

<b>Module Name</b>		<b>Module Code</b>	
Functional Genomics in Phytopathogen Research		agrigAEF015-01a	
<b>Module Coordinator</b>			
Prof. Dr. Daguang Cai			
<b>Organizer</b>			
Institute of Phytopathology - Molecular Phytopathology			
<b>Faculty</b>			
Faculty of Agricultural and Nutritional Sciences			
<b>Examination Office</b>			
Faculty of Agricultural and Nutritional Sciences - Examination Office			
<b>ECTS Credits</b>	6		
<b>Evaluation</b>	Graded		
<b>Duration</b>	One semester		
<b>Frequency</b>	Only takes place during winter semesters		
<b>Workload per ECTS Credit</b>	30 hours		
<b>Total Workload</b>	180 hours		
<b>Contact Time</b>	60 hours		
<b>Independent Study</b>	120 hours		
<b>Teaching Language</b>	English		
<b>Recommended Requirements</b>			
<ul style="list-style-type: none"> <li>• Basic knowledge and understanding of Phytopathology, Genetics and gene techniques.</li> <li>• Basic knowledge of structure and function of genome, and basic tools for genome analysis (according to modules. "Introduction to Molecular Biology-MM1" „Computational and Basic knowledge and understanding of Phytopathology, Genetics and gene techniques.</li> </ul>			
<b>Module Courses</b>			
<b>Course Type</b>	<b>Course Name</b>	<b>Compulsory/Optional</b>	<b>SWS</b>
Lecture	Genome Analysis of Phytopathogens	Compulsory	2
Practical Exercise	Functional Genomics in Phytopathogen Research	Compulsory	2
<b>Prerequisites for Admission to the Examination(s)</b>			
A passed and graded protocol (practical exercises) is necessary.			

<b>Examination(s)</b>				
<b>Examination Name</b>	<b>Type of Examination</b>	<b>Evaluation</b>	<b>Compulsory / Optional</b>	<b>Weighting</b>
Oral Examination: Functional Genomics in Phytopathogen Research	Oral Examination	Graded	Compulsory	100
<b>Further Information on the Examination(s)</b>				
1.+2. period in winter semester 1. period in summer semester  examiner: Prof. Cai / Dr. Schenke QIS: 91800 with number of Examination 91810 and 91820				
<b>Course Content</b>				
<ul style="list-style-type: none"> <li>• Genome of plant pathogens and plant animal pests</li> <li>• Genome and functional genome analysis: NGS sequencing and sequence analysis</li> <li>• Databases and database-based genome analysis</li> <li>• Genome knowledge-based molecular diagnosis</li> <li>• Characterization of a virulence factors involved in molecular plant-parasite interaction</li> </ul> Practical Exercise: qPCR-based molecular diagnosis of <i>Fusarium</i> spp.				
<b>Learning Outcome</b>				
<ul style="list-style-type: none"> <li>• Advanced understanding and knowledge of functional genomics of plant pathogens and plant animal pests</li> <li>• Knowhows and competence for application of functional genomics in basic research on plant-parasite interactions and in plant protection practices</li> <li>• Students learn how to apply appropriate methodology and strategy for genetic improvement of plant disease resistance</li> <li>• Advanced understanding of the application of genomics in agricultural research and practice.</li> <li>• Students learn on using several sources of marker information for genetic improvement of livestock.</li> <li>• They are able to evaluate alternative designs and can classify results. These can be interpreted in view of opportunities and possible pitfalls.</li> </ul>				
<b>Reading List</b>				
Wolpert (2017): "Genome-Enabled Analysis of Plant-Pathogen Interactions"; Alonso (2015): Plant Functional Genomics; Hakeem et al. (2017): "Plant Bioinformatics" Vijai Bhaaauria (2017): "Next-generation Sequencing and Bioinformatics for Plant Science"; Agrios (2005) Plant Pathology; David B. Collinge (2016) Plant Pathogen, Resistance Biotechnology; Robert Burns (2008) Plant Pathology : Techniques and Protocols). Singh (2018): „Molecular Aspects of Plant-Pathogen Interaction"; In addition, Lecture contents and slides, scientific literatures, review articles and internet links are online available, and will be introduced at the beginning of the course.				

### **Additional Information**

class size: 20

Enrollment by OLAT within workdays Monday through Friday in the 1st week of the 2. audit period of the preceding semester. Following information is necessary:

matriculation number

last name, first name

degree

study program

stu-Email

The allocation of the places takes place in the 2nd week of the 2. audit period of the preceding semester.

Acceptance of the place by students only through participation at the first day of the course. Students without a place can get a place at the first day of the course by move-up procedure.

<b>Use</b>	<b>Compulsory / Optional</b>	<b>Semester</b>
Master, 1-Subject, Agricultural Sciences, Specialisation Agricultural Economics, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agricultural Economics, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agribusiness, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agribusiness, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2013)	Optional	-
Master, 1-Subject, AgriGenomics, (Version 2017)	Optional	-
Master, 1-Subject, AgriGenomics, (Version 2010)	Optional	-
Master, 1-Subject, Dairy Science, (Version 2017)	Optional	-
Master, 1-Subject, Nutritional and Food Science, (Version 2013)	Optional	-
Master, 1-Subject, Nutritional and Consumer Economics, (Version 2017)	Optional	-
Master, 1-Subject, Nutritional and Consumer Economics, (Version 2013)	Optional	-