



UNIVERSITÀ  
DI FOGGIA



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## SHEET A

### DOCTORAL COURSE IN BASIC AND CLINICAL NEUROSCIENCE

**Course:** XXXVIII

**Estimated starting date of the course:** 1/11/2022

**Coordinator:** Professor Nazzareno Capitanio (PO) - Area 6 SSD BIO/10 – University of Foggia

**Administrative headquarters:** DEPARTMENT OF CLINICAL AND EXPERIMENTAL MEDICINE – UNIVERSITY OF FOGGIA

**Length:** 3 years

**Curricula:** NO

Total number of positions available No. 6 of which:

- No. 4 positions through scholarship granted by the university;
- No. 1 position through scholarship granted by Ministerial Decree No. 351/2022:
  - Within the scope of: PNRR;
- No. 1 position without scholarship.

#### Short description of the research projects:

The educational path of the doctoral course aims to give the student the insights needed to understand the unique mechanisms of the functioning of the brain and the neural processes of cognitive functions, behavior and learning, both in physiological and pathological conditions, with particular reference to neurological and psychiatric pathologies. The disciplinary areas of reference, including both theoretical aspects and specific investigation methodologies, will cover in integrated modality psychiatry, molecular and cellular neurobiology, biochemistry, neuropharmacology, neurophysiology, cognitive neuroscience, behavioral biology, psychobiology, neuropsychology. In line with the latest orientations in the study of the brain-mind relationship, we will provide the fundamentals to move from a basic reductionist approach to a progressively more integrated functionalist one. Moreover, considering the human and social costs of pathologies induced by injuries of the nervous system, it follows that neuroscience today represents one of the fields of research that can most contribute, with their advancements, to individual and public health. Therefore, in terms of biomedical aspects, particular attention will be paid to neurodegenerative disorders characterizing senile age. In this context, prominence will be given to the identification of predictive biomarkers (proteins, metabolites, nucleic acids) and the development of advanced ultra-sensitive methodologies. The information obtained will be used to verify, in vitro and in vivo, cellular and animal pathology models and to expand the spectrum of current therapeutic interventions. The project proposal was also welcomed by the Apulian business system (healthcare, pharmaceutical, biotechnology companies, clinics, local health authorities, healthcare residences) with great interest and numerous discussions were initiated but not yet formalized as this is a newly-established doctoral course. In particular, the training course offered aims to create value through the knowledge generated by geriatric and gerontological research, to develop cutting-edge research programs on aging - considering both basic research and translational research - and to guarantee elderly patients the excellence in care and assistance integrated with research activities, also contributing to scientific progress through research products that can be transferred to the health system.

#### Short description of the research projects referred to in the PNRR (Ministerial Decree 351/2022):

The educational profile of the proposed doctoral course in Basic and Clinical Neuroscience is one of the priority objectives of the PNRR, particularly consistent with the theme of Neuroscience and Neuropharmacology, as indicated within the scope of Mission 4 - Component 2.

A better understanding of brain physiology and disease states, through preclinical basic research and clinical research, is needed for advances in knowledge to be translated into diagnostic tools and therapies, which could impact patients' lives and society. To achieve the goal, collaboration and continuous dialogue between



basic research (e.g. in-depth knowledge of altered pathways in pathogenesis) and applied research (e.g. the development of innovative therapies) is essential in the following activities: characterization and cross-talk of the activity of single cellular components to understand the functionality of neuronal networks in physiological and pathological conditions, including the combined and multiscale analysis of molecular pathways and genetic determinants of neuronal physiology; genetic data and brain-body and brain-environment interaction; detection and characterization, in advanced cellular and animal models, of cellular and molecular pathways that are altered in the early stages of the disease; development of nanotechnology / technology approaches for selective drug delivery; validation of new early biomarkers and disease predictive models. These studies lay the foundation for identifying common and specific pathogenesis mechanisms, providing important tools for the development of innovative therapies and for the repositioning of existing drugs. They also represent the grounds for appropriate pre-clinical and clinical trial phases, which subsequently allow patients to be stratified by associating them with new therapeutic protocols, with the aim of improving the complex clinical management of citizens affected by brain pathologies, and therefore monitor the socio-economic impact of these for the society and the country.

### **Admission prerequisites:**

Master's Degree in:

LM-6 Biology;  
LM-8 Industrial biotechnology;  
LM-9 Medical, veterinary and pharmaceutical biotechnologies;  
LM-13 Pharmacy and industrial pharmacy;  
LM-17 Physics;  
LM-18 Computer science;  
LM-21 Biomedical engineering;  
LM-32 Computer engineering;  
LM-40 Mathematics;  
LM-41 Medicine and surgery;  
LM-42 Veterinary medicine;  
LM-46 Dentistry and denture;  
LM-51 Psychology;  
LM-54 Chemical science;  
LM-55 Cognitive science  
LM-60 Natural science;  
LM-61 Science of human nutrition;  
LM-67 Science and techniques of preventive and adapted motor activities;  
LM/SNT1 Nursing and obstetrical sciences;  
LM/SNT2 Rehabilitation science of the health professions;  
LM/SNT3 Science of technical health professions;  
LM/SNT4 Science of preventive health professions.

### **Admission procedures:**

The selection will be based on the assessment of qualifications, research project and oral exam.

During the oral exam, the research project presented by the candidate at the time of the application will also be discussed and the knowledge of the English language will be ascertained.

The assessment will take place pursuant to art. 6 of the selection notice.

### **Test completion methods for foreign candidates:**

Foreign candidates can choose to take the admission test in English.

### **Admission test calendar and venue:**

Oral test: 21 September 2022 at 11.00.

Test venue: the oral test will take place online. The email address provided by the candidate will be used to arrange the platform and the related *virtual rooms* for connection.

### **For further information please visit:**

<https://www.unifg.it/it/studiare/post-lauream/dottorati-di-ricerca>