



ANNOUNCEMENT FOR 1 RESEARCH POSITION

Article 1 - Announcement

A public selection based on titles and a research project is hereby announced for the award of 1 research fellowship, in accordance with art. 22 of Law No. 240 of 30 December 2010, co-financed by the European Social Fund, Project "Assegni di ricerca FSE SISSA 2020" (operation code FP2012369501/2020).

Article 2 - Purpose

This announcement is aimed at strengthening the scientific system of Friuli Venezia Giulia and its attractiveness, even at an international level, at promoting the relationships between the university and research system and the economic, productive and social network, at strengthening the research and innovation demand by the economic system and the strengthening of the processes of technology transfer and innovation dissemination in order to achieve objectives of competitiveness, contributing to the employment of candidates, placing them from the earliest stages of their academic training in projects of scientific value, at supporting training in research and knowledge transfer to the economic, productive and social network through research pathways pursuant to the smart specialisation strategy areas (S3) of Friuli Venezia Giulia and their development trajectories.

Article 3 - Research fellowship

A public selection is hereby announced for the award of 1 research fellowship, whose profile, requisites, duration and gross annual amount are set out in Annex 1 which is an integral part of this announcement.

Candidates are required to submit a research project according to article 5.2.

Article 4 - Eligible candidates and requisites

The selection can be accessed by candidates who on the date of application have a documented scientific professional curriculum suitable for carrying out research and any further requirements stated specifically in Annex 1.

According to the current legislation, if not listed in Annex 1 as a compulsory requirement, PhD degrees or, for the relevant Areas, academic titles awarded by medical schools of specialisation together with an adequate scientific production, are considered as an asset.

For the purposes of the selection procedure the equivalence of university degrees and PhD degrees awarded by foreign institutions to the Italian degrees is decided by the examining board.

Permanent staff of universities, institutions and public research and experimentation entities, of the Italian National Agency for new technologies, energy and sustainable economic development (ENEA) and of the Italian Space





Agency (ASI) as well as scientific institutions whose scientific post-graduate degree has been recognised equivalent to a PhD cannot be awarded research fellowship in accordance with art. 74, paragraph 4, of the Presidential Decree No. 382 of 11 July 1980.

In accordance with article 18 of Law 240/10, candidates with a degree of kinship or affinity up to the fourth degree included with the following subjects (see Annex 2) may not participate in the selection:

- Professor of the scientific Area of SISSA who requested the research fellowship;
- Director of SISSA;
- Secretary General of SISSA;
- Member of the Board of Directors of SISSA.

At the starting date of the research project candidates shall be resident or domiciled in the Friuli Venezia Giulia Region.

Candidates who have held research fellowship contracts with any institution, pursuant to Italian Law no. 240/2010, for a period which, summed to the foreseen duration of the contract as detailed in Annex 1, exceeds a total of 6 years including any renewals, are excluded from applying. To this end, the time in which the candidate was holder of a research fellowship and enrolled in PhD courses is not taken into account for a period not exceeding the legal duration of the PhD program.

Furthermore candidates who have held research fellowship or fixed-term researcher contracts at SISSA or any other state-funded, private-funded or on-line Italian university pursuant to articles 22 and 24 of Italian Law 240/2010, or with any other body listed in paragraph 1 of art. 22 of Italian Law 240/2010 for a period which, summed to the foreseen duration of the contract as detailed in Annex 1, exceeds a total of 12 years, even if not consecutive, are excluded from applying. To this end, the time in which the candidate was on maternity or sick leave is not taken into account according to the current legislation.

The fellowship cannot be held contemporarily with other fellowships of whatever kind, except those awarded by Italian or foreign institutes with the aim of integrating the research activity of the candidate through a period spent abroad.

Candidates enrolled in University Degree, Bachelor or Master courses, PhD courses with fellowships or medical school of specialization in Italy or abroad are excluded from applying. Public employees must be given unpaid leave for the period of the fellowship.

Article 5 - Application to the selection procedure

Under penalty of exclusion, application for participation in the competition, along with the relevant qualifications held and the relevant scientific publications, shall be submitted online through the following online application procedures <https://pica.cineca.it/sissa/ar-fse-neur-51-2021/>



It is of utmost importance to provide a valid email address in order to enable the registration process on the electronic procedure.

Applicants shall upload all personal and professional data as requested by the application procedure; all documents must be uploaded in PDF format (.pdf). Each applicant can produce a maximum of no. 30 publications and a maximum of no. 30 other titles and qualifications.

