



LS-WG Infection Biology
Webinar – 20/10/2022



Master's degree program in Infection Biology

The "Infection Biology" curriculum is part of the Health and Biology Master

Dedicated to students of the Faculty of Sciences, Faculty of Medecine and Faculty of Pharmacy

Courses language: French and English

MASTER 1

Proposed courses		Credits
Semester 1 (September-January)		
Immunology	Obligatory	5
Statistics applied to biology	Obligatory	5
Molecular basis of infectious diseases	Obligatory	5
Experimental approaches in infection biology	Obligatory	5
Choice of 2 options among:		
Functional Genomics	Optional	5
Cellular Biology	Optional	5
Structural Biology	Optional	5
Semester 2 (February-July)		
Immunopathology	Obligatory	5
Supervised research work	Obligatory	5
Internship 1 (2 months)	Obligatory	10
Internship 2 (2-4 months)	Obligatory	10

MASTER 2

Proposed courses		Credits
Semester 3 (September-January)		
Molecular and Cellular parasitology	Obligatory	5
Molecular and Cellular Virology	Obligatory	5
Molecular and Cellular Bacteriology	Obligatory	5
Immune Responses to Pathogens	Obligatory	5
Choice of 2 options among:		
Genetic Information, Epigenetics	Optional	5
Signaling: methods and concepts	Optional	5
Bioinformatics and System Biology	Optional	5
Integrated Physiopathology	Optional	5
Physical Biology	Optional	4
Semester 4 (February-July)		
Research project proposal	Obligatory	10
Lab Internship (4-6 months)/Thesis work	Obligatory	20

LAB INTERSHIPS

<https://www.umontpellier.fr/en/recherche/unites-de-recherche>

Laboratory of Pathogen Host Interactions – LPHI

Montpellier Institute of Infectious Diseases Research – IRIM

Institute of Human Genetics - IGH

Institute of Molecular Genetics of Montpellier - IGMM

Montpellier Cell Biology Research Centre - CRBM

MIVEGEC

Pathogenesis and Control of Chronic and Emerging Infections – PCCEI

Translational Research in HIV and Infectious Diseases - TransVIHMI

Bacterial Virulence and Chronic Infections – VBIC

InterTRYP (CIRAD)

Bacteriology, Parasitology and Immunity

Virology, Bacteriology

Virology

Virology

Filariasis, symbiosis with Wolbachia

Parasites and vectors, Virology

Virology

Pathogenesis, transmission and control of infectious diseases

Bacteriology

Host/vector/trypanosomatidae interactions



**Julius-Maximilians
Universität Würzburg**

Infection Biology
PubMed (2021-22): 265 Entries



Julius-Maximilians Universität Würzburg

28.000 Students

2.400 Researchers

10 Faculties

255 Degree Programs



Research Centers:

- HIRI: Helmholtz Center for RNA-based Infection Research
- IMIB: Institute for Molecular Infection Biology
- Fraunhofer Translational Center Regenerative Therapies
- Max-Planck Institute of Systems Immunology

For Master Students

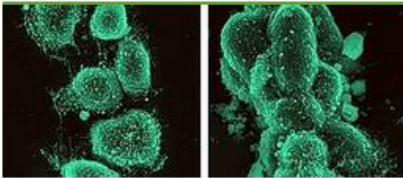
30 Credits:

- Theory Modules à 5, 10 or 15 CP
- Internships à 5, 10 or 15 CP
- Thesis: 1 semester



Chair of Microbiology

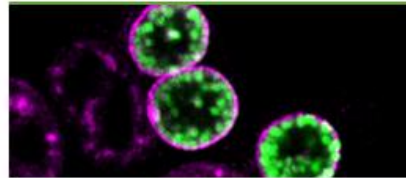
Research



> Infection and Cancer

Group leaders:

- > Thomas Rudel
- > Cindrilla Chumduri



> Chlamydiales

Group leaders:

