



UNIVERSITÀ
DI TORINO

UNIVERSITA' DEGLI STUDI DI TORINO
SCHOOL OF MEDICINE
DEPARTMENT OF MOLECULAR
BIOTECHNOLOGY AND HEALTH SCIENCES

DEGREE IN BIOTECHNOLOGY

Presidente : Prof.ssa Paola DEFILIPPI





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- With over 80,000 students and more than 3,900 academic and administrative staff, the University of Turin (UniTo) is one of the country's largest and most prestigious universities.
- Today, UniTo offers over 150 undergraduate and postgraduate degree programs in almost every field of study. A growing number of courses are taught in English, and Italian language tuition is available for incoming students.
- The University's 27 departments offer excellent opportunities for Italian and non-Italian academic staff; 1 doctoral school provides over 35 doctoral programs.





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The school of Medicine UNITO

- 7 Departments
 1. Molecular Biotechnology and Health Sciences
 2. Clinical and biological sciences
 3. Medical sciences
 4. Neuroscience
 5. Oncology
 6. Surgical sciences
 7. Public Health and Pediatric sciences





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The Department of Molecular Biotechnology and Health Sciences

- Departmental research focuses on molecular events underlying pathophysiological processes, and takes a translational medicine approach.
- Combining basic research and clinical research to develop translational paradigms, the Department seeks to develop advanced diagnostic technologies and innovative therapeutic strategies for clinical practice.





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Main Research Areas

- Molecular and cellular mechanism of metabolic diseases, cardiovascular, oncology and degenerative diseases
- Stem cells and regenerative medicine
- Computational genomics
- New diagnostic imaging technologies and advanced chemical methodologies
- Pre-clinical and clinical testing of new therapeutic protocols





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To study in our Department

Undegraduate

- L2 Biotechnology 3 yrs

Postgraduate

- LM9 Molecular Biotechnology 2 yrs
- LM8 Biotechnological and Chemical Sciences in Diagnostics

PhD Program





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L'UNIVERSITÀ DI TORINO ON LINE



Università di Torino
Scuola Interfacoltà per le Biotecnologie



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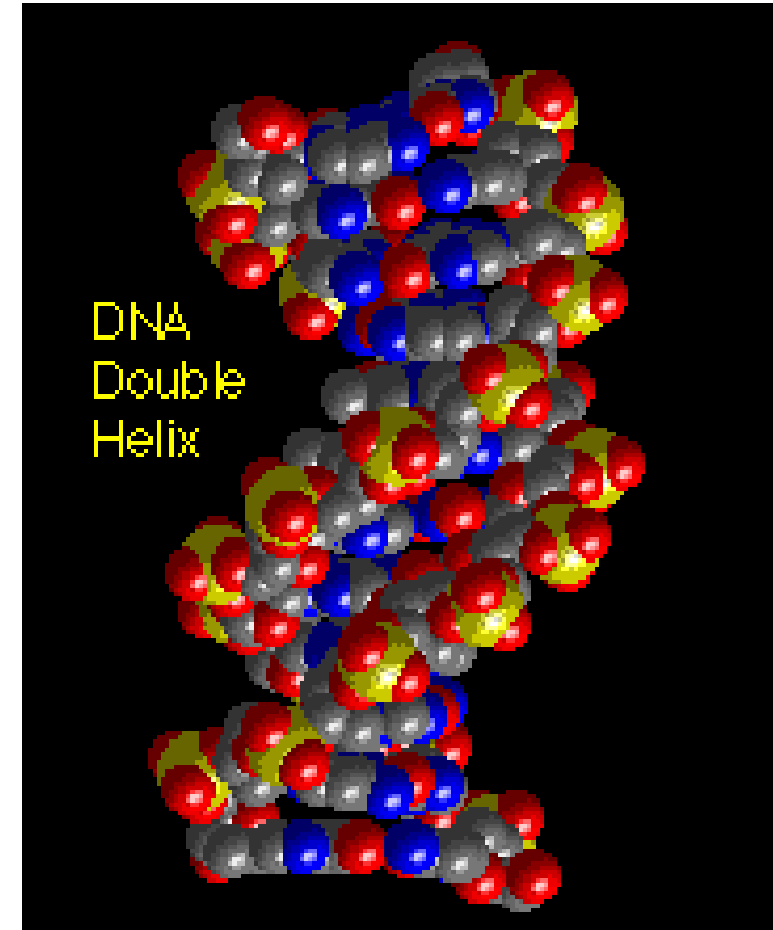
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WHAT ARE BIOTECHNOLOGIES?

