Microorganisms are essential to the well-being of animals and humans and are the keepers of Earth’s ecosystems.

Understanding of the chemical and molecular interactions between microorganisms, viruses, symbiotic hosts, and the environment requires holistic approaches and collaboration across different scientific disciplines.
The Faculty

Department of Microbiology and Ecosystem Research
Division of Microbial Ecology
http://www.microbial-ecology.net

Michael Wagner  Matthias Horn  Holger Daims  Alexander Loy  Dagmar Wöbken  David Berry  Jillian Petersen

Division of Computational Systems Biology
http://compsysbio.univie.ac.at

Thomas Rattei  Stefanie Widder

Department of Ecogenomics and Systems Biology
Division of Genetics in Ecology
http://genetics-ecology.univie.ac.at

Christa Schleper  Simon Rittmann  Silvia Bulgheresi

Core Facility for Advanced Isotope Research in the Life Sciences
http://nanosims.univie.ac.at

Check out our websites and get in contact with us for further information!
Program Overview

Students are trained in **interdisciplinary sciences** such as microbial ecology, symbiosis research, immunobiology, molecular biology, phylogeny and evolution, functional genomics and genetics, and bioinformatics.

They interact with **internationally renowned researchers**, and acquire **extensive practical experience** through courses in **top-class laboratories with high-end instrumentation**.

Graduates will have **excellent Career Opportunities** in Academic Research & Education, Molecular Diagnostics, Clinical & Environmental Consulting and Management, and the Biomedical/Biotech/Pharmaceutical Industry.

1. **Mandatory Module Introduction_MMEI I**.................................30 ECTS
   a. **Introduction** (VO, 5 ECTS)
      NOTE: You **have to pass the exam** to qualify for parts b and c in this module!
   b. **Practical Microbial Ecology** (UE, 10 ECTS)
   c. **Advanced Techniques in Microbial Ecology** (UE, 10 ECTS; SE, 5 ECTS)
      Choose a second UE from the Practical Molecular Microbiology, Microbial Ecology and Immunobiology courses and a SE

2. **Alternative Mandatory Module Microbial Ecology_MMEI II-2**...........30 ECTS
   a. **Proseminar Microbial Ecology_MMEI II-2.1** (PS, 5 ECTS)
   b. **Advanced Microbial Ecology_MMEI II-2.2** (10 ECTS)
      Choose several courses from a selection of VO, UE, and PS
   c. **Advanced Scientific Practice in Microbial Ecology_MMEI II-2.3** (UE, 15 ECTS)

3. **Mandatory Module Interdisciplinary Subjects_MMEI III**...................15 ECTS
   Choose several courses from alternative modules of the Masters Molecular Microbiology, Microbial Ecology, and Immunobiology (MMEI), Genetics and Developmental Biology (MGE), and Molecular Biology (MMB) and other master courses in Biology and Biological Chemistry. Selection of courses needs **prior approval by the SPL (Dr. Barbara HAMILTON)**

4. **Mandatory Module Additional Skills for Biologists_M-WZB**..............15 ECTS
   Selection of courses needs **prior approval by the SPL (Dr. Barbara HAMILTON)**

5. **Master thesis (25 ECTS) and oral defense (5 ECTS)**..........................30 ECTS

**Lectures and Courses in English!**
Courses

**MMEI I Introduction in Molecular Microbiology, Microbial Ecology and Immunobiology**

*Winter Semester*

300364 VO Research topics in Molecular Microbiology, Microbial Ecology and Immunobiology
3 Stunde(n), 5,0 ECTS credits
Alexander Loy, Michael Wagner, Christa Schleper, and other lecturers for Molecular Microbiology and Immunobiology

300484 UE Practical Course in Molecular Microbiology, Microbial Ecology and Immunobiology - Diversity and function of uncultured microbes in medical and environmental samples
6 Stunde(n), 10,0 ECTS credits
Dagmar Wöbken, David Berry

300307 UE Practical Course in Molecular Microbiology, Microbial Ecology and Immunobiology - Molecular genetic and postgenomic analyses of microbial communities and model organisms
6 Stunde(n), 10,0 ECTS credits
Christa Schleper, Silvia Bulgheresi, Simon Rittmann

