



UNIVERSITÀ  
DEGLI STUDI  
FIRENZE



## **COLLABORATIVE DOCTORAL PARTNERSHIP (CDP)**

### **CALL OF INTEREST IN ONE Ph.D. POSITION**

**Topic:**

**“Engineering lipid nanoparticles for genetic medicines”**

**Application deadline:**

**20<sup>th</sup> June 2025 at 12:00 pm (Italian Time)\***

**ACADEMIC YEAR 2025/2026**

**\* The registration procedure will be automatically interrupted at 12 pm sharp.  
Please, consider to start the trials well in advance to conclude them by the deadline**



HR EXCELLENCE IN RESEARCH



The University of Florence - Department of Chemical Sciences “Ugo Schiff” and the Joint Research Centre of the European Commission (JRC) are inviting applications in the field of “Health Promotion and Prevention of Non-communicable Diseases (NCDs)” for **one PhD position through the Collaborative Doctoral Partnerships (CDP) scheme** – Topic: **“Engineering lipid nanoparticles for genetic medicines”** (Agreement n. 36142).

#### Art. 1 - PhD PROGRAMME

The candidate will be enrolled in the XLI cycle of the Ph.D. Programme in **“Chemical Sciences”**.

The University of Florence will award a Ph.D. Degree at the end of the three-year Programme after successfully completing all Ph.D. requirements, including the successful defense of the Thesis as provided by the **University Regulations on Doctoral Programs** available on the University website at the page **PhD Programmes**

#### Art. 2 - Ph.D. RESEARCH TOPIC - PROJECT OBJECTIVES AND DESCRIPTION

The Ph.D. research activities will focus on: **“Engineering lipid nanoparticles for genetic medicines”**. The topic is coherent with the research lines included in the Ph.D. Programme in Chemical Sciences and with the JRC mission.

##### **Short Description of the project and main objectives:**

Genetic medicines aim to modify genomes, enabling gene expression, silencing, or editing. Some of them are already approved for clinical use, including in cancer, spinal muscular atrophy, haemophilia, and sickle cell disease.

Lipid nanoparticles (LNPs), used in mRNA vaccines, are leading non-viral vectors for genetic medicines but face challenges like immune recognition, limited targeting to specific organs, and poor ability to escape endosomal pathways and release mRNA into the cytosol.

This PhD project aims at addressing this challenge by proposing a radical shift in LNP engineering, evolving them from passive carriers into advanced systems endowed with active targeting and endosomal activity. To achieve this, we will test two strategies: i) apply the principles of compartmentalization and phase separation used by Nature to impart responsivity to biological systems; ii) add biological components for active targeting and endosomal escape enhancers.

Through state-of-the-art scattering and microscopy techniques and access to the Nanobiotechnology Laboratory of the Joint Research Centre of the European Commission, the PhD student will design and characterize the structure and functions of these novel LNPs, including their key physical-chemical quality attributes and in-vitro potency, aimed at guiding the rational design of next-generation LNPs.

This project bridges soft matter, pharmaceutical research, life sciences, and regulatory science, offering interdisciplinary training across academia and the European Commission.



### Art. 3 - JOB LOCATIONS

#### European Commission – Joint Research Centre

Via Enrico Fermi, 2749 - 21027 Ispra (VA) – Italy

#### University of Florence

Department of Chemical Sciences “Ugo Schiff”

Via della Lastruccia, 3 – 50019 Sesto Fiorentino (FI) – Italy

### Art. 4 - PROFILE OF THE PHD CANDIDATE

- Master degree (MSc) or equivalent within a relevant scientific area of the Ph.D. Programme in “Chemical Sciences” (Chemistry, Chemical Engineering, Biotechnology)
- Knowledge/experience in Lipid Self-Assembly, Soft Matter, Nanomedicine, Materials Characterization at the Nanoscale
- Languages: excellent working knowledge (written and oral) of English. Knowledge of Italian language is preferential.

### Art. 5 - DURATION OF THE DOCTORAL PROGRAMME, RESEARCH CONTRACT AND SALARY

The PhD candidate will spend 24 months at the Joint Research Centre - Directorate F - Health, Consumers and Reference Materials in Unit F2 Technologies for Health in Ispra (Varese), Italy and 12 months at the Department of Chemical Sciences “Ugo Schiff” of the University of Florence.

The starting date of the Ph.D. Programme is provided for November 1<sup>st</sup>, 2025, the Programme will end on October 31<sup>st</sup>, 2028; the defence of the thesis will be held before October 31<sup>st</sup>, 2029.

