

PhD Programme in NEUROSCIENCE	
DISCIPLINARY SCIENTIFIC AREAS	05 - BIOLOGICAL SCIENCES; 06 - MEDICAL SCIENCES; 11 - HISTORICAL, PHILOSOPHICAL, PEDAGOGICAL AND PSYCHOLOGICAL SCIENCES
COORDINATOR	PROF. PAOLA FADDA
HEAD DEPARTMENT	DEPARTMENT OF BIOMEDICAL SCIENCES
DURATION	3 YEARS
LEARNING OUTCOMES AND RESEARCH TOPICS	<p>The Neurosciences are a field of high and timely scientific relevance, which has undergone a remarkable growth for the combined application of molecular, cellular and physic technologies, opening the way to the comprehension of the molecular basis of complex processes which characterize the central and peripheral nervous system. Therefore, the Neurosciences involve a growing number of researchers, rapidly developing as an independent branch of biomedical sciences, pivotal for the human health care. The PhD program in Neuroscience aims at ensuring a high level education enabled by the constant work of a productive research team internationally acknowledged, and based on the acquisition of the required skills to perform high level research and professional activity.</p> <p>The PhD Board includes both basic and clinical researchers from UNICA, foreign Universities and the CNR Institute of Neuroscience, Cagliari section. Researchers hold different skills and multiple collaborations with national and international research centres.</p> <p>Specifically, researchers at UNICA belong to two distinct Departments: Biomedical Sciences and Medical and Public Health Sciences, which constantly collaborate with italian and foreign Universities and Research Centers as well as with private companies.</p> <p>Based on the scientific interests and multidisciplinary skills of the PhD Board members, research fields within the Neurosciences include chemical neuroanatomy, neurophysiology, sensorial physiology, neurobiology, neuropathology, neurodegenerative mechanisms, neuropsychopharmacology, behavioral neurosciences, and the development of new diagnostic tools and new molecules acting on the nervous system.</p> <p>PhD programme objectives: The PhD programme in Neuroscience aims at training independent scientists to carry out basic and clinical neuroscience research, by means of multidisciplinary approaches.</p> <p>The Neuroscience PhD programme specific aims are:</p> <ol style="list-style-type: none"> 1) Transmitting the knowledge of neuroanatomy and neurophysiology and sensorial physiology, the understanding of developmental and functional mechanisms of central and peripheral nervous systems; 2) Understanding the neuro-pathological and physio-pathological bases of diverse pathologies such as psychiatric diseases (anxiety, depression, bipolar disorders, psychotic disorders and schizophrenia, addictive disorders, eating disorders, borderline personality disorder), neurodegenerative diseases, epilepsy, dementia, migraine, pain, and their related therapeutic approaches. <p>Educational objectives:</p> <ul style="list-style-type: none"> - Training in both basic and clinical neuroscience. - Acquisition of research methodology by means of classical and innovative techniques in histochemistry, immunochemistry,

