

## Assistant Professor in: CELLULAR/NETWORK NEUROPHYSIOLOGY (RTDA – BIO/09),

An Assistant Professor (RTD-A) position is open at the *Neuroscience Area* of the *International School of Advanced Studies (SISSA)* in the context of the Research Infrastructure project “**eBRAINS-Italy – European Brain ReseArch INfrastructureS-Italy**” funded by the PNRR (National Plan for Recovery and Resilience - Next Generation EU).

### WORKING ENVIRONMENT

Such an Assistant Professor will work in the experimental research unit directed by Prof. Dr. Michele GIUGLIANO in the Neuroscience Area at the International School of Advanced Studies (SISSA of Trieste, Italy - <https://www.sissa.it>). The unit includes a new experimental lab in Udine on the same premises of a neurosurgery unit, in addition to the laboratories located in the main SISSA building in Trieste. The unit generates state of the art concepts, novel neurotechnology, electrophysiological data, mathematical models, and theories about brain functions and dysfunctions. Current personnel in the research unit have broad and complementary expertises, ranging from experimental (i.e. electrophysiological) neurobiology to the theoretical study and simulation of neurons and circuits of the cortex, while focusing in health and disease and actively investigating heterogeneities between brain cellular neurophysiology in the experimental animal and in humans, as pioneered in 2014 (see <https://doi.org/10.1371/journal.pbio.1002007>). An overview of lab activities and organization is at <https://www.giugliano.info/lab>. The Assistant Professor will take part to the PNRR “eBRAINS-Italy” initiative and will daily collaborate with other researchers, funded by international and national projects (including Human Brain Project, H2020-FET, and Horizon Europe EIC), already running in the research unit.

### CELLULAR NEUROPHYSIOLOGY (RTDA - BIO09)

The research program, planned for this specific position, focuses on 1) the cellular and microcircuit electrophysiological study of *ex vivo* human brain tissue, obtained from therapeutic resective neurosurgery operations, and 2) the generation of a data workflow to produce, manage, and analyse neurobiological and electrophysiological data from human tissue. The experimental recording techniques involved include cellular neurophysiology *in vitro* (patch-clamp, high-density-MEA), integrated with optogenetics, organotypic culturing protocols, and histological and molecular determinations. The work will also address specific neuropathological cases (including drug-resistant epilepsy, tumour-induced epilepsy) targeting cortical, hippocampal, and cerebellar tissue. The experiments will be complemented with construction and validation of computational models of neurons and circuits. Only very few excellence centres worldwide have access and carry out studies on human tissue samples, such the Vrije Universiteit Medical Center of Amsterdam, Albert-Ludwigs-University of Freiburg, Charite Medical Univ. of Berlin, Hôpitaux Universitaires Pitié Salpêtrière of Paris, Centre

Hospitaller Universitaire Vaudois of Lausanne, Swedish Medical Centre/Allen Institute of Seattle, Harborview Medical Centre of Washington state. The research unit at SISSA actively collaborates and interacts with most of these centres.

## DETAILS ON THE CALL

The official call will appear very soon on “*Gazzetta Ufficiale della Repubblica Italiana*” (expected on Jan 31<sup>st</sup> 2023) as well as on SISSA’s website (<https://www.sissa.it/recruitment>).

Expected starting date: 15 April 2023. Duration: 36 months. The potential academic progression occurs in Italian academia through successive steps such as the RTT (Assistant Professor in tenure track), the scientific qualification (“abilitazione”), the promotion to Associate Professor etc.

Teaching activity is requested for this position in terms of seminars and training lectures, offered to SISSA’s graduate school.

The evaluation of candidates will include CV, publications, reference letters, oral discussion including English language assessment (details in the official call).

## CONTACT AND INFOS

Any details on the call, the research activities and the specific project can be discussed with the applicants. Curriculum Vitae, reference letters and other inquiries should be emailed to [michele.giugliano AT sissa.it](mailto:michele.giugliano@sisa.it).