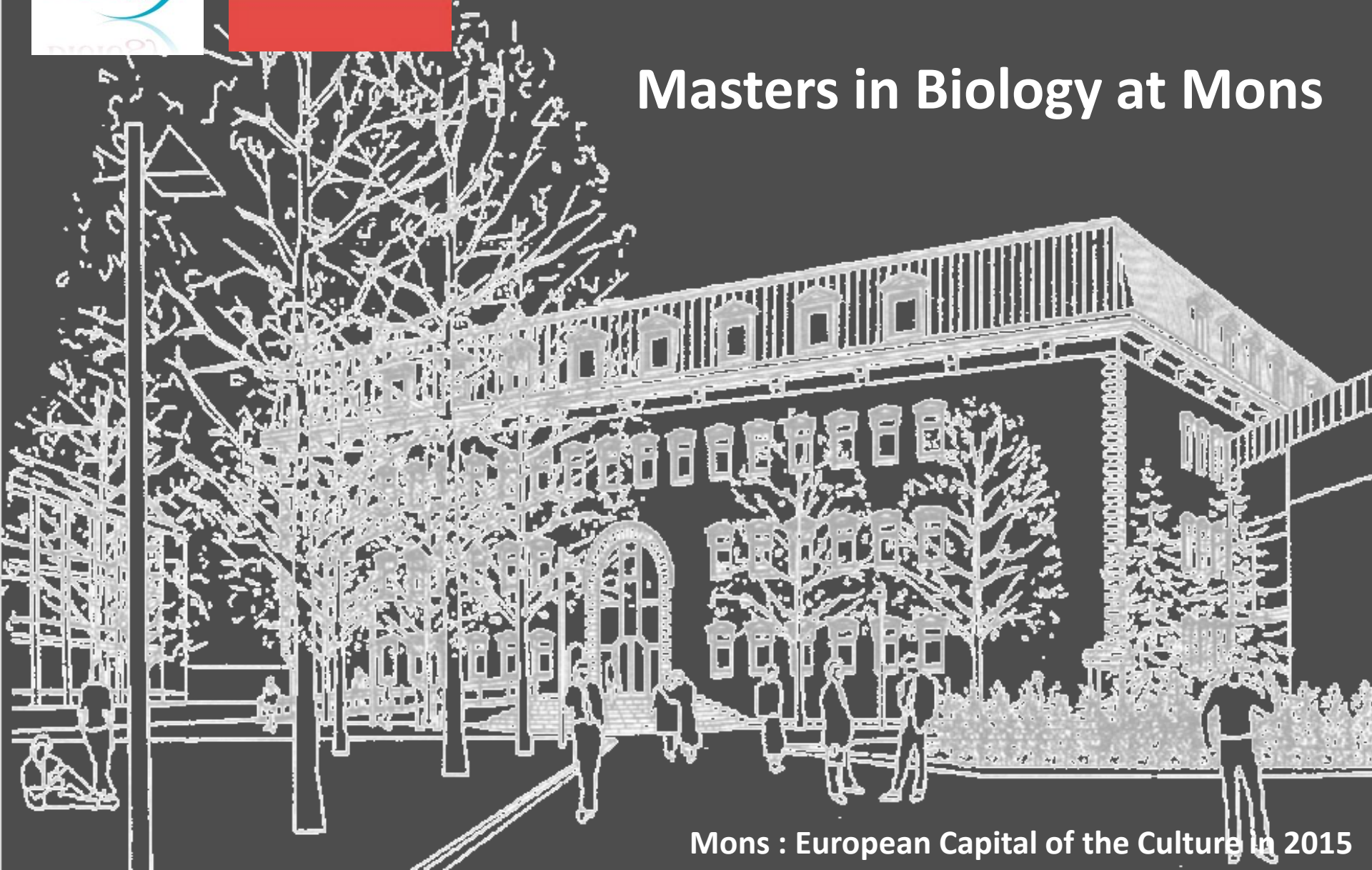




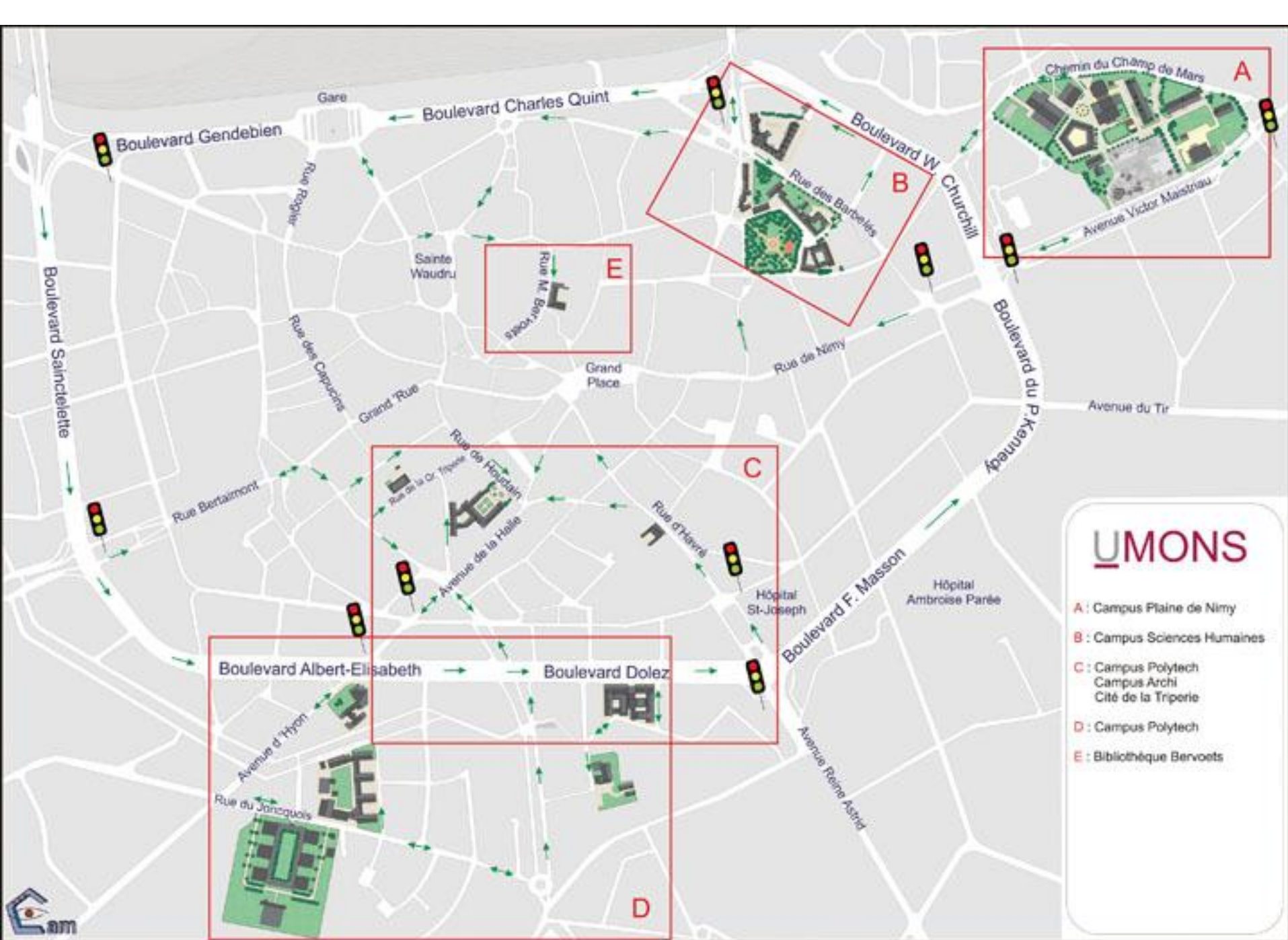
Masters in Biology at Mons

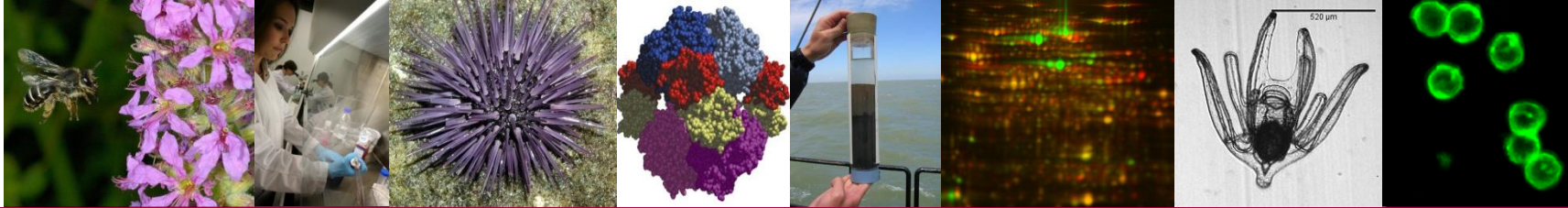


Mons : European Capital of the Culture in 2015



The city of Mons





Masters in Biology

UMONS
Université de Mons

2
blocks

120
ECTS

BOE

Biology of Organisms
and Ecology

Research
*Fundamental
research*

Specialized

- *Environmental consulting*
- *Industry*

BBMC

Biochemistry,
Molecular and Cellular
Biology

Didactic
College teaching

Short Master in Biology
1 block – 60 ECTS



Faculté
des Sciences



Master Organization – Research orientation – BOE and BBMC

Courses

Lab or field pract.

