Master in Biochemistry and Molecular and Cell Biology
Focus Research

Programme mnemonic
MA-BMOL
Focus Research: M-BMOLA

Exists also in
Focus Teaching: M-BMOLD
Focus Research (Charleroi): M-BMOLC

Studies level
Master 120 credits

Learning language
french

Schedule
office hours

Studies category / subcategory
Sciences and technics / Agronomy and bioengineering

Campus
Plaine and Solbosch

Programme objectives
The Master programme provides fundamental courses in biochemistry and molecular and cellular biology (90 credits) in the following disciplines:

> Molecular biology of the cell (cell growth and signaling, internal organisation and physiology, molecular biology of the gene)
> Molecular biology of multicellular organisms (immunology, developmental biology, neurobiology)
> Molecular microbiology (bacteriology, virology, parasitology)

In addition, students must choose one of two focuses (30 credits):

The research focus provides additional courses in bioinformatics and structural biology, as well as additional practical training in the department’s research laboratories or optional course from the entire University catalog. In addition to the master thesis, this cursus also offers the possibility to perform a 10 week-traineeship in a distinct laboratory.

The teaching focus is intended for future teachers, with active and passive courses as well as work placements.

Both focuses allow students to pursue a PhD programme.

Programme's added value
Starting in the first year of the Master programme, students have access to a wide range of experimental approaches in the department’s various research laboratories (5–10 credits).
In addition, they are encouraged to analyse original scientific articles and are trained for scientific writing and communication tools.

In the second year, students are expected to attend many seminars and take part in journal clubs. Each student must also give a seminar on their Master’s dissertation.

During the second year, students have an opportunity to take part in an exchange programme, by completing a research work placement (in a foreign country or in Belgium, in a university or a private company).

While they complete their dissertation, students may attend professional training sessions related to their research topic, offered by the ‘Biopark training unit’.

The research programme on molecular biology was developed at ULB in the 1960s, and has since earned an international reputation.

Classes are given by several researchers from the Biopark, located in Gosselies, near Charleroi. The Biopark is a centre of excellence in molecular biology, hosting 700 researchers with expertise on a wide array of topics. The Biopark includes academic departments, spin offs, and pharmaceutical companies, on a campus that offers attractive possibilities for research-intensive programmes.

The department of molecular biology has concluded several partnerships with research institutes (IMI) and centres (CMMI).

Teaching methods
> Regular classes (35–40%, depending on electives)
> Practical training activities in research laboratories (15–20%, depending on electives)
> Computer-aided training in bioinformatics and structural biology (2% in the research focus)
> Personal assignments (15%, including writing laboratory reports and journal club presentations)
> Master’s dissertation: students are required to conduct original research projects in faculty laboratories, and to attend and host research seminars
Succeed in your studies

Choose
The information and guidance counsellors at the InfOR-études [https://www.ulb.be/en/studies-info-desk-1] service will help you choose your studies throughout the year.

Succeed

Get help
Apply for financial aid, look for accommodation or a student job, get support [https://www.ulb.be/fr/aides-services-et-accompagnement/aid-services-and-support-1] for your specific needs.

International/Openness
1st year: Erasmus exchange programme (for 1 or 2 terms)
2nd year: opportunity to complete the work placement and/or dissertation in a foreign country.
Active participation of teachers from the Centre of Microscopy and Molecular Imaging (CMMI)

Job opportunities
Scientific research (in companies, universities, hospitals, etc.)
Training (teaching biology or chemistry in school) or continuing education
Management and/or communication in the fields of health, biotechnologies, food processing, clinical research, quality control, etc.
Graduates in BBMC can pursue the following careers:

Research in private companies (pharmacology, biotechnologies, food processing, etc.)
Academic research (universities, high schools)
Teaching in secondary schools or higher education institutions
Continuing education
Communication and/or scientific publishing
Forensic science analysis
Organising science outreach or awareness activities
Scientific counselling for products within a company
Quality control (hospitals, private companies, public QC services, etc.)
Monitoring analyses in the fields of biodiversity, bioremediation, biosafety, etc.
Person in charge of monitoring analyses in the fields of biodiversity, bioremediation, biosafety, ...

Contacts
ma-bmol@ulb.be
+32 2 650 98 01
https://sciences.ulb.be/departement-biologie-moleculaire

Jury President
Laurence VAN MELDEREN

Jury Secretary
Guillaume OLDENHOVE
Master in Biochemistry and Molecular and Cell Biology

