UNIVERSITÀ
DEGLI STUDI
DI MILANO

Master's degree programme in

Medical biotechnology and molecular medicine

facoltà di

MEDICINA E CHIRURGIA

Applications and admissions

With mandatory access test.

Admission requirements

To be admitted to the entrance test, all candidates must possess 180 ects obtained in the Bachelor's degree, of which 50 in the following areas: BIO/09 (Physiology), BIO/10 (Biochemistry), BIO/11 (Molecular biology), BIO/12 (Clinical biochemistry), BIO/13 (Biology), BIO/14 (Pharmacology), BIO/16 (Human anatomy), BIO/18 (Genetics), BIO/19 (General microbiology), MED/01 (Medical statistics), MED/03 (Human genetics), MED/04 (General pathology and immunology), MED/05 (Clinical pathology), MED/06 (Medical oncology), MED/07 (Microbiology), MED/08 (Pathology), MED/09 (Internal medicine), MED/25 (Mental health), MED/26 (Neurology), MED/46 (Laboratory medicine), INF/01 (Informatics), FIS/07 (Medical physics).
For Italian and European candidates the selection will be on the basis of a competitive written entrance exam. The admission test consists of a written test based on multiple-choice questions, it will be in English and will include 50 questions on topics such as biology, biochemistry, physics, pharmacology, immunology, pathology, genetics.

*For non-EU students resident abroad (applicants for a student visa), selection and ranking will be based on the assessment of the personal and scholastic curriculums and on an interview evaluation.

Applicants must have a good knowledge of spoken and written English at level B2, and certification (according to the Common European Framework of Reference for Languages CEFR) must be provided upon registration of the admission test.

Bachelor's students getting their degree by December 31th can participate to the test, they will be accepted, in case of success, if they possess the prerequisites described above.

Objectives

The Master Program in Medical biotechnology and molecular medicine is committed to form professionals, provided with a strong technical and theoretical background in order to develop scientific methodologies and coordinate research projects in the fields of applied biotechnology and translational medicine. The Master program will provide students with a strong educational background on the genetic and molecular bases of diseases and the pathophysiological mechanisms that occur in human beings in disease states, in order to develop biotechnology-based diagnostic and therapeutic strategies. This knowledge will be integrated with a specific formation in the fields of computer science, biophysics, nanotechnology and pharmacology. The Master Program is organized in common and curricular learning with insights into neuroscience, oncology, molecular diagnostics, immunobiotechnology and modelling and bioinformatics. The students will also learn about economic management of a scientific project, with emphasis on the construction of the business plan and cost analysis. The second year of the course is almost entirely dedicated to research activities, finalized to generate data for the preparation of the final exam.

Career prospects

The objective of the course is to provide the scientific community with experts in the fields of Medical biotechnology and molecular medicine able to develop new experimental models for the study of human diseases, to develop new diagnostic approaches, to identify new therapeutic molecules, to devise innovative drug delivery systems.
Employment opportunities: public and private research structures, including Universities, CNR (National Research Council), Istituto Superiore di Sanità (National Institute for Health); hospitals; private pharmaceutical, diagnostics and biotechnological companies; companies supporting scientific research (instruments, biotechnological reagents); companies involved in science communication and publishing.

The graduate, therefore, will find employment as:
- medical science liaison (MSL);
- clinical Monitor;
- market access manager;
- medical and scientific communication advisor.

Degree syllabus

I year

COMPULSORY LEARNING ACTIVITIES COMMON TO ALL CURRICULA	ECTS PARTIAL	ECTS TOTAL
I trimester		
Advanced microscopic techniques and nanotechnology		6
Applied pharmacology to biotechnology		7
Pathogenic basis of diseases - General pathology and immunology - Internal medicine and endocrinology	 6 6	12
II trimester		
Genetic and molecular bases of diseases - Biology - Medical genetics	 8 6	14
Human biochemistry		9
Molecular biology applied to biotechnology		7
Elective activity		4

II year
(to be made available as of academic year 2026/2027)

COMPULSORY LEARNING ACTIVITIES COMMON TO ALL CURRICULA	ECTS PARTIAL	ECTS TOTAL
Further learning activities (linguistic, informatic, relational)		3
Professionalising training activities		4
Social aspects of biotechnology - History of medicine - Bio-medicine	 6 5	11
Elective activity		4
Degree program final exam		21

Curriculum: Neuroscience

I year

CURRICULUM SPECIFIC ACTIVITIES	ECTS
Molecular diagnostics and therapy	6
Neurobiology	6
Pathogenic bases of neurological and psychiatric disorders	6

Curriculum: Medical and experimental oncology

I year

CURRICULUM SPECIFIC ACTIVITIES	ECTS
Cancer epidemiology and pathogenesis	6
Cancer immunology and microenvironment (ONC)	6
Research and development of new diagnostic and therapeutic methodologies	6

Curriculum: Molecular diagnostics for personalised medicine

I year

CURRICULUM SPECIFIC ACTIVITIES	ECTS
Advanced techniques in medical biotechnologies	6
Data and laboratory management	6
Molecular diagnostics	6

Curriculum: Experimental immunology and transplantations

I year

CURRICULUM SPECIFIC ACTIVITIES	ECTS
Cancer immunology and microenvironment (IMM)	6
Experimental immunology and immunobiotechnology	6
Transplantation and tissue engineering	6

Curriculum: Advanced computation for human disease modelling

I year

CURRICULUM SPECIFIC ACTIVITIES	ECTS
In vitro and vivo model system for human diseases modeling	6
Multilevel computational modelling of human diseases	6
Spatial and molecular organization of cells in diseases	6

INFO

Disciplinary classification: Pharmaceutical, veterinary and medical biotechnologies (LM-9 R)

Duration: 2 years (120 ects)

Attendance: Compulsory

Curricula:
- Neuroscience
- Medical and experimental oncology
- Molecular diagnostics for personalized medicine
- Experimental immunology and transplantations
- Advanced computation for human disease modelling

Location:

Common learning activities
- Dipartimento di Biotecnologie Mediche e Medicina Traslazionale - via Fratelli Cervi, 93 - Segrate (MI)

Curricular learning activities
- Dipartimento di Biotecnologie Mediche e Medicina Traslazionale - via Vanvitelli, 32 - Milano e via Fratelli Cervi, 93 - Segrate (MI)

For information:
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For other information: www.unimi.it/en - Education