Communication

Master thesis

Animal experimentation

1st Block (60 ECTS)

• General courses
13 ECTS

Specialized
courses
15 ECTS

SWT 5 ECTS

An. Exp. 6 ECTS

Laboratory
practice
7 ECTS

Complementary
formation n° 1
• courses
• field/internship
15 ECTS

2nd Block (60 ECTS)

Initiation to
research
7 ECTS

Research
seminaries
3 ECTS

SWT 5 ECTS

Complementary
formation n° 2
• courses
• field/internship
• 1 thematic week
15 ECTS

Master thesis
30 ECTS



Master Organization – Specialized – BOE and BBMC

Same structure but

- BBMC :
- All traineeships in companies
 - Seminars in companies
 - Master thesis in a company



- BOE :
- Specialized courses focused on **Environmental Consulting**
 - Seminars in companies
 - Master thesis in Environmental Consulting





Examples of **General courses** for BBMC – 1st Block

- | | |
|--|------|
| – Bioinformatics | 15 h |
| – Biostatistics | 15 h |
| – Compared physiology | 15 h |
| – Molecular phylogeny | 15 h |
| – Structural and Functional Proteomics | 30 h |



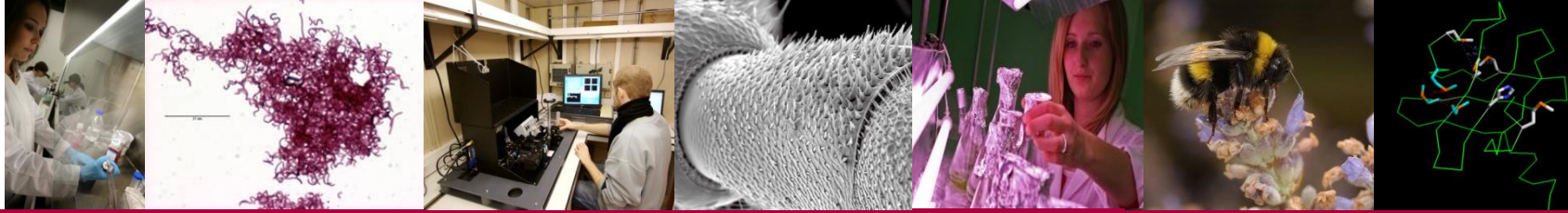
Examples of **Specialized courses** for BBMC – 1st Block

- | | |
|--|------|
| – Microbial biotechnology | 20 h |
| – Complements of cellular biology | 15 h |
| – Experimental immunology | 15 h |
| – Industrial biotechnology | 15 h |
| – Neurobiology of ionic canals | 15 h |
| – General pharmacology | 20 h |
| – Regulation of gene expression | 20 h |
| – Modern techniques of molecular biology | 20 h |
| – Predictive toxicology | 30 h |



Examples of **Laboratory / field training** for BBMC – 1st Block

- Biodiversity and ecology of corals
- Applied biogeography
- Ecophysiology of aquatic animals
- Molecular cloning and transfection
- Electron microscopy
- Phylogenetic inference
- Biological microphotography
- Artificial mesocosms and aquatic ecosystems
- Immunohistochemistry
- Environmental microbiology
- Chemical communication and pheromones
- Proteomics and mass spectrometry
- Ecology of intertidal areas
- Ecology of mountain territories
- Experimental toxicology



Master Organization – Key points

- Certification for **Animal Experimentation** included in the long Master.
- **Communication** skills are developed :

In the lab : **Research Seminars**

In an annual **Scientific Workshop Training** : a poster is presented the first year, a talk is given the second year (all in English)

- Students spend 60% of their time in the **lab** or in the **field**; they integrate **research staffs** early in the first year
- Numerous training courses in UMONS, in other institutes or industry in **Belgium or abroad**