All fields in the online application form must be filled out. Under penalty of exclusion, the application must contain:

- research project (English language), concerning the Scientific Subject listed in the Annex 1;
- the curriculum vitae with the complete list of the scientific and professional activities;
- valid ID of the candidate to be uploaded in electronic format.

Failure to comply with the online application procedure will result in exclusion of the applicant.

Prior to final submission, and within the given deadline for applications submission, the online application procedure allows to modify and save the inserted information in a draft copy.

Confirmation of final submission date will be certified by an automatic notification email.

Submissions after the given deadlines will not be accepted by the system as the online application procedure won't be accessible.

Each application will be given a registration number. For all further communications, the registration number shall be quoted along with the code of the research grant competition.

The online application and submission procedure shall be completed by January 12th 2021, no later than 1 pm (CET - Rome time).

The submission of the online application must be completed and finalized:

- with the digital signature of the candidate, by means of smart card, USB token or remote digital signature, for digitally signing electronic documents with a software using a PC or a web portal for Remote Signature provided by a Certification Service Provider (CSP). Candidates with a smart card or an USB token for digital signature should check the compatibility with the Digital Signature system embedded in our server. In case of compatibility, candidates shall sign the application on the server (i.e. ConFirma);
- holders of server-incompatible Digital Signature and holders of Remote Digital Signature who can access a web portal for digitally signing electronic documents, shall save the PDF file generated by the system on their PC; the PDF file shall not be modified in any way, and it shall be digitally signed in CAdES format: the system will generate a file with .p7m extension. The candidate shall upload the .p7m file on the system. No changes are to be made to the file by the candidates before the Digital Signature, on pain of exclusion from the competition;
- in case the two above-mentioned options do not apply, candidates shall save the PDF file generated by the system on their PC. The PDF file shall not be modified in any way, on pain of exclusion from the competition. The PDF shall then be printed out, signed on the last page, scanned in PDF format and uploaded on the system.



For any technical problem regarding the application candidate should apply to sisssa@cineca.it.

The University will verify that all the statements made in the application and accompanying documentation comply with the provisions of Presidential Decree No. 445/2000.

5.1 - Submission of titles and published works

Candidates must enclose to the application all documents, titles and published works that might be useful for the selection procedure.

EU citizens may submit the original documents, a copy, provided that it is declared true to the original by the relevant authorities, or a copy together with an affidavit according to articles 19 and 47 of the D.P.R. No. 445 dated 28.12.2000. EU citizens may also prove that they are in possession of the documents submitting an affidavit according to articles 46 and 47 of the D.P.R. No. 445 dated 28.12.2000.

Non-EU citizens regularly sojourning in Italy according to the current legislation may submit an affidavit (D.P.R. No. 445/2000) for personal qualities and events which can be certified and attested by public Italian authorities, subject to the special regulations included in laws, legislation governing the immigration and the foreigner status, and international agreements between Italy and the country of origin of the candidate.

In any different case the above stated information must be documented by certificates or documents issued by the relevant authorities of the foreign country with a translation in Italian authenticated by the Italian Consulate abroad, stating that they are conform to the original documents.

Published works must be submitted in the language they have been originally published together with a translation in one of the curriculum languages authenticated by a consulate, an embassy or a chartered translator.

Works published in Italy shall comply with the obligations arising from D.P.R. 3 May 2006, n. 252. Together with their application form candidates shall submit proof that these obligations have been fulfilled or affidavit stating that these obligations have been fulfilled. Works published abroad shall include the date and place of publication. Candidates shall not refer to published works submitted to SISSA for other selection procedures.

SISSA reserves the right to verify all affidavit and declarations. In case of false or misleading information the candidate shall forfeit any benefits resulting from the provisions made on the basis of the false declarations, subject to the provisions of art. 76 of Presidential Decree 445/2000. The withdrawal of the fellowship can be decided at any time, even after the research fellowship contract has entered into force. In such event the candidate shall reimburse to SISSA the fellowships unduly obtained.

5.2 - Research project

The research project must have the duration specified in Annex 1, and must be completed by 30 April 2023.

The scientific Area of SISSA, in hosting the research fellow, will be responsible for the activities foreseen in the project, providing access to and use of structures, materials and services necessary for the implementation of the project and providing a scientific tutoring service through its teaching or research staff, not necessarily permanent.

