

**ANNOUNCEMENT OF PUBLIC SELECTION FOR N° 1 GRANT FOR RESEARCH**  
**(Italian law 30 December 2010, n.240, art.22)**

**Description**

The Scuola Normale Superiore announces a selection, based on work experience and interview, for n. 1 research contract named “*Nanobiosensors in precision medicine: innovative systems for molecular diagnostics*” as part of the research project “*Nanobiosensors in precision medicine*”, acronym NanoPM, within the call “Assegni di ricerca 2021 FSC 2014-2020 della Regione Toscana”.

This research project involves collaboration between two organizations with complementary skills in order to contribute to two of the crucial junctions for the transition from “evidence based medicine” to “precision medicine”, with particular attention to diagnostics. Essential elements of this transition are the replacement of standardized therapeutic protocols with personalized treatments, and a definition of these treatments based on the molecular characteristics of both the pathology and the patient. The proponents identify as essential elements of this new medicine (i) omics and advanced-imaging technologies that allow the profiling of pathology and patient, and (ii) ultra-sensitive detection of the molecular signals characteristic of the various pathologies. By combining the expertise on nanotechnology, bioinformatics and data science of the Science Class of the Scuola Normale Superiore, and those on omics sciences, advanced imaging and bioinformatics of the Fondazione Pisana per la Scienza ONLUS, in this project two central elements of the transition to “precision medicine” are addressed: (i) make the analysis of the large masses of data produced by the molecular profiling processes of patients and pathologies accessible through the development of advanced visualization systems that allow the use of this data by medical personnel without of specialization in bioinformatics and (ii) develop innovative systems for highly sensitive molecular diagnostics by implementing an innovative architecture engineered to irreversibly disassemble following the interaction with the biomarker of interest.

More in detail, the following research activities will be carried out in the project: functionalization of biodegradable/biocompatible polymers with oligonucleotides and their purification; formulation and characterization of hydrogel-based nanostructures based on oligonucleotide-guided aggregation; implementation and optimization of formulation protocols under flow synthesis conditions; evaluation of the stability of the systems obtained in complex matrices (e.g. human plasma).

Duration of the contract: 2 years

Annual gross remuneration, inclusive of all taxes: € 30,000

Application deadline: the application must be registered online by 23.59 (Italian time) of 21 April 2022.

Applications received and registered online after the deadline, for reasons not attributable to the Scuola, will not be admitted to the selection.

Information about the selection procedure can be found below. Candidates are invited to read the official announcement (*Bando*) and to follow exclusively its detailed instructions should they decide to apply.

**Requisites**

Applications are invited from candidates who meet the following requisites, which are both mandatory:

- a) to have completed a Master’s degree in Physics, Chemistry, Biology, Biotechnologies, Chemistry and Pharmaceutical Technologies (in accordance with earlier Italian university regulations, or a second-cycle undergraduate degree as per the interdepartmental decree of 9 July 2009). Candidates who have completed the aforementioned degrees abroad may also apply, if said degrees are recognized as equivalent to Italian degrees;

- b) candidates must be under 36 years old on the date of submission of the application.

Knowledge of English language is also required to carry out the research activity.

Additional competence and/or experience relevant to the choice of the researcher: PhD in Chemistry, Physics, Biology.

### **How to apply**

Candidates with all the aforementioned requisites who wish to participate in the selection process must submit their application using exclusively the online procedure (SerSe) available on the Scuola's website at <https://serse.sns.it/en/>. No other submission method will be accepted.

At first candidates shall register themselves in SerSe and then, once received a confirmation email to the email address indicated by them, they shall select on the homepage the specific call they are interested to. Candidates having already registered themselves in SerSe shall use the same access credentials to enter in the online procedure and submit their application.

For internal users or external users with SPID, it will be possible to log in SerSe with SPID or SNS credentials instead of SerSe credentials.

The email address indicated by candidates during the online registration or application submission is the official means of communication relating to this selection. Any change must be communicated promptly to the email address [job.opportunities@sns.it](mailto:job.opportunities@sns.it).

The online application must include also the following documents:

- a) the scanned copy of a valid identification document (mandatory – the document shall not exceed 1 Mb);
- b) a curriculum vitae containing a detailed description of the studies, qualifications, publications, patents, scientific/professional/teaching experiences (mandatory);
- c) a training-learning-research project (mandatory – around 3000 characters maximum – please use attachment B), describing the targets and the professional growth path that the applicant proposes to carry out with her/his participation to the research project;
- d) the publications, including also the PhD thesis, and any other document that the candidate believes may be useful to the evaluation of her/his application (it is mandatory to attach the publications that the candidate intends to submit to the evaluation of the Committee);
- e) a list of the submitted publications (mandatory).

