



UNIVERSITÉ
DE NAMUR

MASTER IN BIOMEDICAL SCIENCES

PRECLINICAL RESEARCH
CLINICAL RESEARCH
BIOMEDICAL DATA MANAGEMENT
TRANSLATIONAL COSMETIC AND DERMATOLOGICAL SCIENCES



www.unamur.be



MASTER IN

BIOMEDICAL SCIENCES

The University of Namur offers five Masters in Biomedical Sciences, taught entirely in English.

These degree programmes will, via research in the field of life sciences, lead you through each stage in the development of new therapeutic molecules, biomarkers and diagnostic testing.

Two areas of specialisation in clinical research are also offered, leading to careers such as clinical research associate, clinical project manager, clinical trials assistant or data manager. These professions involve setting up and monitoring clinical trials, ensuring the quality of data gathered, and compliance with applicable regulations, as well as the management of data processing.

Our 120-credit Masters are spread over two years, and the choice of a professional focus will ensure your expertise in one of the following areas:

Preclinical Research	at the University of Namur
Clinical Research	at the University of Namur – a joint degree with the University of Liège
Biomedical Data Management	at the University of Liège – a joint degree with the University of Namur
Translational Cosmetic and Dermatological Sciences (EMOTION)	a double degree from the University of Piemonte Orientale (Italy) and either the University of Namur or the Miguel Hernández University (Spain)

Our 60-credit Master lasts one year and provides a basic grounding in Biomedical Sciences, in particular in the field of biopharmaceuticals. At the University of Namur.



YOUR OBJECTIVES

- To lead **scientific projects** which aim for greater understanding of the molecular and cellular mechanisms of pathologies and to improve treatment: to analyse data, interpret the results and share discoveries with the worldwide scientific community;
- To master every stage of the **development of new therapies**, in particular biotechnology or cell-related therapies;
- To develop **biomarkers** related to different therapies, for example using genetics and pharmacogenomics;
- To lead and monitor **preclinical or clinical trials** and to be responsible for the administrative management of testing;
- To ensure the **production quality** of biotechnological and biosimilar products, cell therapies (stem cells), gene therapies, tissue engineering, medical devices (implants, drug delivery devices, etc.) and so on;
- To monitor the quality, safety and efficiency of a **drug** before it is placed on the market.

PROFESSIONAL FOCUS MODULES IN PRECLINICAL AND CLINICAL RESEARCH

Preclinical and clinical research form an intrinsic part of the process of developing new therapies.

At UNamur, you have the opportunity to choose your area of expertise from one of these two specialist fields.

The 120-credit Master in Biomedical Sciences with **professional focus in preclinical research** centres your learning on the laboratory phase of research into new disease-causing mechanisms, as well as products and techniques before they are tested on humans. It is based on a solid grounding in **fundamental research** (current topics in molecular and cellular biology, cell models, elective classes in diverent research fields etc.), **biopharmaceutics** (pharmacotherapy, health technology assessment, biosynthetic drugs and pharmacovigilance), **biotechnology** and **therapy** (clinical and non-clinical experimental approaches, biomedical engineering).

The 120-credit Master in Biomedical Sciences with **professional focus in clinical research** is based around the research carried out on human beings when products and techniques are sufficiently far-advanced. This Master is offered by UNamur but also relies on the expertise of the University of Liège, which provides many courses related to this professional focus.

Whichever focus you choose, your degree programme will boast a significant professional dimension thanks to a large number of visits to companies and hospitals, practical projects and a 5-month placement in a laboratory or company **in Belgium or abroad**.

You will also have the opportunity to write a **thesis** based in a research laboratory or a hospital, working on a personal project right through from design to completion (10 months).



WHY SHOULD I CHOOSE THIS PROGRAMME?

- Unique programmes in the Wallonia-Brussels Federation with strong links to the biopharmaceutical and biotechnological industry;
- Specialised studies in the field of drug development, including basic and translational research, biotechnology (scale-up and 3D reconstruction), quality assurance and regulatory affairs;
- Rapid integration into the world of work, thanks to company and hospital visits and a placement;
- An excellent command of field-based English;
- An official qualification as a bio-technician in handling laboratory animals and managing experiments, in addition to your Masters degree;
- Experience abroad;
- Over 50% options of your choice.