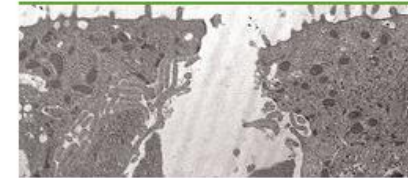
- > Thomas Rudel
- > Cindrilla Chumduri
- > Vera Kozjak-Pavlovic



> Neisseria gonorrhoeae

Group leaders:

- > Thomas Rudel
- > Dagmar Beier
- > Vera Kozjak-Pavlovic



> Bordetella pertussis

Goup leader:

- > Roy Gross



> Staphylococcus aureus

Group leader:

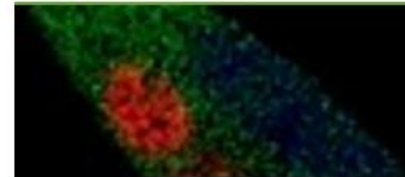
- > Martin Fraunholz



> Systems biology of antibiotics

Group leader:

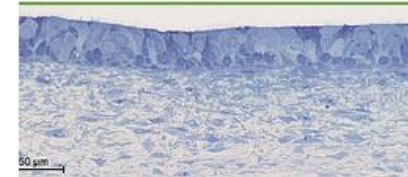
- > Ana Rita Brochado



> Vaccines

Group leaders:

- > Thomas Rudel
- > Birgit Bergmann



> 3D Infection models

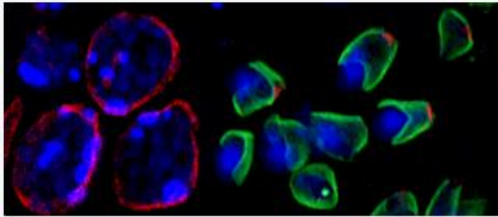
Group leaders:

- > Thomas Rudel
- > Cindrilla Chumduri
- > Roy Gross
- > Vera Kozjak-Pavlovic



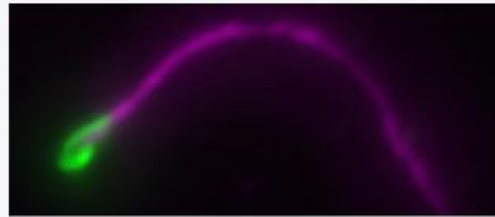
Chair of Cell and Developmental Biology

> Alsheimer



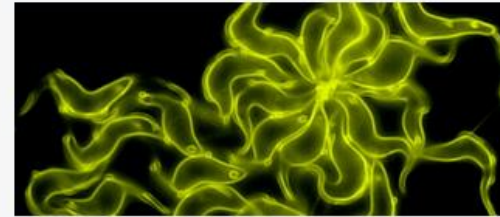
We currently study the function of nucleocytoplasmic network systems in nuclear shaping and meiotic chromosome dynamics

> Morriswood



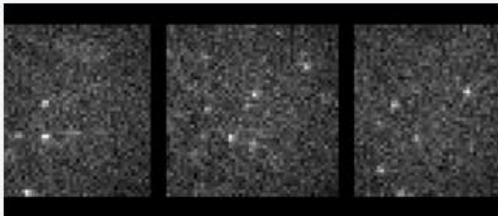
We study the eukaryotic cytoskeleton and motor proteins.

> Engstler



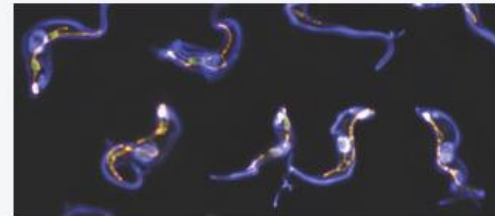
We study the adaptive and dynamic pleomorphism of parasites on the molecular, cellular and organismic level

> Fenz



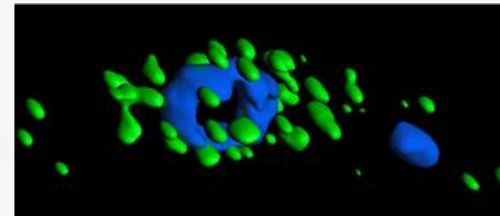
Our research focuses on membrane biophysics of living cells and biomimetic model systems.