At the University of Florence, the position is funded according to the University of Florence regulations, while at the Joint Research Centre in Ispra the candidate will sign a contract as a Grantholder Cat. 20 for a maximum duration of 24 months in accordance with Grantholder rules and the applicable Vademecum ([GH Rules](#)).

### Art. 6 - WHO CAN APPLY

- Italian and foreign citizens holder of *laurea Specialistica/Magistrale*, *laurea Vecchio Ordinamento* conferred by an Italian University by the 31<sup>st</sup> of October, 2025 may apply.
- Italian and foreign citizens holder of *Master Degree* conferred by a foreign University by the 31<sup>st</sup> of October, 2025 may apply for the selection, enclosing the official transcripts of the academic degree, accompanied by an Italian or English translation, also made by the applicant's and under their own responsibility.

Applicants holder of Degrees (EQF Level 7 or II cycle Degree) conferred by a foreign University are conditionally admitted to the selection and will be excluded from it, if the academic title does not comply with the requirements for access to the Ph.D. level, as stated in this announcement. The foreign degree must be equivalent in length, level and subject to the required Italian title. The documentation relating to

the foreign degree duly translated and legalized and with a declaration of value, issued by the competent Italian Consulate/Embassy in the Country where the qualification was obtained must be submitted to the appropriate offices, on or before the enrolment deadline. Alternatively, the candidate can submit the **Statements of comparability and verification of the foreign university degree** issued by ENIC\_NARIC in Italy (CIMEA). The statement must contain all the necessary information to allow a proper evaluation of the title. If the foreign title was obtained in an EU country the *Diploma Supplement* will suffice.

Candidates should, prior to the start of the employment contract with the JRC:

- have the nationality of a Member State of the EU or a country associated to the Research Framework Programme or being resident in a EU Member State since at least five years.
- be enrolled in a Ph.D. Programme with the HEI.

Candidates who are already enrolled in the doctoral study program with the HEI for fewer than 12 months can also be considered eligible.

The selected candidate will have no more than 6 months from the request for confirmation of interest in the position, to produce proof of enrolment in the doctoral study program.

For candidates with third-countries nationality (i.e. who are neither from Member States of the EU nor from countries associated with the Research Framework Programs - Horizon 2020), the recruitment is subject to a security clearance and to the issuance of a residence and work permit in Italy for the period of the stay at JRC.

#### Art. 7 - HOW TO APPLY

For the application, candidates must use exclusively the online procedure at the website [https://sol.unifi.it/domdottjrc/login\\_en.jsp](https://sol.unifi.it/domdottjrc/login_en.jsp). The temporal window to submit the application is **from 21 May, 2025 until 20 June, 2025 at 12 pm** (Italian Time).

##### Applicants need to:

- connect to [https://sol.unifi.it/domdottjrc/login\\_en.jsp](https://sol.unifi.it/domdottjrc/login_en.jsp)
- register and log in following the provided instructions;
- fill in the application carefully following the instructions in the various screens;
- upload all the documents required for the selection, under penalty of exclusion;
- pay the application fee of € 30.00. Payment is due, under penalty of exclusion, within the deadline of the call

##### Documents required for the selection:

- copy of an Identity Document;
- CV, publications, other qualifications
- For candidates with degrees awarded in Italy: (bachelor's and master's degree or combined-cycle degree), a **self-certificate** containing a list of exams taken and the corresponding grade, the title of the thesis and grade, using the dedicated form [here](#)
- For candidates with degrees awarded abroad: (Bachelor's and Master Degrees or combined cycle Degree) with a list of all exams taken, number of credits, and their marks, title of the thesis and graduation mark.



The JRC reserves the right to request additional documents in order to ensure the compliance with all requirements and specific rules applicable to JRC sites. The selected candidate must also be recognized as medically fit to carry out the work activities foreseen. To this end, the candidate must undergo, in advance and independently, the medical checks specified by the JRC.

Please note that the payment of the application fee is compulsory and failure to make payment will result in the exclusion from the selection. The application fee is not refundable under any circumstances.

After the closure of the online application, changes or uploading of other documents are not allowed, except for any documentation required afterwards by the Administration.

It is in the interest of the candidates to make sure to complete and “close” the application well ahead of the deadline of 20 June, 2025, at 12 pm (Italian Time). Please note that the payment will be accepted until 11:59 pm (Italian Time) of the same day. No extension of the above deadline will be granted.

#### Art. 8 - SELECTION PROCEDURE

Candidates will be selected on the basis of their qualifications, CV, as well by means of an interview (in English) for the assessment of their aptitude to carry out research as well as the assessment of their knowledge on the specific field of the research project to which the CDP position is referred, according to the following procedure:

- pre-selection by University of Florence (evaluation on qualification documents and interview);
- final selection by JRC in agreement with the University of Florence Admission Board.