*Summer Semester*

300347 SE Advanced Techniques in Molecular Microbiology, Microbial Ecology and Immunobiology – Molecular Phylogeny and Evolution
4 Stunde(n), 5,0 ECTS credits
Matthias Horn, Holger Daims
Courses

**MMEI II Microbial Ecology**

**MMEI II-2.1 Proseminar Microbial Ecology**

*Winter Semester*

300487 PS Proseminar Microbial Ecology  
3 Stunde(n), 5,0 ECTS credits  
Matthias Horn, David Berry, Silvia Bulgheresi, Holger Daims, Alexander Loy, Christa Schleper, Michael Wagner, Dagmar Wöbken

**MMEI II-2.2 Advanced Microbial Ecology**

*Winter Semester*

300281 VO Symbiosis - concepts and model systems  
3 Stunde(n), 5,0 ECTS credits  
Monika Bright, Silvia Bulgheresi, Matthias Horn, Wolfgang Miller

300114 SE Current Topics in Molecular Microbial Ecology and Evolution 1  
2 Stunde(n), 3,0 ECTS credits  
Matthias Horn, Holger Daims, Alexander Loy

300366 SE Advances in Molecular Microbial Ecology and Evolution (parallel courses)  
2 Stunde(n), 3,0 ECTS credits  
Michael Wagner, Holger Daims, Matthias Horn  
*Presentation of own research results by Master and PhD students*

300060 SE Bioinformatics for metagenomics and metatranscriptomics  
3 Stunde(n), 5,0 ECTS credits  
Thomas Rattei
**MMEI II-2.2 Advanced Microbial Ecology**

*Summer Semester*

300019 VO Computational methods in microbial ecology  
2 Stunde(n), 3,0 ECTS credits  
Thomas Rattei, David Berry

300114 SE Current Topics in Molecular Microbial Ecology and Evolution 2  
2 Stunde(n), 3,0 ECTS credits  
Matthias Horn, Holger Daims, Alexander Loy

300366 SE Advances in Molecular Microbial Ecology and Evolution (parallel courses)  
2 Stunde(n), 3,0 ECTS credits  
Michael Wagner, Holger Daims, Matthias Horn

*Presentation of own research results by Master and PhD students*

**MMEI II-2.3 Scientific Practice in Microbial Ecology**

*Winter Semester*

300401 UE Scientific Practice in Microbial Ecology  
12 Stunde(n), 15,0 ECTS credits  
Michael Wagner, David Berry, Silvia Bulgheresi, Holger Daims, Matthias Horn, Alexander Loy, Simon Rittmann, Christa Schleper, Dagmar Wöbken

*Individual course (small research project), which is typically performed directly prior to a Master thesis. Topic and dates should be arranged directly with the supervisors*

*Summer Semester*

300401 UE Scientific Practice in Microbial Ecology  
12 Stunde(n), 15,0 ECTS credits  
Michael Wagner, David Berry, Silvia Bulgheresi, Holger Daims, Matthias Horn, Alexander Loy, Simon Rittmann, Christa Schleper, Dagmar Wöbken

*Individual course (small research project), which is typically performed directly prior to a Master thesis. Topic and dates should be arranged directly with the supervisors*
Courses

MMEI III Interdisciplinary Subjects

Winter Semester

300359 SE+UE Stable Isotopes in Ecology - Stable Isotope Tracing
3 Stunde(n), 5,0 ECTS credits
Wolfgang Wanek, Andreas Richter

300435 VO Biogeochemistry and Ecosystems
3 Stunde(n), 5,0 ECTS credits
Andreas Richter, Gerhard Herndl

Summer Semester

300315 VO Modelling Ecological Systems
2 Stunde(n), 3,0 ECTS credits
Stefanie Widder

300022 UE Practical Course in Modelling of Ecological Systems
2 Stunde(n), 2,0 ECTS credits
Stefanie Widder

M-WZB Additional Skills for Biologists

You might choose any of the other courses that you have not yet taken!

Winter Semester

Bachelor courses

300027 VO Ökosystem-Ökologie und Biogeochemie
2 Stunde(n), 3,0 ECTS credits
Andreas Richter, Wolfgang Wanek
Lecture in German

Summer Semester