



MSCA-ITN-ETN 860035

Call for One Early Stage Researchers position as PhD scholarships available at the Università degli Studi di Milano (ITALY), in the framework of the EU-funded Marie Skłodowska - Curie ITN-ETN training network “SAND- Secretion and Autophagy and their roles in Neurodegeneration”

The SAND Network MSCA-ITN-ETN 860035

The main aim of SAND is to provide excellent inter-disciplinary, and intersectoral research training to Early Stage Researchers (ESRs) in an emerging area of research targeting a spectrum of neurodegenerative diseases that is constantly rising worldwide.

Neurodegenerative diseases (NDs) such as Alzheimer’s disease, amyotrophic lateral sclerosis, Huntington’s disease, and Parkinson’s Disease will rise to become the second leading cause of death in the next two decades. Neurodegeneration is characterized by neuronal cell death in specific regions of the central nervous system.

The majority of NDs are characterized by the accumulation of cytotoxic protein aggregates formed as a result of the misfolding of neuronal proteins. These toxic protein species are thought to etiopathologically underlie NDs, which thus may be viewed as disorders of proteostasis (protein homeostasis). The secretory and autophagic pathways are two major pillars of cellular proteostasis. Thus, our goals are to:

- elucidate the fundamental mechanisms underlying the autophagy-secretion crosstalk using a combination of imaging-based RNAi screening and proteomics.
- determine the role of autophagy, secretion and their crosstalk in neurodegeneration using a combination of primary cell culture, neuronal stem cell models and animal models. Delineate the cause and effect relations with respect to alterations of autophagy initiation and flux or the structure and function of the secretory pathway.
- develop tools to characterize autophagy- or secretion-based drugs and diagnostic markers with the potential to target NDs.
- provide a framework for training and supervision of students to provide them with a repertoire of transferrable and scientific skills that will equip them for careers in academia and industry.

The SAND consortium comprises of 15 world leading research groups from 9 European countries. The SAND consortium is offering 15 PhD positions for ESRs, 1 PhD for University of Milan.

More information can be found at www.sand.uio.no

The research project

The project will focus on the coordination of secretion and autophagy in neurons and *Drosophila* models of ND. The student will characterize the activity of autophagy protein Snap29 during secretion and will assess whether it is correctly functioning in NDs. Validation of putative regulatory modifications will be performed by generating regulatory mutants and assessing for function in neuronal cells in culture. In addition, to test for the possibility that impairment of the new found Snap29 regulation might lead or contribute to ND, the student will generate *Drosophila* lines expressing regulatory mutants and will perform a battery of standard test for assessing neurodegeneration, such as presence of early-onset neural vacuolarization, analysis of motor function and lifespan, also in presence of known stressors, such as H₂O₂ and paraquat. Should

mutant flies, per se or when challenged by stressors, not reveal involvement in ND, they will be crossed to established *Drosophila* models of NDs (SOD, TDP43 and others) to assess for enhancement or suppression of ND phenotypes. The student will also determine whether alterations of Snap29 modifications are present in ND patients, that might or might not correspond to those functionally analyzed in cell culture and in *Drosophila*. Finally, she/he will test the ability of drugs that might ameliorate the phenotypes associated to misregulation of Snap29 activity, first in neuronal cell lines in culture and eventually, when possible, upon feeding in *Drosophila*.

Secondments:

The student will spend a 2-month secondment to perform proteomics with in the group of Christian Behrends (LMU, Munich, Germany) to identify Snap29 modifications. To test whether Snap29 function is affected in primary neurons of NDs patients, she/he will spend 3-month in the group of Siddharthan Chandran (University of Edinburgh, UK).

Starting date and duration of the project: 3 years starting from April 1, 2020

Research Group and General Conditions

The recruited PhD students will perform their activity under the supervision of prof. Thomas Vaccari, at the Department of Biosciences, University of Milan, ITALY More information at www.vaccarilab.unimi.it. The recruited PhD students will be enrolled in the PhD programme in “Molecular and Cellular Biology”, and will be covered under the social security scheme. They will receive a Monthly Living Allowance plus a Mobility Allowance compliant with the applicable EU Marie Skłodowska-Curie Actions-ITN general conditions.

Admission criteria for doctoral education at University of Milan

In order to apply for a position in the PhD programme, students must have a second-level degree, an equivalent qualification, or an equivalent qualification by study level (Master of Science Degree) from a foreign University. The suitability of the foreign academic qualifications in terms of content is appraised by the Examining Board constituted for admission to each PhD programme, in compliance with the regulations in force in Italy and in the country in which the academic qualification was issued, and the international treaties or agreements pertaining to the conferment of qualifications for the continuation of studies.

ESRs shall, at the time of recruitment, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. Full-time equivalent research experience is measured from the date when the researcher obtained the degree entitling him or her to embark on a doctorate, (either in the country in which the degree was obtained or in the country in which the researcher is recruited) even if a doctorate was never started or envisaged. Part-time research experience will be counted pro-rata.

Other project specific requirements

The Candidates must preferably hold a M.Sc. Degree in a relevant discipline or a MD degree by the starting date of the fellowship:.

- The contract will last 36 months.
- Salary and additional benefits are according to EU-standards for Marie Curie ESRs. Additional benefits are foreseen for mobility and family allowance (if applicable).
- The ESR must be working exclusively for the action.
- Each ESR will have to complete at least 5 months of secondments to academic partners.
- Each ESR must actively participate in the events organized by Universities and Industrial partners, such as training/network events as well as in regular yearly Outreach Activities targeting different audiences.

- Recruitment, selection and appointment of the ESR follow the European Charter & Code of Conduct. All SAND partners commit themselves to provide equal opportunities male, female and disabled ESRs.
- ESRs' progress will be regularly monitored. Every year, the candidates and their work will be challenged and questioned. Failure in providing evidence of a regular and continuous commitment may result in the exclusion from the programme.
- Good collaborative and social skills and an open-minded attitude.
- Proficiency in the English language (minimum level: B2)

Mobility eligibility requirement

Eligible ESRs candidates may be of any nationality but must not, at the time of recruitment, have resided or carried out their main activity (work, studies, etc.) in Italy for more than 12 months in the last 3 years immediately prior to the recruitment date.

Application procedure

List of Documents to provide:

- Application Form (see attachment)
- Letter of motivation (max. 1 page)
- Copies of degree and academic transcripts (with grades and rankings)
- Resumé of Master's thesis (max. 3 pages)
- Short CV including a publication list (if any)
- Two reference letters from academics, prepared according to the attached template. The letters can be sent directly by the academics, but candidates must indicate the academics' details when applying
- Passport copy

- English proficiency certificate (optional. It must be presented by the candidate, if selected, before the enrolment)
All the above-mentioned documents must be collected in pdf files, preferably in a unique file.

The pdf file(s) have to be sent, in a single email, within January 7, 2019 to the SAND Coordination Office at the following email address:
thomas.vaccari@unimi.it

Recruitment strategy

A common scoring system and interviews of the candidates will be used, respecting privacy and protection of the Applicant's data. Female candidates and candidates with disabilities are encouraged to apply. For any further inquiry or information, please write to:
thomas.vaccari@unimi.it