# UE4 Microbial interactions

Niveau d'étude
BAC +4

ECTS
9 crédits

Composante
UFR Sciences
Vie Terre
Environnement

# Présentation

## Description

Les enseignements de cette UE sont délivrés à l'Université de Mayence en Allemagne

In this module comprehensive knowledge of the complexity of microbial interactions with relevance to plant and animal health, as well as within microbial communities, is imparted with a focus on (i) control of biofilms and (ii) signalling in interactions between microorganisms and their host (from parasitism to mutualism). The microorganism–microorganism or microorganism–host interactions are essential for microorganisms to establish in a variety of different environments. The aim of this module is therefore to give an overview of the different aspects of microbial interactions as well as methods used in modern biology to study them. The learning success can be checked by the students in small quizzes. In an accompanying seminar, in which the students prepare and present a scientific lecture, selected top ten papers reporting advances in the field are then discussed. Finally, the module contains practical works in which different microbial interactions are addressed.

Programm :

**Lectures (20h)**

Principles of microbial interactions; biofilms and aggregates as persistence strategies of bacteria in environments; Control and promotion of biofilms; Inter-kingdom signalling: communication in the gradient of interactions from mutualism to parasitism; Interactions between microorganisms and their hosts (host-microorganism interaction mechanisms, immune responses); repertoire of techniques used to study microbial interactions.

Transversal theme with Module " Microbial diversity and microbial circulation in ecosystems ": Alternative therapies of microbial diseases (phage therapy, antagonistic or probiotic bacteria…).

**Tutorials (8h)**

Analysis of articles (writing and oral presentation).

Analysis of results obtained during practice (writing and oral presentation).

**Practice (20h)**

Impact of double symbiosis on host.

Study of bacterial biofilms and their role in bacterial adaptation.

## Objectifs

Applying theoretical concepts of microbial interactions.

Conceiving and preparing experiments on microbial interactions.

Handling and following a protocol with respect to health, safety and sterility rules.

Obtaining, analyzing and validating experimental results to draw conclusions.

Analyzing, interpreting and reporting scientific data on microbial interactions in the context of current research, presenting them in English to a scientific audience.

## Heures d'enseignement

| | | |
|---|---|---|
| CM | Cours Magistral | 20h |
| TD | Travaux Dirigés | 8h |
| TP | Travaux Pratiques | 20h |

## Pré-requis obligatoires

basic skills in microbiology and molecular biology

## Syllabus

## Modalités de contrôle des connaissances

## Évaluation initiale / Session principale - Épreuves

| Type d'évaluation | Nature de l'épreuve | Durée (en minutes) | Nombre d'épreuves | Coefficient de l'épreuve | Note éliminatoire de l'épreuve | Remarques |
|---|---|---|---|---|---|---|
| CC (contrôle continu) | CC : Ecrit et/ou Oral | | | 9 | | |

# Infos pratiques

## Campus

› Campus de Dijon