> Janzen



We investigate how African trypanosomes and Leishmania parasites adapt to different host environments

> Kramer



We study spatial aspects of mRNA metabolism in trypanosomes aiming to understand gene regulation.



Helmholtz Center for RNA-based Infection Research (HIRI)

Research Groups



[RNA Biology of Bacterial Infections](#)
Prof Jörg Vogel



[RNA Synthetic Biology](#)
Prof Chase Beisel



[Recoding Mechanisms in Infections](#)
Jun Prof Neva Caliskan



[Integrative Informatics for Infection Biology](#)
Jun Prof Lars Barquist



[LncRNA and Infection Biology](#)
Jun Prof Mathias Munschauer



[Single-cell Analysis](#)
Dr Antoine-Emmanuel Saliba



[Genome Architecture and Evolution of RNA viruses](#)
Jun Prof Redmond Smyth



[Host-pathogen-microbiota interactions](#)
Jun Prof Alexander Westermann



[RNA Biology of Gram-positive Bacteria \(associated research group\)](#)
Jun Prof Franziska Faber



IMIB – Institute for Molecular Infection Biology

Research Groups



RNA Biology

Prof. Dr. Jörg Vogel



Mycology

Prof. Dr. Joachim Morschhäuser



Gram-Positive Cocci

PD Dr. Knut Ohlsen



Deep Sequencing Approaches to Pathogenesis

Prof. Dr. Cynthia Sharma



Nosocomial Infections

PD Dr. Wilma Ziebuhr

Young Investigator Groups



Systems Biology of Antibiotic Action

Ana Rita Brochado, PhD
(ZINF, Microbiology)



Organoid-based models to explore host pathways

Dr. Carmen Aguilar (ZINF/IMIB)



Organoids as host models

Dr. Sina Bartfeld
(ZINF/IMIB associated group)



RNA Biology of *Clostridium difficile*

Dr. Franziska Faber
(IMIB/HIRI)



Host-Pathogen-Microbiota Transcriptomes

Dr. Alexander J. Westermann (IMIB/HIRI)

Institute for Hygiene and Microbiology



> Medical Mycology (Kurzai lab)



> Cellular Microbiology (Schubert-Unkmeir lab)



> Parasitology/Echinococcus (Brehm lab)



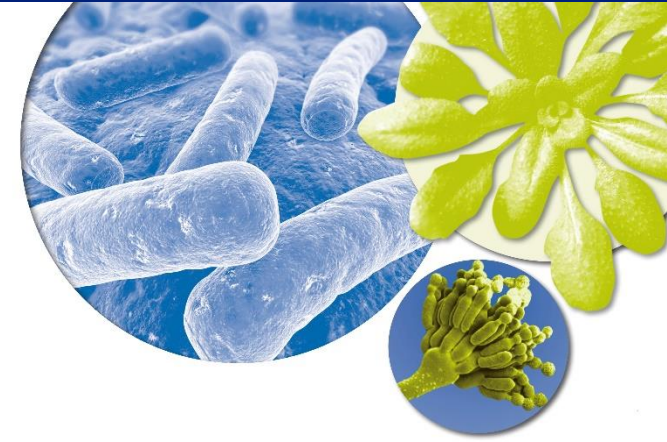
> COVID-19



> Else Kröner Center



> Functional Genomics and Systems Microbiology (Schoen lab)



Subjects

- Biochemistry
- Structural Biology
- Molecular Genetics
- Cell Biology
- Microbiology
- Biotechnology
- Plant Molecular Biology
- Plant-Microbe Interactions
- Chemical Biology
- -omics
- Biophysics
- Bioinformatics

Microorganisms

Plant-Microbe Interactions



Plants





module	number	structure and options		C/ module	C total
core module	3	lecture + seminar/tutorial + methods course	choice of 7 different modules	12	36
profile module	1	additional core module MBB core module DNB, MSc Chemistry interdisciplinary courses*		12	12
key competence module		course offer ZESS course offer MBB, Chemistry, DNB, BEE interdisciplinary courses*		2-12	12
advanced module	1	7 weeks lab course I		12	30
	1	7 weeks lab course II		12	
	1	scientific project management		6	
Master thesis (26 weeks)					30

