



UNIVERSITÀ
DEGLI STUDI
DI MILANO



PhD scholarships available in the Vaccarilab at the University of Milan in the framework of the EU-funded Marie Curie ITN-EID training network “*SAND- Secretion and Autophagy and their roles in Neurodegeneration*”.

3 years starting from October 2020

About the SAND Network MSCA-ITN-EID 860035

SAND will provide excellent inter-disciplinary research training to Early Stage Researchers (ESRs) in an emerging area of research targeting a spectrum of neurodegenerative diseases (NDs) that is constantly rising worldwide. 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 and may be viewed as disorders of proteostasis. The secretory and autophagic pathways are two major pillars of cellular proteostasis. Thus, SAND 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.
- develop tools to characterize autophagy- or secretion-based drugs and diagnostic markers with the potential to target NDs.

The SAND consortium comprises of 15 world-leading research groups from 9 European countries. More information can be found at www.sand.uio.no

About the research project

The successful candidate will join the lab of Prof. Thomas Vaccari (VaccariLab.unimi.it), who has extensive expertise in studies of proteostasis in ND models (Rusmini 2019; Akwa 2018; Morelli 2016; Tognon 2014; Morelli 2014) at the Department of Biosciences of the University of Milan. The SAND project will focus on the coordination of secretion and autophagy in neurons and *Drosophila* models of ND. She/he will characterize the activity of the protein Snap29 during secretion and will assess its role 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, She/he will generate *Drosophila*

lines expressing regulatory mutants and will perform a battery of standard test for assessing neurodegeneration. Mutant flies will also be crossed to established *Drosophila* models of NDs (SOD, TDP43 and others) to assess for modification of ND phenotypes. She/he will also determine whether alterations of Snap29 are present in ND patients. Finally, she/he will test the ability of drugs that might ameliorate the phenotypes associated to misregulation of Snap29 activity. She/he will also spend considerable training time with network partner labs including 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 also spend 3-month in the group of Siddharthan Chandran (University of Edinburgh, UK).

About the University

The University of Milan (<https://www.unimi.it/en>) is the city largest academic institution. The department of Biosciences (DBS) is one of the top university department and part of Italy's department of excellence program. DBS possesses state-of-the-art laboratories and equipment, including Italy's first CryoEM platform and Unitech Nolimits, a brand new light imaging facility. DBS is located in an affordable and vibrant area near downtown Milan.

About the candidate

She/he will have a keen interest in the topic, passionate attitude to experimental science and ability to work in and international team. Experience with *Drosophila* is not mandatory but welcome. Candidates must hold a M.Sc. Degree or equivalent qualification, preferably in a relevant discipline. English language (minimum level: B2) is required. Eligible ESRs may be of any nationality but must not, at the time of recruitment, have carried out activities in Italy for more than 12 months in the 3 years prior to the recruitment date. ESRs shall be in the first 4 years (full-time equivalent research experience) of their research careers from the date of their M.Sc. Degree. The successful candidate will be enrolled in the PhD program in "Molecular and Cellular Biology", and will be covered under the social security scheme. They will receive a competitive monthly living allowance plus a mobility allowance. SAND partners provide equal opportunities. Female candidates and candidates with disabilities are encouraged to apply.

Application procedure

Applications are to be sent by email at thomas.vaccari@unimi.it as a single PDF file containing a letter of motivation (max 1 page), copies of degree and academic transcripts (with grades and rankings), resumé of Master's thesis (max. 3 pages), a short CV including a publication list, two references and a copy of the passport **by September 10, 2020**. A common scoring system and interviews of the candidates will be used, respecting privacy and protection of the Applicant's data.