► PROGRAMME STRUCTURE

ECTS

CORE SUBJECTS

31

Pharmacotherapy • Preclinical Drug Development • Clinical Trials • Statistics Applied to Preclinical and Clinical Studies • Negotiation, Communication and Networking • Bioethics • Quality Assurance: GMP, GCP, GLP and Auditing • Pharmacovigilance • Pharmaco-Economy and Health Technology Assessment

ELECTIVE MODULES

6

Introduction to Patient-Reported Outcomes • Investigator-Initiated Trials • Integrative Approach of Organelle Pathology • Interdisciplinary Programme in Healthcare Innovation • Dermato-cosmetic Sciences • Biomarkers and Surrogate Markers in Clinical Dermatology Trials • Laboratory Animal Sciences (mammals, fish, amphibians) for Master of Experiments - FELASA • Anticancer Therapies • Philosophy of Life Sciences • Animal Pathology • Molecular Virology

PROFESSIONAL FOCUS

30

PRECLINICAL RESEARCH

Basic Research Modules (including classes on cancer, inflammation, aging...)
 • Current Topics in Molecular Cell Biology • Laboratory Research Training • Biopharmaceuticals • Biotechnology: Principles and Scale-Up • Drug and Society • Innovation in Biomedical Engineering • Biomarkers, Biobanks, Personalized Medicine • Vaccinology, Immunotherapy • Project Management: Development of Biomarkers

at the University of Namur

CLINICAL RESEARCH

Patient and Researcher Interplay • Medical Psychology • (Bio)Safety and Biorisk Management in Clinical Research • Intellectual Property and Patent • Writing and Reading Skills • Biomarkers and Surrogate Markers in Clinical Research • Pathophysiology • Evidence-Based Medicine • Clinical Trials of Medical Devices • Bioinformatic Skills • Clinical Study Management • Clinical Research Associate Training • Clinical Project Management

both at the University of Namur and at the University of Liège

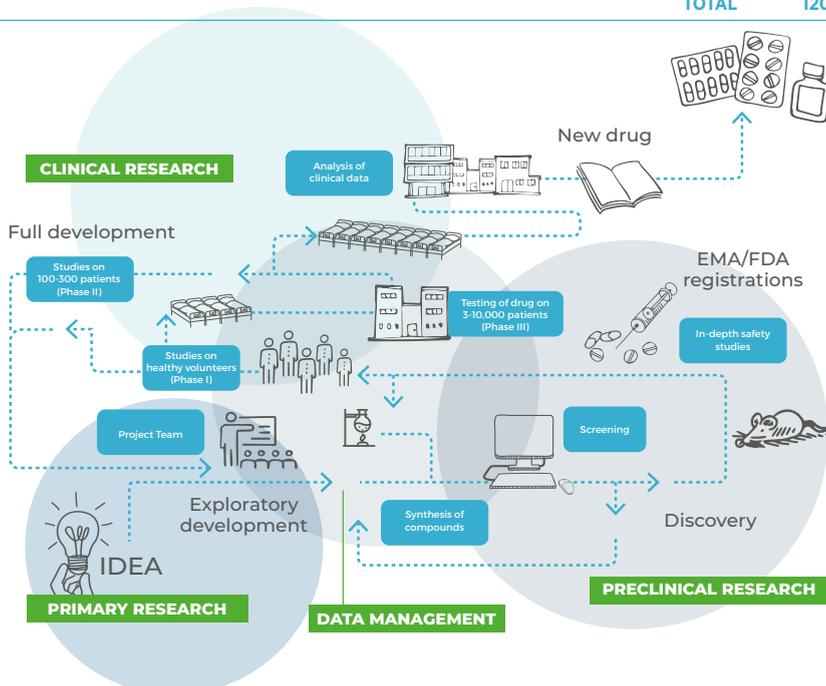
PROFESSIONAL INTERNSHIP

20

INTRODUCTION TO SCIENTIFIC RESEARCH AND THESIS

33

TOTAL 120



For more information, please visit:
www.unamur.be/medecine/etudes/biomed

PROFESSIONAL FOCUS IN BIOMEDICAL DATA MANAGEMENT

Offered by ULiège, the 120-credit Master in Biomedical Sciences with professional focus in Biomedical Data Management also benefits from the renowned expertise in data management of UNamur's Faculty of Computer Science. This focus will lead to a specialisation in medical data management.