4 Semesters: 120 ECTS

limited to 48 students

small group practical training



module	number	structure and options		C/ module	C total
core module	3	lecture + seminar/tutorial + methods course	choice of 7 different modules	12	36

General and Applied Microbiology

Molecular Genetics & Microbial Cell Biology

Cell & Molecular Biology of Plant-Microbe Interactions

Applied Bioinformatics in Molecular Bioscience

Structural Biochemistry

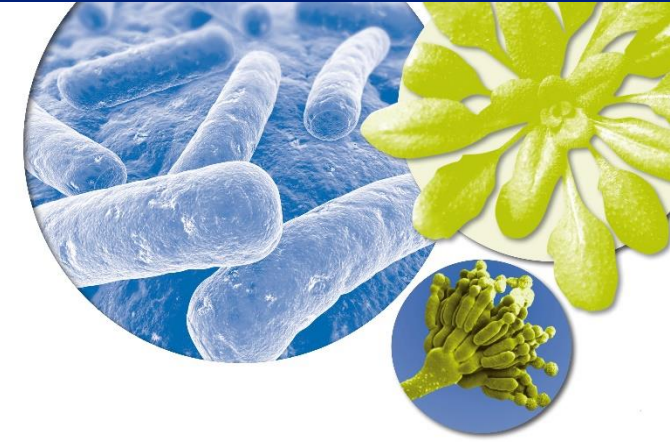
Biochemistry & Biophysics

Enzyme Catalysis and Chemical Biology





advanced module	1	7 weeks lab course I	12	30
	1	7 weeks lab course II	12	
	1	scientific project management	6	
Master thesis (26 weeks)				30



Prof. Jörg Stülke

Benzalkonium chloride resistance mechanisms of the human pathogen *Listeria monocytogenes*

Virulence determinants in the minimal pathogen *Mycoplasma pneumoniae*.

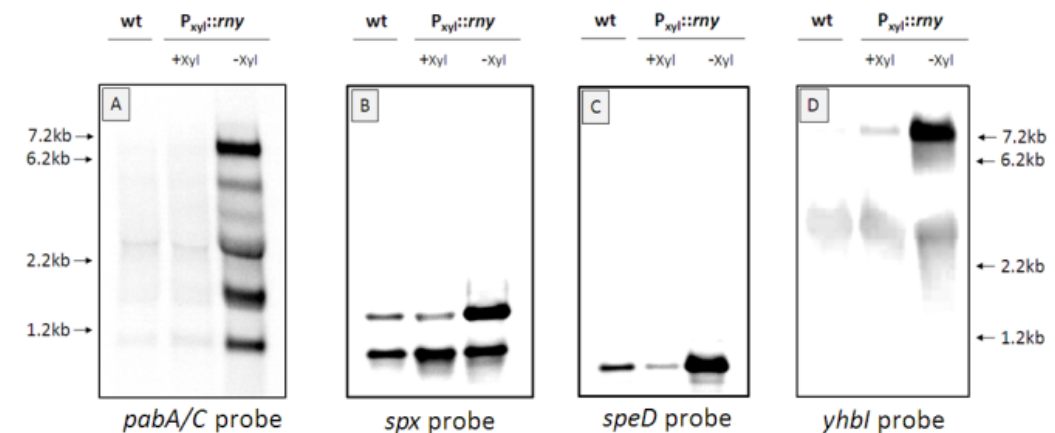
Influence of gut microbiome composition on health of non-human primates.