	<p>neurochemistry molecular biology, electrophysiology, genetics and behavioural analyses, in the fields of basic and clinic neuroscience.</p> <ul style="list-style-type: none"> - The acquisition of independent and critical approach to scientific research, as well as methodological accuracy. - To introduce the PhD students into scientific networks with national and international researchers groups. <p>Specifically, during the first PhD year, the lectures and the seminars will be devoted to basic neuroscience, including biomedical statistics, neuroanatomy, neurophysiology, neuropharmacology, in vivo and ex vivo research methods, animal use in research, and research ethics. During the second and third years, the lectures and the seminars will focus on neurological disorders covered in relation to neuropathology and clinical-therapeutic management. Supported by the tutor, the PhD student will acquire technical skills required to master the experiments, including the use of instruments, data analysis and interpretation.</p> <p>Research fields:</p> <p>Main professional positions for PhD graduates in Neuroscience are:</p> <ul style="list-style-type: none"> - Academic career in public and private, national and international universities - Public health services; - Research activity in public centers (Istituto Superiore di Sanità, CNR, IRCCS); - Research activity in local, national and international pharmaceutical companies, diagnostics and biotech; - Preclinical research and technological development in public and private, local, national and international structures; - Management in public and private biotechnological structures; - Promotion and development of scientific and technological innovation in neurobiology; - Publishing of high level scientific culture with specific focus to Neurosciences; - Applied biology and biochemistry in Neuroscience in health and neuropharmacological fields; - Testing and development of biological/biotechnological drugs. <p>The acquired theoretical and practical skills apply to fields beyond the Neurosciences as well.</p> <p>Regione Autonoma della Sardegna envisions the support to Research as a main objective for local economic and cultural development, which has led to the establishment of several private and public companies in the biomedical and pharmacological field. In this context, the PhD programme is specifically tailored to impart the professional skills for such job opportunities.</p> <p>The interaction with local enterprises begins during the PhD training period throughout collaborative relations between the PhD Academic Board and the companies located in the Scientific and Technologic Park of Sardinia, within the projects founded by MUR and Regione Autonoma della Sardegna.</p>
<p>ELIGIBILITY AND OTHER REQUIREMENTS FOR CANDIDATES (ART. 2 - NOTICE OF COMPETITION)</p>	<p>LM-6 Biologia LM-9 Biotecnologie mediche, veterinarie e farmaceutiche LM-13 Farmacia e farmacia industriale LM-21 Ingegneria biomedica LM-41 Medicina e chirurgia LM-42 Medicina veterinaria LM-51 Psicologia LM-55 Scienze cognitive LM-60 Scienze della natura LM-61 Scienze della nutrizione umana</p>

	<p>LM/SNT3 Scienze delle professioni sanitarie tecniche 6/S (specialistiche in biologia) 9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) 14/S (specialistiche in farmacia e farmacia industriale) 26/S (specialistiche in ingegneria biomedica) 46/S (specialistiche in medicina e chirurgia) 47/S (specialistiche in medicina veterinaria) 58/S (specialistiche in psicologia) 63/S (specialistiche in scienze cognitive) 68/S (specialistiche in scienze della natura) 69/S (specialistiche in scienze della nutrizione umana) and all equivalent second level degrees.</p> <p>Foreign candidates: If the foreign applicant's degree does not suit those degrees included in the Italian educational system, the application will be individually evaluated for applicant's eligibility.</p>
ADMISSION TESTS	<p>ASSESSMENT OF QUALIFICATIONS AND CURRICULUM VITAE AND VIDEO CONFERENCE INTERVIEW</p> <p>The interview will aim to ascertain the candidate's ability to orient on the main areas of study inherent in the doctorate and to verify his/her analytical, processing and communication skills. English skills will also be evaluated.</p> <p>During the interview, a three-year research project proposed by the candidate will be discussed, which must be presented, in addition to the documents required by art. 3 of the call for applications (Annex A "Titoli valutabili e Curriculum Vitae"; Annex B 'Dichiarazione sostitutiva di certificazioni del/i titolo/i di accesso con esami e voti'; two-sided coloured scanned copy of a valid ID, with a clear photo), by uploading it to the system by the call expiry date (file name: research_project_surname_name).</p> <p>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.</p>
ADMISSION TESTS FOR FOREIGN CANDIDATES APPLYING FOR RESERVED POSITIONS SUPPORTED BY A SCHOLARSHIP	<p>ASSESSMENT OF QUALIFICATIONS AND CV, VIDEO CONFERENCE INTERVIEW</p> <p>The interview will be held in English. English skills will be evaluated.</p> <p>During the interview, a three-year research project proposed by the candidate will be discussed, which must be presented, in addition to the documents required by art. 3 of the competition announcement (certificate attesting the award of a 2nd level foreign degree needed to access a PhD programme, including exams and marks, with a translation in Italian or English; certificate attesting the award of a 1st level foreign degree, including exams and marks, with a translation in Italian or English; signed Curriculum Vitae preferably in EU format, in English or Italian; additional qualifications, certifications, publications; a copy of a valid passport), by uploading it to the system, by the expiry date of the announcement (file name: research_project_surname_name). The interview can also be conducted in English.</p> <p>Reference letters (up to 3) must be written in English, using the form available on the webpage https://unica.it/dottoraticerca (How to apply for PhD selection: Guidelines and forms- Annex D), by a university professor or an expert in the research fields of the PhD programme, on letterhead of their institution, dated and signed. Evaluators will send their letters directly to the email address phdcall_referenceletter@unica.it (object: surname and name of the candidate being evaluated and name of the PhD programme for which he/she is applying).</p>
POSITIONS	6 (1 of which, with scholarship, reserved for a foreign candidate with a foreign degree)
SCHOLARSHIPS	5: 2 funded by UniCa; 2 funded by Ministerial Decree no. 118/2023: 2 NRRP

