced molecular biology, biochemistry and cell biology (see contents of the module). • can independently carry out small scientific projects related to the topic of the module. • have learned how to present research results in oral and written form and to critically discuss scientific publications related to the topic of the module on a professional level. • are able to transfer skills acquired in this module to other fields of biology. 					
3	Module Content <ul style="list-style-type: none"> • Theory of modern methods in molecular plant sciences (also used in other sciences) • Plant developmental biology • Molecular biology of plant-environment interactions • Biotic interactions (e.g. symbiosis with mycorrhizal fungi) • Protein-protein interactions (e.g. co-immunoprecipitations, FRET, co-localization) • Genetic and molecular analysis of cell-cell communication (mutant analysis, plant transformation) • Cell imaging using fluorescent and confocal microscopy • Analysis of reporter gene activities, particle bombardment • Real-time RT-qPCR to analyze gene expression • Epigenetics, histone modifications • Other methods in modern molecular biology, biochemistry and cell biology • Learning how to write a grant proposal 					

4	<p>Teaching Methods</p> <ul style="list-style-type: none"> Lectures; Interactive tutorials; Practical/Lab; Seminar; Guidance to independent research; Training on writing and presentation techniques in oral and written forms
5	<p>Prerequisites (for the Module)</p> <p>Enrollment in the Master's of Science degree course "Molecular Plant and Microbial Sciences"</p> <p>Additional academic requirements</p> <p>Previous attendance of the lecture module Molecular Plant and Microbial Sciences</p>
6	<p>Type of Examination</p> <p>The final examination consists of two parts: One hour written examination on topics of lectures, seminars and the practical/lab part (50 % of the total module mark), oral presentation (20-30 min; 50 % of the total module mark)</p>
7	<p>Credits Awarded</p> <p>Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)</p>
8	<p>Compatibility with other Curricula</p> <p>None</p>
9	<p>Proportion of Final Grade</p> <p>12.0 %</p>
10	<p>Module Coordinator</p> <p>Prof. Dr. Ute Höcker, phone 470 6897, e-mail: hoeckeru@uni-koeln.de</p>
11	<p>Further Information</p> <p>Participating faculty: Prof. Dr. M. Bucher, Prof. Dr. U. Höcker, Prof. Dr. M. Hülskamp, Dr. F. Turck</p> <p>Literature:</p> <ul style="list-style-type: none"> Information on recommended textbooks and other reading material will be given on the ILIAS representation of the course (see https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html) <p>General time schedule: Week 1-5 (Mon.-Thu./Fri.): Lectures, tutorials, practical/lab and writing exercises. Week 6 (Mon.-Fri): Preparation for the seminar talk (held at the end of week 6); Week 7 (Mon.-Fri): Preparation for the written examination</p> <p>Note: The module contains hands-on laboratory work conducted in groups of max. two people and is taught in a course room fully equipped with up to date research technology. The module does contain computer-based practicals/research as one main component.</p> <p>Introduction to the module: April 13, 2026 at 9.00 a.m., Cologne Biocenter, room 4.004 (fourth floor) or online (in this case, further information/link will be sent to your Smail-Account); for preparation to the module before this introduction see ILIAS link under literature.</p> <p>Written examination: June 05, 2026, second/supplementary examination August 14, 2026; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>