Biotechnologies:

the importance to read and write

in the DNA of different organisms





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BIOS + TECHNE + LOGOS

BIO TECHNO SPEECH/APPLICATION





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- Biotechnology is the use of biology to develop new products, methods and organisms intended to improve human health and society.
- Biotechnology, often referred to as biotech, has existed since the beginning of civilization with the domestication of plants, animals and the discovery of fermentation.





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GREEN

WHITE

RED

Green: improving the environment and agriculture, and food production; **White:** improving new eco-compatible industrial processes; **Red:** Developing human and animal health





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Types of biotechnology



Red
medical and
pharmaceutical



White or gray
industrial



Green
agricultural



Gold
bioinformatics
and data



Blue
marine and
aquatic
environments



Yellow
food
production



Violet
governance
of ethical
considerations



Dark
warfare





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- **Gold**, also known as bioinformatics, is a cross between biological processes and informatics. It refers to the methods healthcare workers use to gather, store and analyze biological data to treat patients.
- **Blue** encompasses processes in marine and aquatic environments, such as converting aquatic biomass into fuels and pharmaceuticals.





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- **Yellow** refers to processes that aid food production, the most popular application being the fermentation of alcohol and cheese.
- **Violet** ensures the practice of biotechnology is in compliance with laws and ethical standards governing each field.
- **Dark** is the use of biotechnology for weapons or warfare.



Biotechnology

- Many types of technology that uses:
 - Cells
 - Proteins
 - Genetics
- Other fields use biotechnology, like health care, agriculture, genetics, and food science.



Genetically Modified

- Organisms whose genes have been changed.
- Used for:
 - Making medicines
 - Treating diseases
 - Improve crops



Herbicide-resistant corn!



Making insulin for diabetic patients!

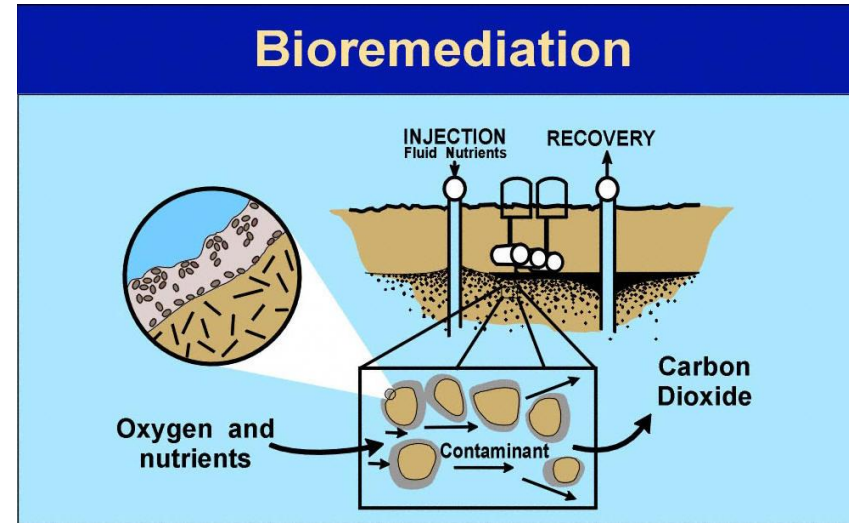
Ethics

- Ethical Questions – deal with morally right or wrong issues.
- Examples: Cloning; Genetic Modification.



Bioremediation

- Uses existing bacteria in the soil to clean up the environment.
- Examples: oil spills, toxic waste.





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LESS COMMON BIOTECHNOLOGY



Genetically modified mice

RED





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Cell therapy and gene therapy

The Cell Factory is a leading biotechnology platform, built according to European guidelines of Good Manufacturing Practice (GMP) that is able to accommodate activities of reception, manipulation, storage and distribution of tissue and cells to be used for transplantation. The Cell Factory offers:

- GMP-B class laboratories: for the extensive manipulation of cells and bioengineered tissues**

The Cell Factory carries out:

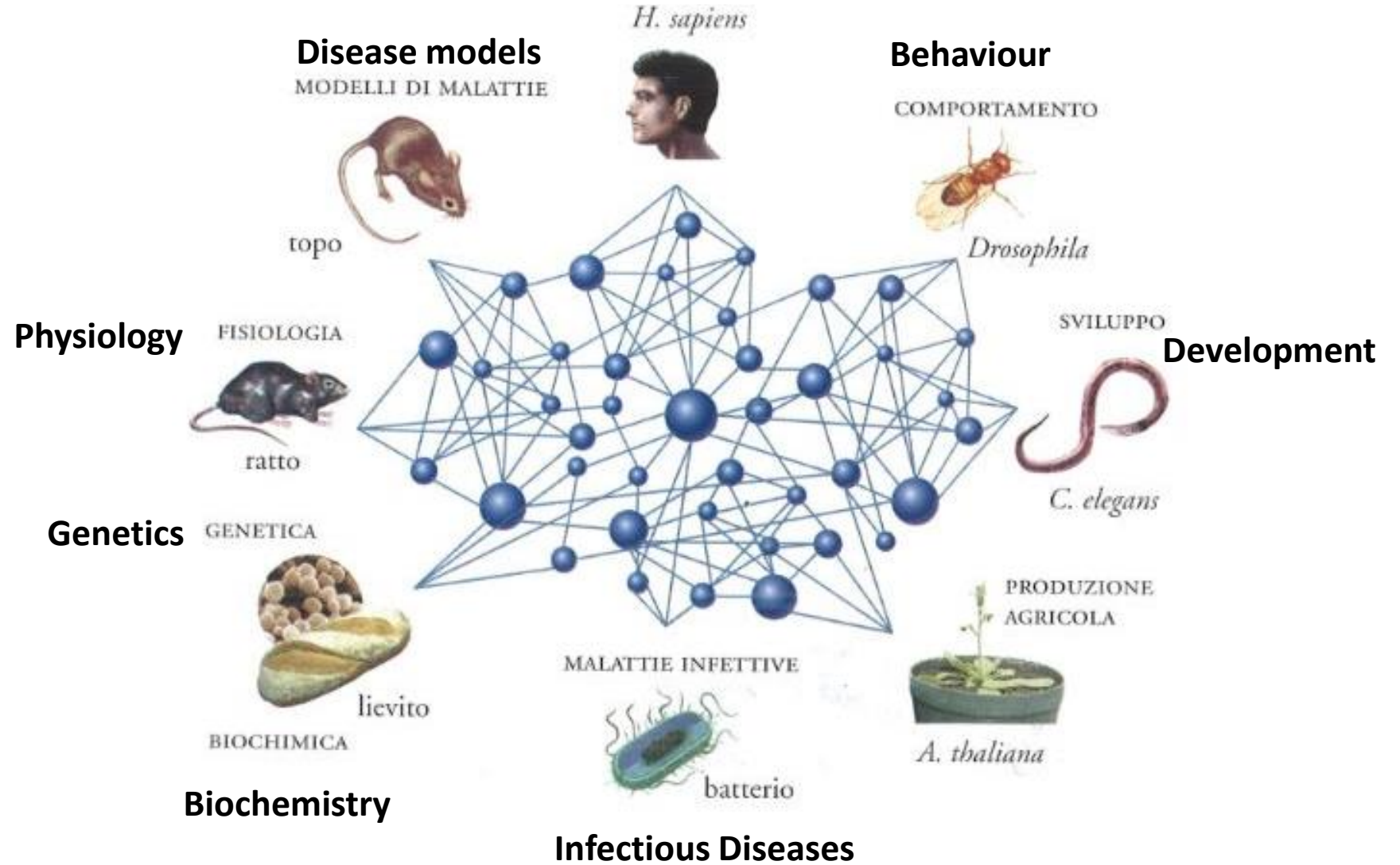
- Stem cell processing, preservation, validation and distribution for transplantation in onco-hematology patients**
- Activities of processing, preservation, validation and distribution of tissue for transplantation and tissue/cell bioengineering.**





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Genetically modified organisms as models of physiology and pathology





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The modern practice of biotechnology draws from various disciplines of science and technology, including the following