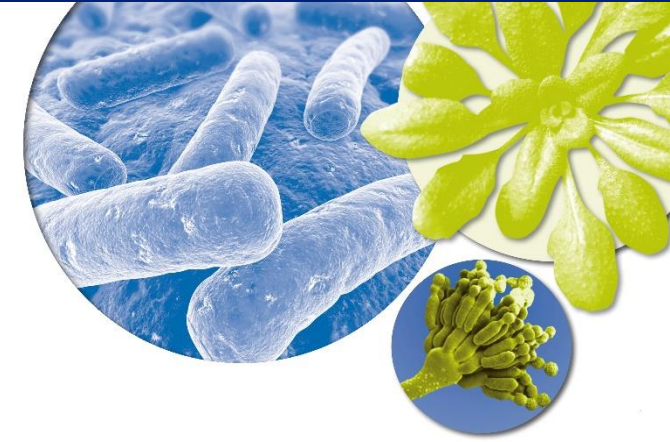
Distribution of antibiotic resistances via municipal wastewaters.



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<https://uni-goettingen.de/en/577601.html>





Prof. Gerhard Braus

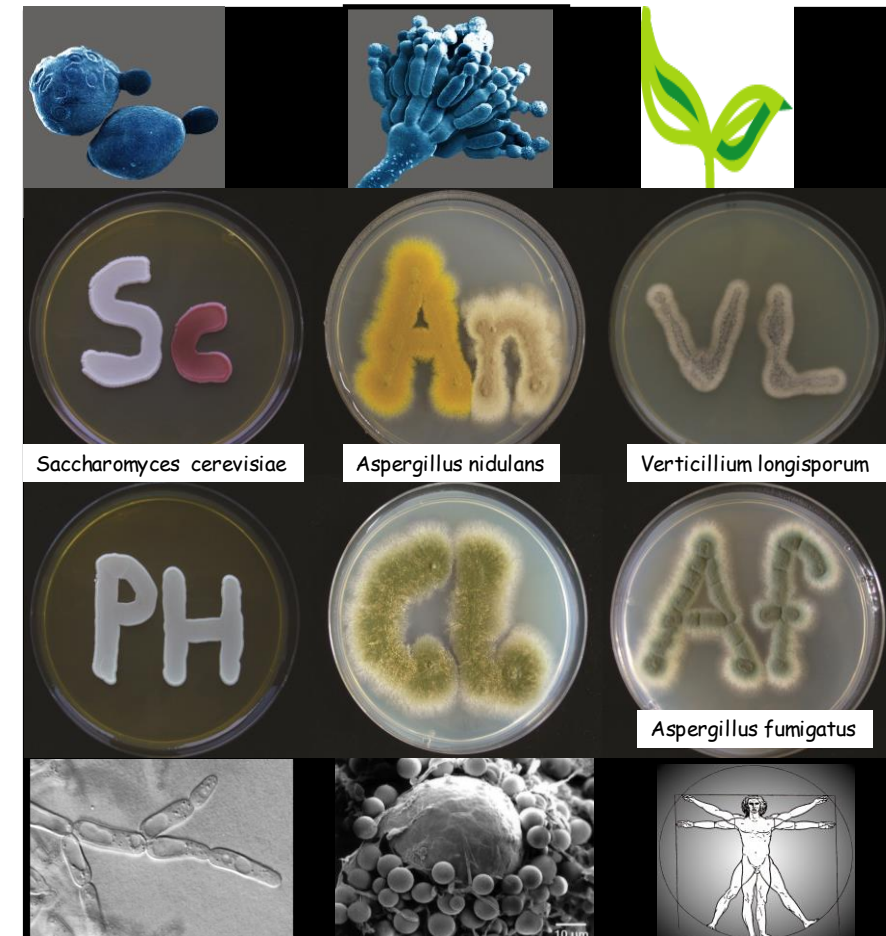


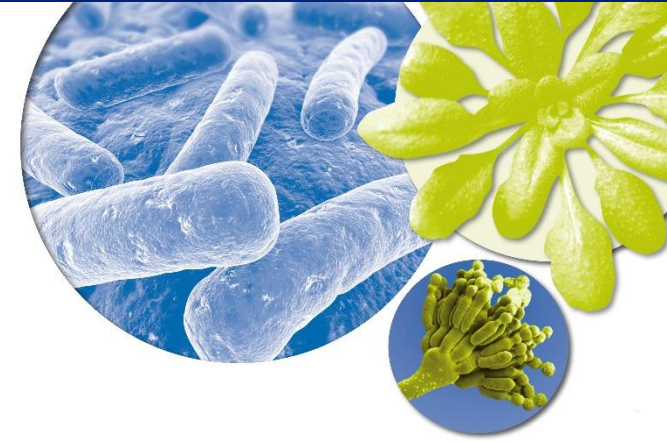
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Aspergillus fumigatus
as an opportunistic human pathogen:
interaction with host cells and
resistance against anti-fungal drugs