> PROGRAMME STRUCTURE

	ECTS
CORE SUBJECTS	22
Communication • Cellular and Molecular Biology of Disease • Genomics • Biostatistics • Introduction to Oncology • Biorisk Management in Research and Development • Scientific English • Bioinformatics • Clinical Chemistry • Introduction to Translational Research • Multivariate Statistical Analysis	
ADVANCED SUBJECTS	10
Immunology and Vaccinology • Cardiovascular Biology • Neurosciences • Nutrition and Gastrointestinal Tract Biology • Pharmacology and Toxicology	
ELECTIVE MODULES	10
Oncology and Immunology • Preclinical Neurosciences • Clinical Neurosciences • Gastrointestinal Tract from Bench to Bedside • Advanced Concepts in Drug Therapy and Development • Clinical Aspects of Drug Therapy • Mass Spectrometry Technologies in Biomedical Research • Medical Records and Hospital Information • Legislation and the Legal Aspects of Hospitals and Medicine • Advanced Radiobiology and Radiation Protection • Advanced Biological Analysis	2 courses
PROFESSIONAL FOCUS	30
BIOMEDICAL DATA MANAGEMENT Introduction to Programming • Operating Systems • Algorithmics • Data Analyses • Advanced Programming • Data Management within the Clinical and Reporting Processes • Patient Records • Clinical Data Management and Biobank	both at the University of Namur and at the University of Liège
PROFESSIONAL INTERNSHIP	17
INTRODUCTION TO SCIENTIFIC RESEARCH AND THESIS	31
TOTAL	120



WHY SHOULD I CHOOSE THIS PROGRAMME?

- A door towards bioinformatics, which became central to the research fields;
- Shortage in the skilled trades;
- Synergies with UNamur's Faculty of Computer Science in terms of both teaching and research;
- Reinforcement and development of research projects within the Namur Research Institute for Life (Narilis) at UNamur and the Interdisciplinary Biomedical Research Centre (GIGA) at ULiège.



INTERNATIONAL MASTER IN TRANSLATIONAL COSMETIC AND DERMATOLOGICAL SCIENCES

UNamur is one of the **European partner universities which together offer the European Master in Translational Cosmetic and Dermatological Sciences (EMOTION)**.

This 120-credit Master, limited to only 30 students, will entitle you to a **double degree** from the University of Piemonte Orientale (Italy) and one of its partner institutions: the University of Namur or the Miguel Hernández University (Spain).

You will have the opportunity to experience teaching at these universities, all experts in their field, whilst gaining international experience and learning about other ways of teaching and about the cultures of the partner countries.

EMOTION's mission is to educate the future generation of translational scientists and professionals in dermocosmesis and dermatologic therapies.

This Master comprises two semesters in Italy and one semester in either Belgium or Spain.

In the first year, held in Italy, courses in Anatomy, Physiology, Pharmacology, Dermatology, Regulatory Affairs, Pharmaceutical Technology and Medicinal Chemistry are taught together with workshops on Project Management, Drug Discovery, and the Features of the Pharmaceutical and Cosmetic Sectors.

In the first semester of the second year, you are invited to choose whether you wish to continue your studies in Preclinical Cosmetic and Pharmaceutical Research (in Spain) or in Clinical Development (at the University of Namur):

CLINICAL DEVELOPMENT

Clinical Trials • Quality Assurance: GMP, GCP, GLP and Auditing • Bioethics • Clinical Study Management • Clinical Research Associate Training • Clinical Project Management • Lecture Series in Dermato-cosmetic Sciences • Biomarkers and Surrogate Markers in Clinical Dermatology Trials

*at the
University
of Namur*

You will also attend workshops intended to introduce you to the world of industry and provide you with transferable and soft skills (including communication, job-seeking skills and know-how for entrepreneurship).

Finally, in the second semester of the last year, you will have the opportunity to carry out work on your thesis in industry or in academia at the three partner Universities and at Humboldt University (Germany).



CAREER OPPORTUNITIES

Biomedical Sciences can lead to many different careers, mainly in the area of research, either basic or applied. This research is carried out at universities, university hospitals, government agencies (e.g. public health institutes, drug and health product agencies, health policy bodies, etc.), and in laboratories in the biopharmaceutical, biotechnological, nutrition, cosmetics and medical equipment sectors.