5.3 - Exclusion from the selection and withdrawal

Each candidate is admitted with reserve to the selection procedure for which they have applied.

The administration can exclude candidates from the selection procedure due to lack of requisites with justified Directorial Decree.

Article 6 - Examining Board

The Examining Board is composed of a minimum of three members, including one President and one Secretary, chosen between professors and researchers of SISSA, Universities, research organizations or experts in the competition sector referred to in Annex 1. Members of the examining board must not have a family relationship or other degree of kinship up to the 4th degree with the candidates.

The Examining Board is nominated by the Director of SISSA before the evaluation, according to the proposal of the relevant Area Council, Giunta or Coordinator.

Article 7 - Evaluation criteria

The Examining Board has a total of 100 points that can be awarded to titles and published works, to the interview, if foreseen, and to the research project.

The assessment shall be made by the Examining Board according to the following criteria that are detailed in Annex 1:

- a) Evaluation of titles and published works;
- b) Evaluation of the Research Project.

For the evaluation of titles the Examining Board shall take into account:

- the documented research activity;
- the academic qualifications (university degree, PhD, specialization diplomas and certificates of attendance of postgraduate courses obtained in Italy or abroad);
- other titles.

For the evaluation of published works the Examining board will also consider their relevance to the field of activity of the Research Project;

The Examining Board shall also assess the relevance, pertinence and quality of titles and published works with regard to the topic of the research activity.



The evaluation of the Research Project shall be based on:

- the quality of the Research Project with special attention to the objectives, the methodology adopted and the schedule of activities.

The Research fellowship is awarded following the classification list to candidates who have obtained the total minimum score of 70/100.

SISSA seeks to ensure equal opportunities for men and women for accessing financial facilities covered by this announcement, in line with EU directives.

Article 8 - Evaluation results and classification list

At the end of the selection procedures the Examining Board draws up the minutes bearing the overall score of each candidate and the classification list, based on the total score obtained by each candidate.

The selection procedure documentation and the classification list shall be approved with Directorial Decree and shall be published on the official bulletin of SISSA, and on the website of SISSA at <https://www.sissa.it/progetti-fse>

Eligible candidates shall undertake a research fellowship contract with SISSA in accordance with art. 22 of Law 240/2010.

Being in the classification list shall not give any rights in other selection procedures.

Article 9 - Award of the research fellowship

The candidate resulting as the fellowship winner shall be informed of the results of the evaluation.

The research fellowship is awarded through a contract. The contract does not give any right to be employed by universities.

In the event of rejection of the winning candidate, the fellowship may be awarded to the next eligible candidate in the classification list, through the Director's authorization at the express request of the scientific responsible of the position.

The annual gross amount of the research fellowship is listed in Annex 1, will be paid in monthly instalments and includes contributions to be paid by the fellowship holder. The fiscal and social security treatment of the research fellowship is in accordance with ex art. 4, Italian law No. 476/84, and par. 26 and followings, art. 2, Italian law No. 335/95 and subsequent integrations and modifications.

Payments are made by bank transfer to the current account that the fellow shall own or open in Italy or abroad.

SISSA arranges for insurance coverage for the fellow against accidents in the workplace and for third party liability while carrying out their research work. The amount of relevant premiums shall be deducted from the fellowship.

Should the funding not be guaranteed by the funding authority, SISSA reserves the right to not implement the fellowship. The validity of the contract is therefore subject to the verification of the existence of the necessary funding.

Article 10 - Duties of SISSA

SISSA shall make available to the research fellow the structures and tools necessary to the realization of the research project and provide a scientific responsible through the teaching or research staff.

For each application received SISSA ensures to keep all documentation in a separate (paper and/or electronic) folder which will be constantly updated and stored at the headquarters of SISSA – Research Funding and International Relations Office.

Article 11 - Duties of the research fellow

At the start of the project the research fellows shall be resident or domiciled in the territory of Friuli Venezia Giulia.

For this purpose, the research fellow shall submit to SISSA one of the affidavit mentioned below:

- affidavit under the Presidential Decree of 28 December 2000, No. 445, stating the election of domicile in the Friuli Venezia Giulia region on the starting date of the project;
- affidavit under the Presidential Decree of 28 December 2000, No. 445, stating the residence in the Friuli Venezia Giulia region on the starting date of the project.