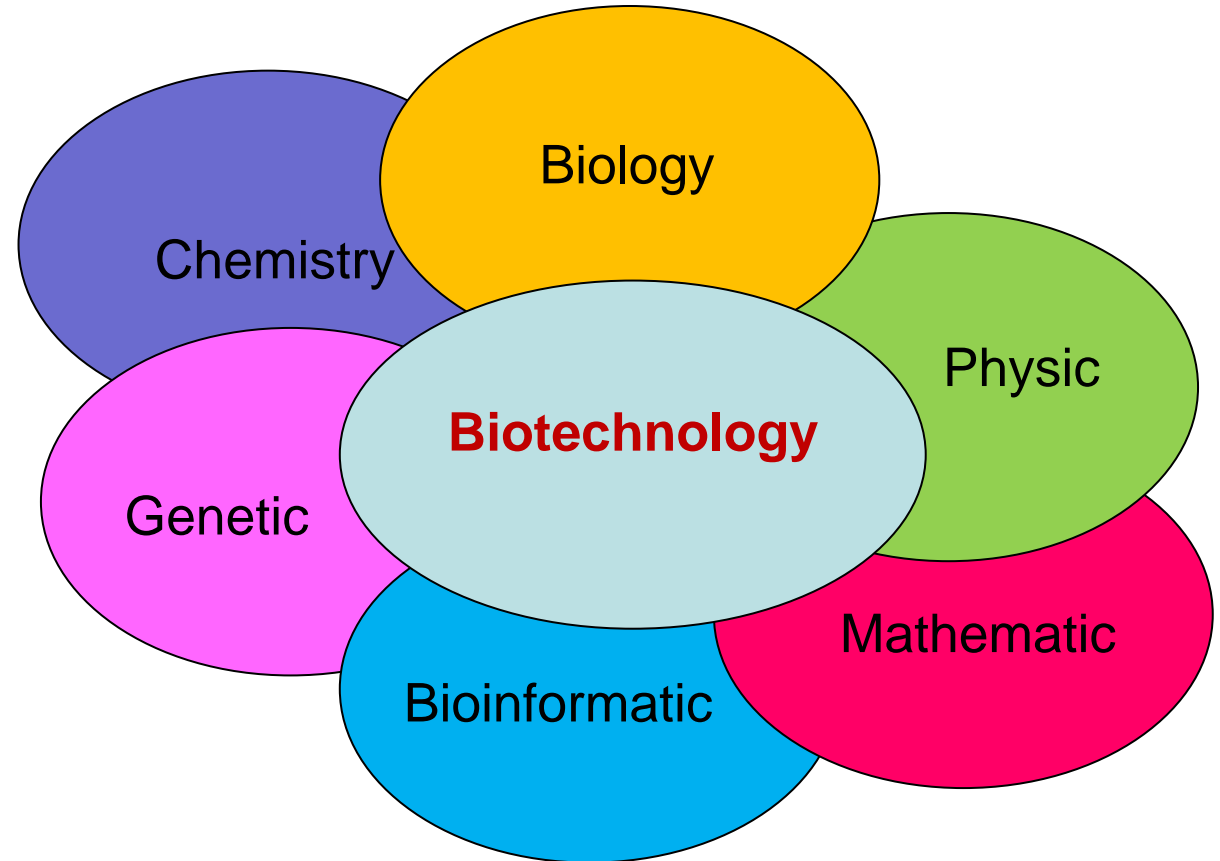
- molecular biology
- chemistry
- bionics
- genetic engineering
- genomics
- nanotechnology
- informatics





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BIOTECHNOLOGY with an INTERDISCIPLINARY APPROACH





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SCUOLA DI MEDICINA

Graduation in Biotechnology

It is three years in duration and aims to provide essential knowledge on the structure, function, analysis, and modification of biological systems.

120 university educational credits, CFU per year.

Main objective: acquire conceptual and technical-practical tools for experimental operations, aimed at using cells and their components to obtain goods and services





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UNIVERSITÀ DEGLI STUDI DI TORINO

SCUOLA DI MEDICINA

Presidente Corso di Laurea:

Prof. Paola Defilippi (paola.defilippi@unito.it)



Lessons are located at

Lezioni: Centro per le Biotecnologie Molecolari (MBC)

Via Nizza 52

<http://biotec.campusnet.unito.it/do/home.pl>





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SCUOLA DI MEDICINA

1° year teaching

- General, Inorganic, Physical Chemistry
- Organic and Analytical Chemistry
- Physics and Informatics
- Mathematics and Biostatistics
- Cellular Biology
- Genetics
- Economics, Technology, and Health Legislation





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SCUOLA DI MEDICINA

2° year teaching

- Plant Biology and Genetics
- Biochemistry
- Molecular Biology and Bioinformatics
- Developmental Biology
- Histology
- Microbiology and Parasitology
- Anatomy and Physiology of Animal Models
- Scientific English Language





