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| Module Name Plant Genetics and Development | | | | | | |
| Type of Module ○ Advanced Module | | | | Module Code Plant Genetics and Development | | |
| Identification Number MN-B-SM (P 2) | 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) Practical/Lab c) Seminar | | Contact Time 9 h 166 h 3 h | | Private Study 18 h 140 h 24 h | |
| 2 | Module Objectives and Skills to be Acquired Students who successfully completed this module <ul style="list-style-type: none"> • have acquired detailed knowledge on principles and methods used to study plant development including genetics, molecular biology next generation sequencing and microscopy. • have obtained an understanding of different aspects of plant development including leaf, fruit and stamen development and meiosis. • are able to independently plan, carry out and evaluate small scientific projects related to the topics 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"> • CRISPR/Cas9 gene editing • Confocal laser scanning microscopy • Genetic and phenotypic characterization of mutants • Next generation sequencing approaches • Generation and characterization of transgenic plants • Microscopy and cell biology <p><i>Explanatory note:</i> The above list comprises state-of-the art genetic and molecular techniques that are commonly used in the field of plant genetics and plant molecular biology. Every student participating in this module will be confronted with a large subset of it. The exact content, however, will depend on the 6-week research project the student will work on (lab of Prof. M. Tsiantis: leaf development and diversity; lab of Dr. A. Hay: explosive seed dispersal; lab of Dr. H. Nakagami: Marchantia as a model system; lab of Prof. R. Mercier: meiosis).</p> | | | | | |

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| 4 | <p>Teaching Methods</p> <ul style="list-style-type: none"> Lectures; Practical/Lab (Project work); Presentation of scientific papers; Training in independent research and communicating scientific results in oral and written form. |
| 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: Oral examination on topics of lectures (20-30 min; 50 % of the total module mark), written report (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>Dr. Angela Hay, phone 5062 108, e-mail: hay@mpipz.mpg.de</p> |
| 11 | <p>Further Information</p> <p>Participating faculty: Dr. A. Hay, Prof. R. Mercier, Prof. M. Tsiantis, Dr. H. Nakagami</p> <p>Location: The module will be held at the MPI for Plant Breeding Research, Carl-von-Linné-Weg 10, 50829 Köln</p> <p>Literature:</p> <ul style="list-style-type: none"> Griffiths, A.J.F., Wessler, F.R., Lewontin, R.C., <i>et al.</i> (2008) An Introduction to Genetic Analysis. 9th edition, W.H. Freeman Leyser, O., Day, S. (2003) Mechanisms in Plant Development. Blackwell Publishing <p>General time schedule: Weeks 1-6 (Mon.-Fri.): Lab project; Weeks 1-4 (Mon.-Fri.): One lecture per week; Week 5: Journal club (topic and date will be arranged individually); Week 6: Preparation for oral examination; Week 7 (Mon.-Fri): Oral examination; Complete written report by end of Week 9.</p> <p>Note: The module contains hand-on laboratory work conducted individually and is taught in research laboratories. The module does not contain computer-based practicals/research as a main component.</p> <p>Introduction to the module: April 8, 2024 at 13:00, MPI for Plant Breeding Research, Carl-von-Linné-Weg 10, 50829 Köln, Seminar room CS-E11 or online (in this case, further information/link will be sent to your Smail-Account)</p> <p>Oral examination: May 27, 2024, second/supplementary examination August 02, 2024; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p> |