Verticillium:
a broad host range pathogen
of the vascular system of many plants
including important crops

<https://www.uni-goettingen.de/en/424383.html>





Prof. Kai Heimel

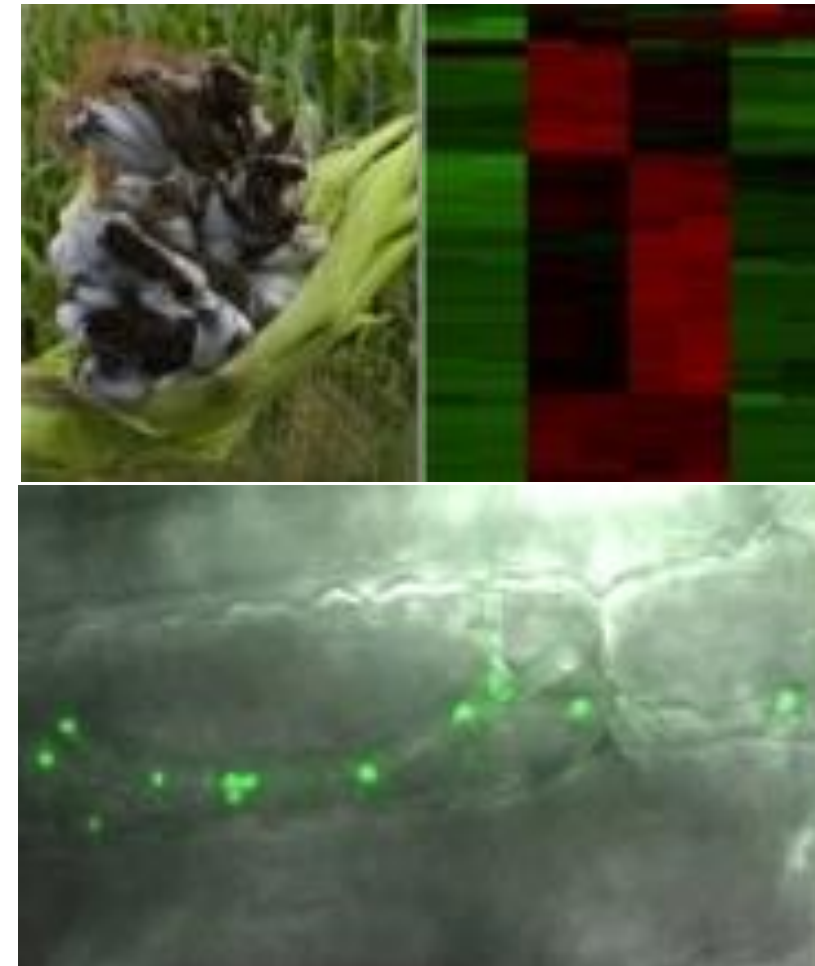


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**Virulence factor delivery
in the corn smut pathogen
*Ustilago maydis***

**Signalling pathway and
transcriptional networks in the
U. maydis/maize interaction**

<https://www.uni-goettingen.de/de/434133.html>





Prof. Stefanie Pöggeler
Dr. Daniela Nordzieke



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Signalling in the pathogenic life cycle of the plant pathogenic fungus *Colletotrichum graminicola*.

Root infection strategies of *Colletotrichum graminicola*.

Autophagy-regulated developmental processes in the filamentous ascomycete *Sordaria macrospora*.

Molecular biology of ascospore germination.

Kinase and phosphatase signalling during fruiting body development of *Sordaria macrospora*.

<https://www.uni-goettingen.de/en/433268.html>