	Research; 1 funded by Ministerial Decree no. 117/2023
POSITIONS WITHOUT SCHOLARSHIP	1
CONTACT PERSON	PROF. PAOLA FADDA EMAIL: pfadda@unica.it - TEL. +39 0706754326 - +39 070 6754312
WEBSITE	http://people.unica.it/dottoratoneuroscienze/
SCHOLARSHIPS FUNDED BY MINISTERIAL DECREE NO. 118/2023	
SCHOLARSHIP 1	
TYPOLOGY	NRRP Research
RESEARCH PROJECT	Study of the neuropathological and physiopathological bases of psychiatric diseases
PRINCIPAL INVESTIGATOR	Prof. Paola Fadda
DESCRIPTION OF DOCTORAL TRAINING	The training of the PhD student is aimed at the acquisition and understanding of chemical neuroanatomy, neurophysiology and sensory physiology, of the mechanisms of development and functioning of the central and peripheral nervous system and of the neuropathological and physiopathological bases of pathologies such as psychiatric diseases (anxiety disorders, depressive disorders, bipolar disorder, psychotic disorders and schizophrenia, pathological addictions, eating disorders).
FOREIGN INSTITUTION	The foreign institution where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection proceedings.
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
BORSA 2	
TYPOLOGY	NRRP Research
RESEARCH PROJECT	Study of the neuropathological and physiopathological bases of pathologies such as neurodegenerative diseases, epilepsy, dementia, headache, pain
PRINCIPAL INVESTIGATOR	Prof.ssa Paola Fadda
DESCRIPTION OF DOCTORAL TRAINING	The PhD student will follow a training course that will allow him/her to acquire and understand chemical neuroanatomy, neurophysiology and sensory physiology, the mechanisms of development and functioning of the central and peripheral nervous system and the neuropathological and physiopathological bases of pathologies such as neurodegenerative diseases, epilepsy, dementia, headache, pain and related therapeutic approaches.
FOREIGN INSTITUTION	The foreign institution where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection proceedings.
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIPS FUNDED BY MINISTERIAL DECREE NO. 117/2023	
SCHOLARSHIP 1	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Multi-modal phenotyping of rem sleep behavior disorder: artificial neural networks analysis of neurodegeneration biomarkers
PRINCIPAL INVESTIGATOR	Prof. Monica M. F. Puligheddu
DESCRIPTION OF DOCTORAL TRAINING	Isolated REM sleep behavior Disorder (iRBD) is considered the prodromal phase of alpha-synucleinopathies. The research for biomarkers (BMs) capable of predicting phenoconversion to the full-blown neurodegenerative disease is urgently needed. This project aims to characterize iRBD patients through an advanced analysis capable of identifying disease phenotypes, driven by

	established as well as innovative BMs. Main implications of the proposed multi-modal phenotyping are better understanding of iRBD and alpha-synucleinopathies, personalized approach to patients, and disease burden reduction. The project aims to recruit 100 iRBD patients from 4 Italian centers to guarantee harmonized procedures (Ethic App23-03.20). and to study neurophysiological aspect of RBD such as: RSWA quantification, high-density EEG and Startle Reflex-Stacked. Autoencoders will be applied in order to obtain a self-classification of phenotypic subtypes following their automatic identification.
COMPANY/RESEARCH INSTITUTION	Micromed S.p.A. Legal head office: via Giotto, 2, 31021 Mogliano Veneto, Treviso Contact person: Eng. Cristiano Rizzo https://micromedgroup.com/it
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	12
FOREIGN INSTITUTION	University of Barcelona, School of Medicine and Hospital Clinic de Barcelona Clinical Neurophysiology group of IDIBAPS Contact person: Prof. Alex Iranzo
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6