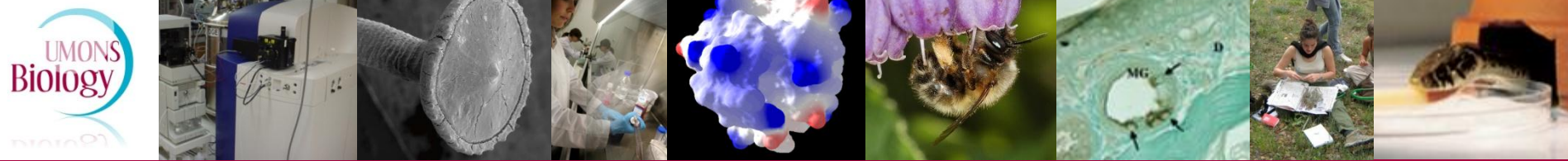
Mons University – Research

- **700** researchers and more than 100 research departments
- Our researchers work at a regional and international level
- Research is subdivided in **10 research institutes**

biosciences
complexys
energy
humanOrg

inforTech
language
materials
numediart

risks
health

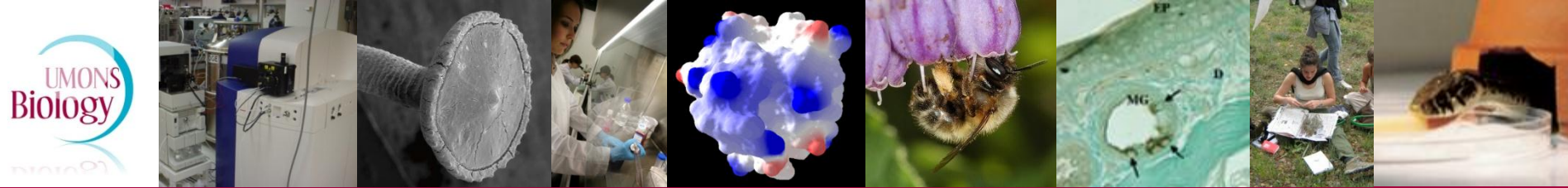


Some research themes of the Biosciences Institute

MADAGASCAR HOLOTHURIE Ltd.



- Since 1999, a **sea cucumber mariculture project** was launched in Madagascar
- Funded by the Belgian University Commission for Development (CUD) and the Malagasy government
- Aim : build a hatchery and farm for the breeding of sea cucumbers to reduce overfishing – promote research – marine research lab



Some research themes of the Biosciences Institute

Byefouling FP7 project



BYEFOULING - Low-toxic cost-efficient environment-friendly antifouling materials

The main vision of BYEFOULING is to provide the means for industrial, cost-effective and robust manufacturing of **antifouling coatings** in Europe, where SMEs are both coating components developers and production technology providers. A set of procedures, guidelines and fabrication tools will be developed, enabling short time to market for new coating concepts.

The main goal of BYEFOULING is to design, develop and upscale antifouling coatings with enhanced performance compared to current available products. The project addresses high volume production of low toxic and environmentally friendly antifouling coatings for mobile and stationary maritime applications.

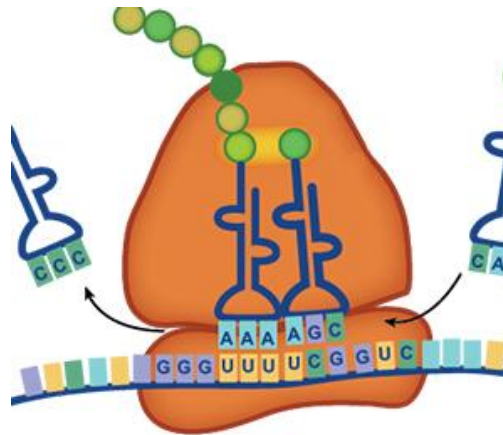
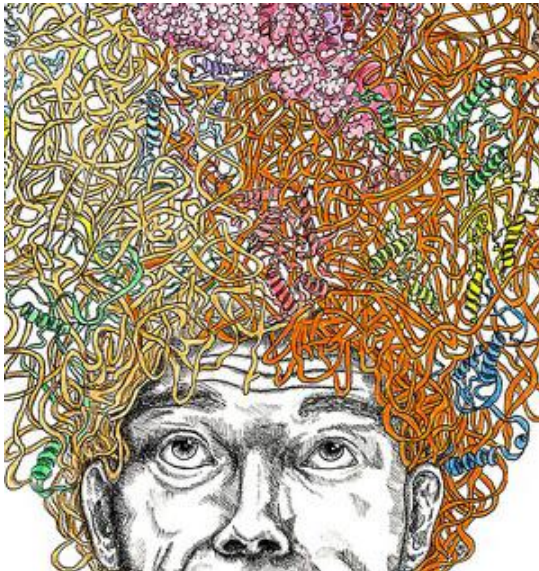


Some research themes of the Biosciences Institute

The biogenesis of Ribosomes

Cellular Biology

New service since October 2014





Some research themes of the Biosciences Institute

The **STEP Project** : Status and Trends of European **Pollinators**

- Funded by the EU within its Seventh Frame Work Programme (FP7)
- 20 universities and research centres
- Aim : understand what is affecting bees in continental Europe
- UMons expertise : mapping bee diversity – Red List of endangered species.

