PhD Programme in **LIFE, ENVIRONMENTAL AND DRUG SCIENCE** Curriculum 1: BIOMEDICAL Curriculum 2: DRUG SCIENCE Curriculum 3: HUMAN AND ANIMAL BIOLOGY, AND ECOLOGY	
DISCIPLINARY SCIENTIFIC AREAS	05 - BIOLOGICAL SCIENCES; 03 - CHEMICAL SCIENCES
COORDINATOR	PROF. CRISTINA FOLLESA
HEAD DEPARTMENT	DEPARTMENT OF LIFE AND ENVIRONMENTAL SCIENCE
DURATION	3 YEARS
EDUCATIONAL OBJECTIVES AND RESEARCH TOPICS	The PhD programme involves 31 professors, 19 from biology area, 12 from the chemistry area, with multidisciplinary expertise: in biochemistry, pharmacology, genetics and microbiology, aimed at studies in biomedical fields; expertise in zoology, biological anthropology and ecology aimed at environmental biology studies (marine, animal and human); expertise in organic chemistry, pharmaceuticals and pharmaceutical technologies aimed at pharmaceutical development studies. Therefore, the PhD course is organized into three curricula: • Biomedical, in which students focus on research activities in the fields of biochemistry, genetics and microbiology; • Drug Sciences, in which students focus on research activities in the fields of medicinal chemistry, pharmacology, organic chemistry and pharmaceutical technology. • Human and Animal Biology and Ecology, in which students focus on research activities in the fields of anthropology, ecology and zoology; Furthermore, for the biomedical and drug sciences curricula, the PhD programme signed international agreements with an Asian University (Taipei Medical University and College of Pharmacy) and a European University (University of Porto), which will allow doctoral students to acquire eventually a double international degree. The educational objectives of the PhD programme are divided into three years. With respect to the *first year of the program*, students of all the three curricula will have to: - possess a systematic understanding of a research theme in one of the above described investigational areas; - master the analysis of biological and environmental phenomena and pharmaceutical problems by scientific methodologies and advances and statistic technologies currently used in the above described investigational areas; - deal with problems in the above-described investigational areas by learning to ask questions scientifically relevant; - demonstrate the ability to conceive, design, implement and perform experimental approaches to answer the identified questions. *2nd year of the program*: - knowing how to analyse the results of the research and design further studies that allow for advance in scientific knowledge; - acquire problem solving skills; - deepen the issues of national/international study planning, intellectual property and the exploitation of results; - spend a period of study and research abroad. *3rd year of the program*: - complete a period of study and research abroad;

	- acquire the ability to prepare conference presentations and to write scientific papers in English;
	- know how to critically evaluate the research developed and propose studies aimed at deepening the thesis.
	At the end of the PhD, students must:
	- know how to carry out independent research in the fields of biochemistry, molecular biology, genetics, microbiology, virology, ecology, anthropology, zoology, human and animal biology, pharmacology, pharmaceutical chemistry and pharmaceutical technologies;
	- have a systematic knowledge of a topic of study in the above fields of investigation;
	- know how to analyse biological and environmental phenomena and pharmaceutical problems with rigorous methodologies and with the advanced technologies currently used in these fields of investigation;
	- to be able to tackle problems in these fields and to ask questions of scientific importance;
	- know how to conceive, design and pursue experimental approaches to adequately address the identified questions;
	- to make an original scientific contribution to a research theme identified within the aforementioned fields of investigation, showing that it has acquired critical analytical capacity; evaluation and synthesis of new ideas adapted to the complexity of the biological and pharmaceutical systems studied;
	- to be able to communicate the results of surveys carried out in Italian and English, in written and oral form, to their colleagues, to the national and international academic community;
	- have mastered English;
	- have acquired fundamental principles of ethics, gender equality and integrity;
	- know how to interact in academic, technological and professional, national and international contexts.
	
	The PhD students, at the end of the programme, will obtain high competencies in one of the above-described investigational areas, a complete judgment autonomy, an adequate communication skill, a high ability to learn new information and apply new technologies to one of the listed research areas.
	Therefore, they will be able to:
	- perform research activities in academia and research centers;
	- perform research and development activities in biomedical, environmental and pharmaceutical companies;
	- perform promotion and developmental activities regarding innovative technologies, new technology design and management in biomedical, environmental and pharmaceutical fields;
	- perform professional activities related to:
	  - the study and understanding of biological phenomena at molecular, genetic and microbiologic level;
	  - the regulated and incremental use of biotic resources in the environmental field;
	  - the design and development of new molecules and release systems in the pharmaceutical field;
	- carry out consultancy activities in the biomedical, environmental and pharmaceutical fields,
	- perform advice activities in biomedical, environmental and pharmaceutical fields;
	- carry out activities relating to the dissemination and scientific dissemination of the relevant knowledge.

ELIGIBILITY AND OTHER REQUIREMENTS FOR CANDIDATES (ART. 2 - NOTICE OF COMPETITION)	EVERY ITALIAN 2ND CYCLE DEGREE (LAUREA MAGISTRALE/SPECIALISTICA/VECCHIO ORDINAMENTO) AND EQUIVALENT AND SUITABLE FOREIGN ACADEMIC DEGREES
ADMISSION TESTS	ASSESSMENT OF QUALIFICATIONS AND CV, INTERVIEW The interview will mainly focus on the presentation and discussion of the candidate's research project, to evaluate the adequacy of the profile with regard to the ability to orient in the main areas of doctoral studies, preparation in the disciplinary field of the project, aptitude for scientific research and linguistic skills. The project must be submitted using the compulsory form available at https://web.unica.it/unica/en/studenti_s01_ss05.page (Annex C), in addition to the documents required in art. 3 of the notice of competition, within the deadline scheduled in the notice of competition (file name: research_project). The interview can be conducted in English. Candidates unable, for justified reasons, to take the interview at the established venue, may be granted the possibility of carrying it out by videoconference, on the same date and time established for face-to-face interviews, according to the procedure indicated in the notice of competition.
POSITIONS	1
SCHOLARSHIPS	1 funded by NRRP
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WEBSITE	https://corsi.unica.it/sciviamfa/

SCHOLARSHIPS FUNDED BY NRRP	
SCHOLARSHIP 1	
CUP	C63C22000570001
MUR CODE	IR0000035
TYPOLOGY	Research Infrastructures (RI)
MISSION/COMPONENT/INVESTMENT	Mission 4, Component 2, Investment 3.1 - Fund to create an integrated system of research and innovation infrastructures
TITLE OF THE NRRP PROJECT	EMBRC UNLOCKING THE POTENTIAL FOR HEALTH AND FOOD FROM THE SEAS (EMBRC-UP)
TITLE OF THE RESEARCH PROJECT	BIO-Bank: catalogue of behavioural responses of aquatic organisms using habitat simulators
HEAD SCIENTISTS	Prof. Pierantonio Addis and Prof. Maria Cristina Follesa
DESCRIPTION OF DOCTORAL TRAINING	The project is aimed at studying the behavioural, biochemical and physiological responses of model marine organisms (invertebrates) subjected to chemical-physical stimuli, environmental contaminants, microplastics, micro and macro algae, feed prototypes. The experiments will be conducted using a Technological Aquaria Rak system (TARs) equipped with controller and sensors. The final objective of the project is to create a catalogue of responses (Bio Bank) of model species subjected to various environmental stimuli/stressors.
NO. OF MONTHS TO BE SPENT ABROAD	6