

name of the module	Elective Module, WM
start	Two time slots: time slot 1: June, time slot 2: July
duration	2 - 3 weeks; limited number of students!
location	University of Freiburg, Faculty of Biology
contact person	Thomas Kretsch, Ralf Reski (Eva Decker)
ECTS (regular/max)	9
examination	Individual – depending on the selected module
graded	no
description of content (approx. ½ page)	<p>The Elective Modules reflect the various sub disciplines of the Major Plant Sciences. The students can choose between different offers in two different time slots (week 24 – 27, week 28 – 31).</p> <p>Molecular signaling mechanisms in plants – time slot 1 Contents: Broad introduction into current topics and scientific work at the department of Molecular Plant Physiology, mainly concentrating on molecular mechanism of light and hormone signaling in plants; Practical: Students choose between two different options: First, a classical experimental option that mainly concentrates on projects in the laboratories of participating working groups and, second, an english scientific writing option.</p> <p>Molecular developmental biology of plants– time slot 1 Contents: Balance between stem cell renewal and differentiation, chromatin structure in cell fate regulation, embryonic formation of stem cells and meristems, meristem function, environmental regulation of meristem activity; mobile signals: micro RNAs, transcription factors; reconstruction of small RNA signaling pathways, logic of transcription factor networks, visualizing signaling processes by live imaging phosphorylation pathways; applied aspects in agronomics</p> <p>The cell at high resolution - time slot 1 Contents: Comprehensive overview and practical experiences in various cell biology topics and high/super resolution microscopy techniques covering the following areas: Endocytosis, vesicular trafficking, cellular compartments, polarized cells, fluorescence microscopy, electron microscopy, Atomic force microscopy</p> <p>Plant biotechnology and functional genomics – time slot 2 Contents: Design of an individual cloning strategy (via Gibson Cloning) for a gene-targeting/genome-editing construct (knockout/knockin) for <i>Physcomitrella patens</i>; project design for generation and molecular analysis of transgenic <i>Physcomitrella</i> plants; generation and molecular analysis of transgenic <i>Physcomitrella</i> plants.</p> <p>Cell biology – time slot 2</p>

Contents: 4 weeks of practical work in a project of plant cell biology, e.g.: cell polarity and molecular control of pathogenic and symbiotic infections; subcellular localization and quantitation of membrane-signalling compounds; control of infection by plant cells in symbiotic and pathogenic plant-microbe interaction; expression of markers of infections; fluorescence microscopy-based analyses of cellular repolarization before and during microbial infection.