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SCUOLA DI MEDICINA

3° year teaching

(Important: Mandatory courses in English)

Integrated Course of Laboratory Techniques

Immunology

Pharmacology and Toxicology

Exams of Choice in English/Italian

Stage





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Optionals at the 3° year

[APPLIED MICROSCOPY AND PHYSIOLOGY TECHNIQUES](#) (BIO0194)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

[Applied Microscopy I](#) (BIO0194A)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

[Applied Microscopy II](#) (BIO0194B)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

[Biochemical, molecular and cellular technologies A](#) (BIO0201A)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

[Biochemical, molecular and cellular technologies B](#) (BIO0201B)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

[BIOCHEMICAL, MOLECULAR, AND CELLULAR TECHNOLOGIES](#) (BIO0201)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie





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BIOLOGY OF HUMAN REPRODUCTION AND IN VITRO FERTILIZATION (BIO0193)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

Biotechnology for sustainable agrifood system (BIO0249C)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

BIOTECHNOLOGY IN AND TOWARDS ENVIROMENTAL SUSTAINABILITY (BIO0249)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

BUSINESS PLAN REDACTION (BIO0203)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie





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CANCER METABOLISM (BI00185)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

COMPUTATIONAL DRUG DISCOVERY (BI00220)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

Environmental sustainability (BI00249B)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

GENETICS MODELS OF HUMAN PATHOLOGY (BI00187)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

MEDICAL PATHOPHYSIOLOGY (BI00197)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

Medical Pathophysiology A (BI00197A)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

Medical Pathophysiology C (BI000197C)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

METHODS IN COMPUTATIONAL BIOLOGY (BI00221)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie





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MOLECULAR IMAGING INTRODUCTION (BI00202)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

MOLECULAR MEDICINAL CHEMISTRY (BI00186)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

PATHOLOGY AND MEDICAL GENETICS (BI00199)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

Pathology and Medical Genetics A (BI00199A)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

Pathology and Medical Genetics B (BI00199B)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

PHYSIOLOGY AND SYNTHETIC BIOLOGY OF PLANTS (BI00196)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

PRINCIPLES OF PLANT AND BACTERIAL BIOTECHNOLOGIES (BI00135)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie





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PROTEOMICS, METABOLOMICS AND INTERACTOMICS (BIO0200)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

Proteomics, Metabolomics and Interactomics A (BIO0200A)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

Proteomics, Metabolomics and Interactomics B (BIO0200B)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

RICONOSCIMENTO CREDITI "DIVENTARE IMPRENDITORI" (BIO0180)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie

STRUCTURAL ANALYSIS FOR BIOLOGICAL STUDIES (BIO0250)

Anno accademico: 2023/2024

Corso di studio in: Laurea Triennale in Biotecnologie





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Internship

- Internships (commonly referred to as "stage" in Italian) are practical work periods that allow the application of knowledge gained through university education in a real-world setting.
- All study programs at the School of Medicine include a mandatory curricular internship period, which is an integral part of the university curriculum. Its duration is 225 total hours for the Bachelor's Degree Program in Biotechnology (9 university educational credits, CFU).





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Graduation Bachelor thesis

- The thesis consists of analyzing a topic consistent with the course objectives, approached from different aspects through the analysis of three scientific articles.
- The thesis topic must be agreed upon with a Faculty member, who will also be the Candidate's Advisor during the thesis defense. The thesis will also be evaluated by a Co-advisor, chosen by the Course President.
- The thesis can be written and defended in Italian or English. The language of writing and defense will not be a factor in the evaluation





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- In the evaluation of the thesis and its presentation, the Committee will consider the following elements:

Clarity in explicitly stating:

- The state of the art related to the topic;
- The objectives of the analyzed works;
- The fundamental methodology for achieving the objectives, with particular reference to crucial experiments;
- The conclusions of the analyzed works.





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- Student's ability in synthesis and communication.
- Student's ability to propose a perspective for further advancement of the analyzed research.
- Critical thinking skills demonstrated by the Student in the discussion with the Committee.





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Academic year 2024-25: In presence, with a 10% of blended lesson

Dipartimento di Biotecnologie Molecolari e
Scienze per la Salute

Hai dimenticato lo username o la password?



