



**CALL FOR PHD POSITIONS – 35 cycle  
July's session**

**PHD PROGRAMME IN NEUROSCIENCE**

<b>PhD Programme Coordinator</b>	Prof. Marco Sassoè Pognetto
<b>Department</b>	Neuroscienze "Rita Levi Montalcini"
<b>PhD Programme Length</b>	4 years
<b>PhD web site</b>	<a href="http://dott-neuroscienze.campusnet.unito.it/cgi-bin/home.pl">http://dott-neuroscienze.campusnet.unito.it/cgi-bin/home.pl</a>
<b>Course start date</b>	November 1 <sup>st</sup> , 2019
<b>Departments involved in PhD programme</b>	Dipartimento di Neuroscienze "Rita Levi Montalcini", Dipartimento di Scienze della Vita e Biologia dei Sistemi, Dipartimento di Scienze Veterinarie, Dipartimento di Psicologia, Dipartimento di Scienze Cliniche e Biologiche, Dipartimento di Scienza e Tecnologia del Farmaco, Dipartimento di Scienze della Sanità Pubblica e Pediatriche dell'Università degli Studi di Torino

<b>Positions offered</b> <sup>1</sup>	
n. 3 positions with scholarship	Of which: - n. 2 scholarships funded by Dipartimento di Neuroscienze (program of "Dipartimenti di Eccellenza")
n. 1 position without financial support	

**CALL FOR POSITIONS**

**Admission procedure**

Assessment of qualifications, research project and interview

**Qualifications to be uploaded in the on-line application**

<sup>1</sup> All additional scholarships and apprenticeship contracts (Legislative Decree no. 81/2015 art.45), which may become available after the publication of this Call, will be announced on the University websites <http://www.unito.it/ricerca/fare-ricerca-unito/dottorati-di-ricerca> and <http://en.unito.it/research/phd/phd-programmes> until Call's deadline.



# UNIVERSITÀ DEGLI STUDI DI TORINO

<ul style="list-style-type: none"> <li>• Research project (max 3000 word, space and bibliography included) written in English following the scheme provided in section 'Further information on assessment of qualifications, project and interview'.</li> <li>• Letters of reference (max 2 letters, see art. 4 of this Call)</li> </ul>	
<b>Assessment criteria</b>	<b>Maximum score 100 points</b>
<b>Assessment of qualifications</b>	<b>Maximum score 55 points</b>
Final grade of Laurea/ second cycle degree (or weighted average of examinations taken during the Laurea Magistrale/2nd cycle degree for candidates applying under condition)	Maximum score <b>10</b> points
110L            10 points 110                9 points Da 107 a 109    8 points Da 104 a 106    6 points Da 100 a 103    4 points =< 99            2 points	
Publications Publication as main author on an indexed journal: 2 points Publication as co-author on an indexed journal: 1 point Publication on a non-indexed journal or book chapter: 0.5 points Abstracts for congresses: 0.2 points up to 1 point in total (max 5 already published publications will be assessed)	Maximum score <b>5</b> points
Other qualifications: - Second/additional master degree: 1 point - Italian specialising master 1st and 2nd level degree if relevant: 1 point - Any other pertinent specialising course: 1 point - Non-university master: 0.5 points - Other qualifications: up to 0.5 points	Maximum score <b>2</b> points
Research project	Maximum score <b>35</b> points
Max 2 letters of reference signed by professors or qualified researchers (1.5 points for each letter)	Maximum score <b>3</b> points
<i>Minimum threshold for admission to the interview</i>	<b>40</b> points



<b>Interview</b>	<b>Maximum score 45 points</b>
<i>Minimum threshold for passing the interview</i>	<b>30 points</b>

**Further information about the examination**

**Research proposal**

Applicants are required to submit a research proposal (in English) of no more than **3000 words** (excluding references). Note that, if admitted, students will not be expected to pursue the research project as it is outlined in the proposal (though it may form the basis of their doctoral work). The submitted research proposal will be used during the application process to assess the applicant's understanding of what doing research in neuroscience entails.

The proposal should normally include the following information:

1. Tentative **title** for the intended research.
2. **Abstract:** The proposal should include a concise statement of the intended research of no more than 150 words.
3. **Background:** The proposal should situate the project in the context of the existing literature, summarising the current state of knowledge and recent debates on the topic.
4. **Research Questions:** The proposal should set out the central aims and questions that will guide the research.
5. **Research Methods:** The proposal should outline the research methods for each specific aim, including the rationale for the choice of methods when alternatives exist.
6. **Significance of the possible results:** The proposal should include a brief description of the expected results, explaining why the research is important (for example, by explaining how the research builds on and adds to the current state of knowledge in the field or by setting out reasons why it is timely to research the proposed topic).
7. **References:** The proposal should include a short bibliography (up to 20 references) identifying the most relevant works for the topic.

**Instructions for reference letter**

Applicants will indicate the email addresses of referees on the online application form. Referees (max 2) will then upload their references online. Applicants are required to check with them that they have done so by the deadline. If references arrive late, they cannot be considered when assessing the application. Applicants are strongly advised to arrange for their referees to send their references at least 1 week before the deadline.