Bees are major pollinators of flowering plants
Without bees, humans would face disastrous consequences as they are important in almost 35% of global crop production. The massive decline of bees is a fact accepted by all.



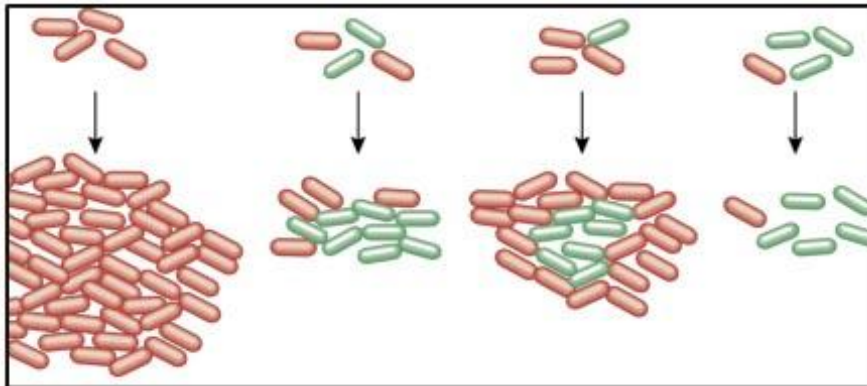


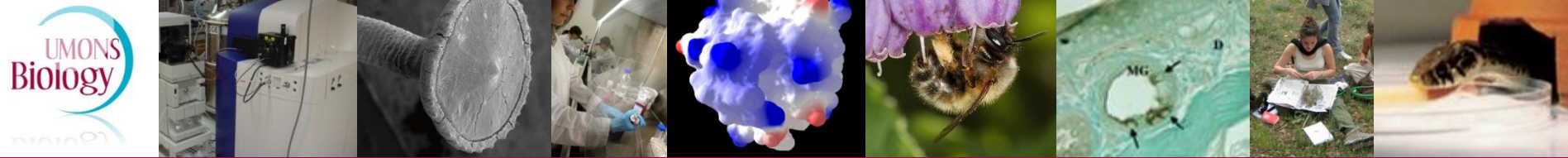
Some research themes of the Biosciences Institute

MICROBIAL RESOURCE MANAGEMENT (MRM) in Engineered and natural ecosystems

- An Interuniversity Attraction Poles (IAP) programme funded by the Belgian Science Policy Office (Belspo)
- Involves 7 research groups in Belgium, Denmark, and Switzerland
- 150 researchers in the field of microbiology
- IBS expertise : Proteomics – Metaproteomics
Bioreactors – Microbiology

Synthetic ecosystems

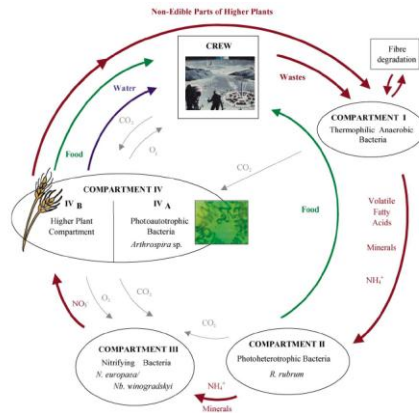




Some research themes of the Biosciences Institute

The MELiSSA Project : Micro-Ecological Life Support System Alternative

- Multidisciplinary research project managed by the European Space Agency (ESA) and funded by the Belspo Prodex programme.
- 10 research teams : Europe – Canada
- Offer solutions for food and wastes of astronauts during long space missions
- **Artificial microbial ecosystem**
- 5 interconnected bioreactors





Other Research topics

- CISMA : Interdisciplinary center of mass spectrometry
- Forensic entomology
- Phylogeography
- Adhesive mechanisms, photoreception
- Co-evolution of mutualism and parasitism
- Phytoplankton and zooplankton studies using flow Cytometry, digital imagery and machine learning
- Artificial Mesocosms

...

Numerous national and international projects :



For more informations :

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