<https://biotec.i-learn.unito.it/>





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ACCESS CONDITIONS and AVAILABLE PLACES:

Passing a mandatory access TEST at local level TOLC-B, test delivered online in TOLC@HOME mode, via the CISIA consortium platform

For the A.Y. 2024/25 there will be **187 available places** distributed as follows:

n. 180 EU and non-EU citizens legally residing in Italy;

n. 5 non-EU citizens residing abroad;

n. 2 members of the Marco Polo project from China.

Progetto
Ambasciatori





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STRUCTURE OF TOLC-B

SECTIONS	NUMBER OF QUESTIONS	TIME
MATHEMATIC	20	50 MIN
BIOLOGY	10	20 MIN
PHYSIC	10	20 MIN
CHEMISTRY	10	20 MIN
LINGUA INGLESE	30	15 MIN

For total 125 minutes.

Progetto
Ambasciatori





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For enrollment in the University's Degree Course in Biotechnology of Turin the TOLC-Bs could be made in a large window of time

from 2 January 2023 to 8 September 2023,

at any Italian university that provides the TOLC-B, in both methods: TOLC at the University (in person) or TOLC@HOME (remote).





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Academic year 2023 2024

After having passed the TOLC-B, around 1000 students enter in a Biotechnology list and the first 187 are allowed to enter the course.





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Follow the University's social channels, the main contents will also be published through these channels to ensure maximum dissemination of information:

UniTO on Facebook

UniTO on X

UniTO on Instagram



tutorato.cdlbiotecnologie@unito.it

per qualsiasi altra informazione





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<https://www.unito.it/didattica/orientamento>

Orientamento



Orientati alla scelta del corso di studio

Informazioni utili

Iniziative di orientamento

Anno Accademico
2023 | 2024



Eventi di orientamento

Scopri tutte le iniziative di
orientamento organizzate
da UniTo



Progetto Ambasciatori e altre iniziative per gli insegnanti

Percorsi rivolti ai docenti e
ai referenti delle scuole
secondarie per
l'orientamento universitario



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To be ORIENTED

- We started since 2021 an activity for the students of the secondary school:

IL DIPARTIMENTO DI BIOTECNOLOGIE MOLECOLARI E SCIENZE PER LA SALUTE
PRESENTA IL CICLO DI WEBINAR
BIOTECXFUTURE
ONLINE SU WEBEX AL LINK: <https://tinyurl.com/bioxfut23>

10 Gennaio 2024 ore 17.00
Il linguaggio segreto dei tumori
Prof.ssa Miriam MARTINI
Dott.ssa Maria Chiara DE SANTIS

24 Gennaio 2024 ore 17.00
**Quando le Nanotecnologie incontrano l'immunologia:
un approccio combinato per la terapia dei tumori**
Prof.ssa Laura CONTI
Dott.ssa Enza DI GREGORIO

7 Febbraio 2024 ore 17.00
**Le nano(bio)tecnologie: dalla medicina
di precisione al rilevamento di armi
chimiche e biologiche.**
Prof. Giuseppe FERRAUTO
Prof. Fabio CARNIATO

21 Febbraio 2024 ore 17.00
**Next Generation Technologies
applicate allo studio della Vulvodinia.**
Dott.ssa Valentina PROSERPIO

28 Febbraio 2024 ore 17.00
**Il tumore come un ecosistema:
educare il microambiente tumorale per
sconfiggere la resistenza alla terapia**
Prof.ssa Claudia VOENA
Prof. Riccardo TAULLI

I webinar sono rivolti a studentesse e studenti delle Scuole Secondarie di secondo grado e ai loro docenti per promuovere la conoscenza delle Biotecnologie e delle loro applicazioni per l'innovazione

Prossimi eventi in programma per il ciclo di webinar BiotecXfuture

in collaborazione con

Contatti: biotecxfuture@unito.it



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And after graduation?

95% of the students enroll in a master





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Professional opportunities

DIAGNOSTIC labs





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PHARMACEUTICAL AND BIOTECHNOLOGICAL COMPANIES: R&D Research and Development





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Italian Biotechnologists has as its ultimate goal the protection of the biotechnologist's role by enhancing their identity, developing and offering services tailored to their needs, and creating opportunities for professional and career growth.

<https://www.biotechnologitaliani.it/>

- Italian Biotechnologists is the reference association for those working in the field of biotechnology in Italy.
- Professional recognition, networking, continuous training, communication, and access to the job market are the key elements for enhancing the link between Research and Industry, playing a fundamental role in the country's development.





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- Thank you for your kind attention