Reference letters should contain an evaluation of the candidate based on the following scheme:

	<i>below averag e sotto la media</i>	<i>averag e media</i>	<i>good buon o</i>	<i>exception al eccezionale</i>
<i>ACADEMIC/SCIENTIFIC Accademico/scientifico</i>				
<i>Capacity for independent thinking, creativity, curiosity Capacità di ragionare in modo indipendente, creatività, curiosità</i>				
<i>Motivation for research and commitment</i>				



Motivazione alla ricerca e impegno				
<i>Research skills: bench work skills, scientific communication skills</i> Attitudine alla ricerca: capacità tecniche e di comunicazione				
<b>SOCIAL Social</b>				
<i>Reliability: sense of responsibility</i> Affidabilità: senso di responsabilità				
<i>Interpersonal relationships: ability to get along with others, teamwork</i> Relazioni interpersonali: capacità di rapportarsi con gli altri, capacità di lavorare in gruppo				

Overall judgment on the candidate (max 20 lines) / Giudizio Complessivo del candidato (massimo 20 righe).

**Interview**

During the interview, candidates will discuss the submitted research proposal, their qualifications and their motivation for pursuing a PhD in Neuroscience. Adequate command of spoken and written English is required for admission.

**Titoli progetti di ricerca**

**Dottorato di Ricerca in Neuroscienze**

**Titles of research projects**

**PhD Programme in Neuroscience**

**1. Study and development of panel of neuronal intermediate filaments useful in diagnosis and prognosis of amyotrophic lateral sclerosis (supervisor: Prof. Adriano Chiò)**  
*(titolo di progetto "dipartimenti di eccellenza" abbinato alla borsa di studio finanziata dal / "department of excellence" research project linked to the PhD scholarship funded by Dipartimento di Neuroscienze)*

Amyotrophic lateral sclerosis (ALS) is a fatal neurodegenerative disease characterized by a progressive death of upper and lower motor neurons. Pathophysiology is unknown and several prognostic factors have been identified, but there is still a lack of clinical prognostic markers useful for care management and for clinical trials. Moreover, diagnosis is difficult, based on exclusion of other diagnosis and there's usually a delay of more than 1 year from symptoms onset. Furthermore, there is a lack of biomarkers to aid the initial differential diagnosis of the disease. Neurofilaments, both light (NfL) and phosphorylated heavy chains (pNfH), are now becoming a widely accepted prognostic biomarker for ALS and other neurodegenerative diseases (PMID: 26296871). More than twenty years ago neurofilaments were first found to be increased in ALS CSF. Reliable measurements of neurofilament in peripheral biofluids have become available over the last five years, NfL were found to predict disease course in ALS and both NfL and pNfH are increased in a wide range of neurological conditions (PMID: 29212830). Unfortunately, neurofilaments are non-specific marker of motoneuron damage. So, it could be important to study sub-types of intermediate filaments (such as periferin)



able to distinguish central from peripheral neuron death, to recognise motoneuron damage from other type of neuronal damage and to do differential diagnosis from ALS to ALS-mimics (important not only for diagnosis, but also for prognosis and therapy). The aim of this project is to focus on the development of a panel of plasmatic biomarkers useful in early diagnosis and in prognosis evaluation in ALS.

**2. Suicide attempts and suicidal ideation in obsessive-compulsive disorder: comorbidity, age at onset, and association with specific obsessive-compulsive symptoms (supervisor: Prof. Giuseppe Maina)** *(titolo di progetto abbinato alla borsa di studio finanziata dal / research project linked to the PhD scholarship funded by Dipartimento di Neuroscienze)*

Although a growing number of studies have investigated suicidal thoughts and behaviours in individuals with obsessive compulsive disorder (OCD), there is controversy about the frequency and burden of suicidality in OCD. This study aims to examine the association between suicidality and clinical features in a large sample of subjects with OCD. One key development is the ideation-to-action framework, which stipulates that (a) the development of suicidal ideation and (b) the progression from ideation to suicide attempts are distinct phenomena with distinct explanations and predictors. The aims of this research project are to: 1) explore the rate of suicide, planned and unplanned suicidal attempts, and suicidal ideation in OCD; 2) identify clinical factors that predict ideation from those that predict suicide attempts.

**3. Investigating Non-invasive Neurostimulation in Neurocognitive Disorders (supervisor: Prof. Innocenzo Rainero)** *(titolo di progetto "dipartimenti di eccellenza" abbinato alla borsa di studio finanziata dal / "department of excellence" research project linked to the PhD scholarship funded by Dipartimento di Neuroscienze)*

Neurocognitive disorders (NCDs), which include mild cognitive impairment and dementia, are dramatically rising throughout the world as a result of ageing populations. Due to the lack of effective disease modifying therapies, alternative therapeutic strategies are currently investigated. Nonpharmacologic interventions, like invasive and non-invasive neurostimulation, hold promise for enhancing cognitive functioning in these patients. The main methods of non-invasive brain stimulation are repetitive transcranial direct current stimulation (tDCS) and transcranial magnetic stimulation (TMS). These techniques reversed cognitive impairment in Alzheimer's disease transgenic mice, and even improved cognitive performance in normal mice. Preliminary findings in AD patients suggested that both tDCS and TMS can enhance performances on several cognitive functions. In addition, patients with language dysfunctions due to Frontotemporal dementia showed significant improvement after brain stimulation with tDCS. The main aim of this research project is to deeply investigate efficacy of both tDCS and TMS in a large population of patients with NCDs, including patients with Mild Cognitive Impairment, Alzheimer's disease and Frontotemporal dementia.