During the project the research fellow shall:

- a) follow the plan of the activities and time schedule of the objectives foreseen in the project;
- b) observe the rules of behaviour and conduct in force at SISSA and at any third parties if foreseen by the Research Project;
- c) submit to SISSA the periodical declaration stating that the activities have been regularly carried out, if foreseen by the Research Project and submit to SISSA, on an annual basis, an analytical report of the activity conducted, signed by the fellow and validated by the scientific responsible;
- d) submit to SISSA the final report signed by the fellow and validated by the scientific responsible.

Article 12 - Early termination

For the early termination of the project, the fellow shall prove the regular implementation of the research activities until the early termination.

At least 30 days' notice must be given by the fellow in case of resignation. Failure to do so shall result in a penalty involving the recovery of or the failure to pay the salary for the period of notice not given. The 30 days' notice shall not be applied during the first 30 days of the research activity.

SISSA may also terminate an on-going contract if the periodic reports show that the fellow has failed to achieve the objectives of the project for the period to which they refer and that the project has therefore failed.

The loss of external funding that allowed the implementation of the research fellowship constitutes cause for termination by SISSA. In that case SISSA is required to respect the notice period of at least 60 days.

Should SISSA fail to respect the aforesaid notice period, SISSA shall pay to the fellow an amount corresponding to the remuneration for the period of notice not given.

Article 13 - Suspension of the project

The project and the payment of the research fellowship may be suspended only in the following cases, upon notification by the beneficiary:

- a) maternity leave
- b) parental leave
- c) documented serious family reasons
- d) serious health reasons.

In such cases, the fellowship holder should submit a duly certified request. The project may be restarted at the end of the suspension period and must be completed in any case by 30 April 2023.

Article 14 - Access to documents, data processing and administrative procedure officer

Providing data is necessary for procedural purposes, on penalty of exclusion from the selection procedure. The candidate may exercise the right of access to data in accordance with art. 7 of Legislative Decree 196/2003.

Published works submitted shall be used solely for the evaluation and the drawing up of the classification list.

In accordance with article 13 of the Legislative Decree 196/2003 and with the European Regulation 2016/679 (General Data Protection Regulation), SISSA undertakes to respect the confidentiality of the information provided by the candidates: the personal data collected will also be processed by computers, only for purposes related to the selection and the drawing up and management of the relevant contract, according to the current legislation, and may also be transferred to and used by public administrations directly involved in the legal and economic position of the research fellow.

Participation to the selection procedure entails, while respecting the principles set out in the abovementioned law, the expression of tacit consent to the publication of the candidate personal data and data relating to the evaluation procedure on the SISSA website.



Candidates are guaranteed access to documentation of the selection procedure in accordance with the current legislation (Law 241/90 and subsequent amendments and integrations and Presidential Decree 184/2006).

SISSA, in the person of the Director, is the owner and responsible of data processing. Under Law 241/90 and subsequent amendments and integrations, the administrative officer is dr. Marco Rucci.

Article 15 - Intellectual property rights

In accordance with regional announcement "Specific programme 25/15: Support for the development of post-graduate education", results of research projects, such as any patents and industrial property rights obtained and their financial usage rights belong to SISSA, possibly in co-ownership with the partner or partners involved in the project, if any. In any case, the current legislation on the matter, in particular Legislative Decree No. 30 of 10 February 2005 "Industrial property code" and subsequent amendments and integrations and internal regulations of SISSA governing the matter shall be applied.

The fellows will retain the moral rights to be recognised as authors/inventors.

The owner of results shall give widespread dissemination of the results, citing specifically that they were achieved with the co-funding of the European Social Fund operational Programme 2014/2020 of the autonomous region Friuli Venezia Giulia.

Article 16 - Final provisions

All matters not covered in this announcement shall be governed by SISSA regulations.



Annex 1 Position 1

Scientific Area of SISSA: Neuroscience

Research field: **Nanomaterial as drug delivery platforms in the central nervous system**

Area: 05 Biology

Competition sector: 05/D1 Physiology

Relevant academic scientific sector: BIO/09 Physiology

Scientific responsibility: prof. Laura Ballerini

Fellowship duration: 12 months

Gross fellowship amount paid to the winner: € 24.336,00

Requisites:

- University Master degree in: Pharmacy, Pharmaceutical Chemistry and Technology, Biotechnology, Neuroscience, Biology;
- Doctoral degree in: Pharmacology, Neuropharmacology
- proven experience in: Experienced neuroscience researcher with a demonstrated interest for the understanding of neurological disorders. Documented ability to contribute to multidisciplinary studies and interdisciplinary projects requiring the use of nanomaterials. Research experience in vitro technologies and methods (immunohistochemistry, immunofluorescence microscopy and histology) and in vivo animal models, with particular relevance to the development of behaviour anxiety animal models. Experience in neuro surgery in rodents and biomaterials implantation. Ability to generate ideas, conduct experiments, and complete them. Reliability.
- Additional requirements, competencies and abilities: To undertake experiments under the instruction and supervision of the Principal Investigator. To contribute to the design of experiments in relation to the project. To correctly execute experiments in consultation, ensuring that experiments are appropriately recorded, analysed and documented both electronically and by maintaining a lab book that will serve as a permanent record of the methodologies used and the experiments performed.

Evaluation criteria (max 100 total points):

PhD: up to 10 points

Master degree: up to 5 points

Publications and other research products: up to 25 points

Further post-graduate degrees: up to 5 points

Further qualifications, including reference letters: up to 15 points

Research project submitted: up to 40 points



Abstract: The project aims at bridging the activity of the candidate from academic research to the translational development of personal devices for programmable or on-demand release of active pharmaceutical agents, improving pharmacokinetics and biomaterial interfaces. The proposal should thus facilitate the future translation of nanomaterial-based technology into final products with a clear impact in integrating research activity at SISSA with FVG BioHighTech clusters and thus fostering the formation of spin-offs in FVG.

Engineered small graphene oxide (s-GO) sheets were previously shown to reversibly down-regulate glutamatergic synapses in the hippocampus of juvenile rats, disclosing an unexpected translational potential of these nanomaterials to target selective synapses in vivo. Neuropeptide Y (NPY) is a neuromodulator that plays a neuroprotective role in the central nervous system (CNS). NPY interacts with different neurotransmitter systems and can inhibit the release of glutamate. Therefore, NPY could be a potential therapeutic target for anxiety disorder, neuroinflammation and neurodegenerative diseases by decreasing release of glutamate from the presynaptic terminal of neurons. However, there are some limitations for the application of NPY systems as a therapeutic tool, including gastrointestinal degradation and short half-life due the fast endogenous enzymes metabolism. Aiming to prolong the NPY stability in vivo, NPY can be chemically conjugated to sGO (NPY-sGO). sGO might play a role as drug carrier to the NPY improving its effectiveness in the CNS. Moreover, sGO could also interfere directly with the glutamatergic systems, exerting a synergic effect with NPY by decreasing the presynaptic glutamate release. In order to evaluate the efficacy of the NPY-sGO in the biologic system in vivo, we propose to test the impact of the NPY-sGO in a stress-related psychiatric disorder. For that purpose, NPY-sGO will be injected intracerebroventricular in an animal model of PTSD, evaluating the defensive response and the avoidance response to open spaces. We expect to get results showing the potential anxiolytic effect of NPY-sGO widely distributed into the central nervous system (CNS) and a more efficiently impairment of the PTSD-like behavioral responses than NPY or sGO alone. After the effect of NPY-sGO in the PTSD-like behavioral responses will be established, the impact of the NPY-sGO will be deeper investigated using a different set of experiments. We will study the CNS bioavailability of NPY-sGO systemically-administered, through IV injection on rats, by testing the capability of the nanomaterial to transport NPY across the blood-brain barrier (BBB).

With this line of research, we might also be able to evaluate the capability of the sGO as a carrier tool targeting a specific brain structure, responsible for the elaboration of the stress-related behavioral responses, such as lateral amygdala and hypothalamus, using an audacious and innovative approach, the c-fos immunoreactivity. The product of the immediate-early gene c-fos is expressed throughout the brain in response to a variety of tasks, thus making it a powerful instrument to study intracellular responses of neurons to different stimuli, such as exposure to the predator odor.

An examination of c-Fos protein, may help us to identify the neuronal network recruited during the contextual fear conditioned. Moreover, applying the c-Fos immunoreactivity protocol to map areas activated during the conditioned fear we can investigate whether the fear circuits can be suppressed by pretreatment with NPY, sGO or NPY-sGO, pointing their site of the action out.



The present project might reveal a potential application of the carbon-based nanomaterial as drug delivery for peptides and an effective intervention strategy for stress-induced psychiatric disorders. Results can open the possibility to design of miniaturized drug delivery device platforms based on s-GO, loaded with active pharmaceutical ingredients and electrical- light- and magnetic-actuated delivery system.