**Focus Research**

### Bloc 1 | M-BMOLA | MA-BMOL

#### Tronc commun

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Coordinator(s)</th>
<th>Credits [Type]</th>
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</thead>
<tbody>
<tr>
<td>BMOL-F007</td>
<td>Lectures d'articles en biologie moléculaire</td>
<td>Fabienne ANDRIS</td>
<td>5 credits [Project: 80h]</td>
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<tr>
<td>BMOL-F4005</td>
<td>Travaux pratiques de biologie moléculaire 1</td>
<td>Fabienne ANDRIS, Bruno ANDRE, Mélanie BOECKSTAENS, Louis DROOGMANS, Cyril GUEYDAN, Véronique KRUYS, Denis LAFAUTAIN</td>
<td>5 credits [Practical work: 48h]</td>
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<tr>
<td>BMOL-F4008</td>
<td>Travaux pratiques de biologie moléculaire 2</td>
<td>Fabienne ANDRIS, Eric BELLEFROID, Sabrina BOUSBATA, Dukas Jurénas, Maud MARTIN, David PEREZ-MORGA, Jacob SOUOPGUI</td>
<td>5 credits [Practical work: 48h]</td>
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<tr>
<td>BMOL-F414</td>
<td>Scientific writing</td>
<td>Abel GARCIA-PINO, Etienne MEYLAN</td>
<td>5 credits [Practical work: 48h]</td>
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<tr>
<td>BMOL-F416</td>
<td>Expression génique</td>
<td>Cyril GUEYDAN, Véronique KRUYS, Denis LAFAUTAIN, Carine VAN LINT</td>
<td>5 credits [Lecture: 42h]</td>
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<tr>
<td>BMOL-F417</td>
<td>Communication inter-cellulaire (signalisation/intégration des signaux)</td>
<td>Benoît VANHOLLEBEKE, Bernard ROBAYE</td>
<td>5 credits [Lecture: 28h, Seminars: 8h]</td>
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<tr>
<td>BMOL-F460</td>
<td>Organisation interne et physiologie de la cellule</td>
<td>Bruno ANDRE, Denis LAFAUTAIN, Maud MARTIN</td>
<td>5 credits [Lecture: 36h]</td>
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#### Cours spécifiques

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<tr>
<td>BMOL-F003</td>
<td>Biologie Structurale, Enzymologie et Protéomie</td>
<td>Louis DROOGMANS, Sabrina BOUSBATA, Abel GARCIA-PINO</td>
<td>5 credits [Lecture: 44h, tutorial classes: 8h]</td>
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<tr>
<td>BMOL-F413</td>
<td>Bioinformatique</td>
<td>Matthieu DEFRANCE, Jean-François FLOT, Maxime TARABICHI</td>
<td>5 credits [Lecture: 48h]</td>
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#### Cours optionnels

* A total of 15 credits chosen from the following

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<tr>
<td>BMOL-F006</td>
<td>Microbiologie moléculaire</td>
<td>Carine VAN LINT, Mélanie BOECKSTAENS, Abel GARCIA-PINO, Dukas Jurénas, Anna MARINI, Laurence VAN MELDEREN</td>
<td>5 credits [Lecture: 40h]</td>
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<td>BMOL-F009</td>
<td>CIVIS - Mobility Blend Immuno-oncology</td>
<td>Fabienne ANDRIS</td>
<td>5 credits [Lecture: 28h]</td>
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<td>BMOL-F418</td>
<td>Immunologie et biologie du cancer</td>
<td>Etienne MEYLAN, Fabienne ANDRIS, Stanislas GORIELY</td>
<td>5 credits [Lecture: 40h]</td>
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</tbody>
</table>
Neuroscience et biologie cardiovasculaire  | Maud MARTIN (Coordinator), Eric BELLEFROID, Alban DE KERCHOVE D'EXAERDE, Serge SCHIFFMANN and Benoît VANHOLLEBEKE

- 5 credits [lecture: 52h]  - second term  - French

Relations hôtes-vecteurs-parasites: notions approfondies  | Sabrina BOUSBATA (Coordinator) and Luc VANHAMME

- 5 credits [lecture: 36h, practical work: 24h]  - second term  - French

Questions d’actualités en Biologie moléculaire et Physiologie cellulaire  | Véronique KRUYS (Coordinator), Bruno ANDRE and Cyril GUEYDAN

- 5 credits [lecture: 12h, tutorial classes: 12h]  - second term  - French

Cours extérieurs au programme

- 5 credits  - academic year  - French
Master in Biochemistry and Molecular and Cell Biology
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**Bloc 2 | M-BMOLA | MA-BMOL**

### Tronc commun

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<tr>
<td>MEMO-F510</td>
<td>Séminaires de recherche</td>
<td>Laurence VAN MELDEREN</td>
<td>5</td>
<td>48h</td>
<td>1st and 2nd terms</td>
<td>French</td>
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<td>MEMO-F511</td>
<td>Travail bibliographique en Biologie moléculaire</td>
<td>Etienne MEYLAN</td>
<td>10</td>
<td>48h</td>
<td>1st and 2nd terms</td>
<td>French</td>
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<tr>
<td>MEMO-F516</td>
<td>Mémoire</td>
<td>Laurence VAN MELDEREN</td>
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<td>1st and 2nd terms</td>
<td>French</td>
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<tbody>
<tr>
<td>STAG-FD22</td>
<td>Stage de recherche en biologie moléculaire</td>
<td>Sabrina BOUSBATA</td>
<td>15</td>
<td>180h</td>
<td>Academic year</td>
<td>French</td>
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