Basic biomedical research aims to understand, via an experimental approach, how the human being works at the level of cells and molecules. Its conclusions may one day lead to clinical applications.

Applied biomedical research puts into practice the advances made in basic research. Its objective is to improve the way conditions are diagnosed and treated. For example, it might aim to design new vaccines or new diagnostic tests. It also paves the way for careers in the pharmaceutical or cosmetics industries.

Clinical research management involves the setting up and coordination of clinical trials in hospitals, clinical research organisations and the biopharmaceutical industry, and can lead to the following careers:

- **clinical trials assistant** - assists investigating doctors in carrying out clinical trials;
- **clinical project manager** - executes the clinical trial development plan, in accordance with regulations and deadlines;

- **clinical research associate** - sets up and monitors the clinical trials in a particular project, whilst ensuring the quality of the data gathered in compliance with regulations;
- **data manager** - manages the processing of data obtained in the context of the clinical trial.

As well as research, **the clinical sector** offers a large number of other career paths: toxicology, nutrition, clinical biology, bioengineering, medical imaging, etc., as well as medical data management.

Biomedical Sciences can also lead to **many other opportunities** in the fields of research and development, production, insurance and quality control, regulatory affairs, intellectual property, consultancy, medical representation, teaching, and so on.

Finally, the Master in Biomedical Sciences allows you to further your studies in the third cycle (Doctorate) or to take an interuniversity certificate in Health Product Regulatory Affairs, offered jointly by UNamur and ULiège.



CONDITIONS FOR ADMISSION TO THE MASTER IN BIOMEDICAL SCIENCES

MASTER 120 IN BIOMEDICAL SCIENCES, PROFESSIONAL FOCUS IN PRECLINICAL RESEARCH

MASTER 120 IN BIOMEDICAL SCIENCES, PROFESSIONAL FOCUS IN CLINICAL RESEARCH

MASTER 60 IN BIOMEDICAL SCIENCES

STUDENTS WITH A FIRST DEGREE OBTAINED IN BELGIUM

DIRECT ACCESS

- Bachelor in Biomedical Sciences.

ACCESS subject to a maximum of 15 ADDITIONAL CREDITS

- Bachelor in Pharmacy, Medicine, Veterinary Medicine, Biology, Dentistry, Physiotherapy and Rehabilitation, Motor Sciences, Chemistry;
- Master in Chemical and Materials Science Engineering, Public Health, Physiotherapy and Rehabilitation.

ACCESS subject to AN ADDITIONAL 15 TO 30 CREDITS

- Bachelor in Midwife, Nurse Responsible for General Care;
- Advanced Bachelor in Anaesthesia, Intensive Care and Emergency Medical Aid.

ACCESS subject to AN ADDITIONAL 30 TO 60 CREDITS

- Bachelor in Dietetics, Occupational Therapy, Nursing, Medical Imaging Technologist, Medical Laboratory Technologist;
- Bachelor in Chemistry orientation Biochemistry, Biotechnology, Applied Chemistry, Environment;
- Bachelor in Nursing for holders of the certificate of Hospital Nurse.

ACCESS BY APPLICATION

- Other higher education qualifications obtained in the French Community of Belgium;
- Higher education qualifications obtained outside of the French Community of Belgium;
- On the basis of VAE ('Valorisation des acquis de l'expérience' – recognition of previous experience).

For admission to Masters degrees, please contact the Admission Service.

STUDENTS WITH A FIRST DEGREE OBTAINED OUTSIDE OF BELGIUM

If you have a degree from an institution outside of Belgium, you will need to complete and return the admissions request form before 30 September (31 March for students from outside the European Union): www.unamur.be/inscription

MASTER 120 IN BIOMEDICAL SCIENCES, PROFESSIONAL FOCUS IN BIOMEDICAL DATA MANAGEMENT

This Master is offered jointly by UNamur and ULiège. For details of conditions for admission, please see the ULiège website:

www.enseignement.uliege.be/cms/c_9780514/en/enrol

MASTER IN TRANSLATIONAL COSMETIC AND DERMATOLOGICAL SCIENCES (EMOTION)

For more information concerning this Master as well as related Erasmus Mundus bursaries, please visit www.emotion-master.eu



For more information, please visit:
www.unamur.be/medecine/etudes/biomed



INFORMATION

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