For those unpublished texts accepted for publication, the candidate must include the relative document in its final form and the publisher's certificate or a detailed substitute statement of affidavit confirming that the relative text has been accepted for publication (please use attachment C).

In order to submit the documents listed above, candidates shall upload them exclusively as PDF files (only PDF format will be accepted). Only if direct upload is not possible, exceptionally one or more publications can be provided extra online procedure, delivering them by registered mail or courier to the following address: Ufficio Protocollo of the Scuola Normale Superiore, Via del Castelletto, n. 11, 56126 Pisa (Italy).

After the online application has been received and registered, it will not be possible for candidates to change or integrate it with further documents.

### **Interview**

The interview will be carried out on 6 May 2022, at 3 p.m. (Italian time).

Applicants who live permanently outside Italy or are domiciled abroad for work/study or research, or who are unable to carry out an on-site interview may carry out the interview by videoconference provided that they ask for it in the online application and they have the necessary and appropriate technical means for the online audio/video connection.

Moreover, without prejudice to the above situations, should the current health emergency persist it might be necessary to arrange the interview with all the admitted candidates by videoconference, in accordance with the scheduling and procedures to be defined by the Committee.

The Committee will indicate also the video conferencing software platforms to be used (for instance Skype or Google Meet).

During the interview, applicants must show the identity card or passport that they had enclosed in copy with their application, otherwise they could not take part in it.

The wrong communication of the contact details, as well as the missed connection at the date and time communicated by the Administration and the missed presentation of the identity card or passport cause the loss of right to participate at the interview and consequentially at the selection.

Scuola Normale is not responsible for any technical problems that may arise during the interview.

In case of problems in registering the online application, for administrative information or questions, candidates can write an email to [job.opportunities@sns.it](mailto:job.opportunities@sns.it).

**Call Assegni di ricerca 2021 FSC 2014-2020 della Regione Toscana, project “*Nanobiosensors in precision medicine*”, acronym NanoPM**

**Description of the project**

This research project involves collaboration between two organizations with complementary skills in order to contribute to two of the crucial junctions for the transition from “evidence based medicine” to “precision medicine”, with particular attention to diagnostics. Essential elements of this transition are the replacement of standardized therapeutic protocols with personalized treatments, and a definition of these treatments based on the molecular characteristics of both the pathology and the patient. The proponents identify as essential elements of this new medicine (i) omics and advanced-imaging technologies that allow the profiling of pathology and patient, and (ii) ultra-sensitive detection of the molecular signals characteristic of the various pathologies. By combining the expertise on nanotechnology, bioinformatics and data science of the Science Class of the Scuola Normale Superiore, and those on omics sciences, advanced imaging and bioinformatics of the Fondazione Pisana per la Scienza ONLUS, in this project two central elements of the transition to “precision medicine” are addressed: (i) make the analysis of the large masses of data produced by the molecular profiling processes of patients and pathologies accessible through the development of advanced visualization systems that allow the use of this data by medical personnel without of specialization in bioinformatics and (ii) develop innovative systems for highly sensitive molecular diagnostics by implementing an innovative architecture engineered to irreversibly disassemble following the interaction with the biomarker of interest.

More in detail, the following research activities will be carried out in the project: functionalization of biodegradable/biocompatible polymers with oligonucleotides and their purification; formulation and characterization of hydrogel-based nanostructures based on oligonucleotide-guided aggregation; implementation and optimization of formulation protocols under flow synthesis conditions; evaluation of the stability of the systems obtained in complex matrices (e.g. human plasma).



Self-declaration affidavit (*Dichiarazione sostitutiva dell'atto di notorietà*)  
(according to art. 47 of D.P.R. n. 445/2000)

The undersigned \_\_\_\_\_  
born in \_\_\_\_\_ on \_\_\_\_\_

Under my own responsibility, fully aware of the penal sanctions in case of false or mendacious statements according to Presidential Decree n. 445 dated 28/12/2000

DECLARES

that the scientific publication entitled “ \_\_\_\_\_ ”,  
submitted with my online application, has been accepted by the publisher  
“ \_\_\_\_\_ ” and it will be printed on “ \_\_\_\_\_ ”.

Place and date, \_\_\_\_\_

Full legible signature

\_\_\_\_\_