The pre-selection is carried out by a specialized Admission Board appointed by the University of Florence and chosen among professors and researchers with experience on the topics subject of the Call, guaranteeing an adequate gender representation.

At the end of the pre-selection process, the resulting ranking list consisting of a minimum of 2 and a maximum of 5 candidates, will be sent to the JRC host Unit F.2 (together with the candidates' applications), for the final selection; the JRC Grantholders Human Resources Unit will organize an evaluation panel with the pre-selected candidates.

At the end of the selection procedure, the JRC will contact each pre-selected candidate to inform about the outcome of their application, the successful candidate will then be contacted by the University of Florence for the enrolment procedure.

All relevant information and name of successful candidate will be published on the [University of Florence website](#)

#### Art. 9 - INTERVIEW

The interview will be held in English Language remotely by Videocall **on 1<sup>st</sup> July 2025 at 9:30 am** (Italian Time). The Board will send to the selected candidates the link to participate in the interviews to the email address indicated in their application.

The Interview is aimed at evaluating the candidate's scientific background, knowledge, and skills in relation to the research topic of the CDP Call.

Candidates must ensure to have a webcam at their disposal in order to allow the Admission Board to identify and have full view of the candidate during the interview.



The candidates are required to identify themselves before the interview by showing a valid identification document.

Failure to show up, failure to connect, unavailability of the candidate on the day or time set, or failure to provide a valid identification document, are grounds for exclusion from the selection procedure.

Where technical problems of connection arise during the videoconference interview, if the problem concerns one or more Board members, the interview shall be postponed by default to another date, if the problem concerns the candidate, the Board may, on grounds of good reason, postpone to another date, respecting the principles of non-discrimination and equal treatment between candidates.

#### **Art. 10 - ENROLMENT**

The successful candidate will be contacted by the Ph.D. Office of the University of Florence for the enrolment procedure.

Pursuant to art. 1, paragraphs 252 and 262 of law n. 232/2016, PhD students, in addition to the stamp duty of € 16,00 (required for the enrolment application), doctoral students are required to pay the regional tax for the right to university education (pursuant to art. 18, paragraph 8, of Legislative Decree no. 68/2012) the amount of which, for the academic year 2025/2026, is set at € 140.00.

#### **Art. 11 - INTELLECTUAL PROPERTY ON RESEARCH RESULTS AND PUBLICATIONS**

Intellectual and industrial property rights to any findings of the Ph.D. student are governed in accordance with current legislation (Copyright Law - Legislative Decree 633/1941 - and Industrial Property Code - Legislative Decree 30/2005), to the **Regulations for the management of industrial and intellectual property rights with reference to research activities carried out by university personnel** and, if necessary, according to what is established in individual agreements with universities, companies or entities involved. Ph.D. Students are required to sign appropriate confidentiality undertakings in relation to information, data and documents of a confidential nature of which they may become aware in the course of their work at and/or on behalf of the University.

The Ph.D. Student is, in any case, guaranteed the opportunity to carry out the normal publication activities envisaged by the programme, which must be scheduled in a manner compatible with the protection of any results.

#### **Art. 12 - PROCESSING OF PERSONAL DATA**

Personal data pertaining to this procedure are collected and processed for the University's institutional purposes in accordance with Articles 13 and 14 of EU Regulation 2016/679 - General Data Protection Regulation (GDPR).

For more details follow the University of Florence webpage **Data Protection**

#### **Art. 13 - PUBLICITY**

The Call is published - in its entirety, on the Official Register of the University of Florence and on the **website**, It is also advertised on the Ministry of Education's website and on the European website Euraxess.



#### Art. 14 - THE PROCEDURE MANAGER

For all purposes pertaining to this call, the Unit in charge is the Educational Services Area - "Unit Ph.D. Office" - Piazza San Marco 4, 50121 Florence.

Information and clarifications on application submission can be addressed to e-mail [dottorato@unifi.it](mailto:dottorato@unifi.it) or by phone at the following numbers + 39 055 2757 668 - 682 - 309

The procedure manager is Mrs. Chiara Cianferoni.

#### Art. 15 - FINAL PROVISIONS

Competition documents are public, to which access is permitted in the manner established by Law No. 241 of August 7, 1990.

For anything not expressly provided for in this announcement, please refer to [University Regulations on Doctoral Programs](#) available at the page [PhD Programmes](#) and to the statutory, regulatory and ministerial provisions cited in the decree announcing the Call for Applications.

The University reserves the right to exclude at any time candidates who participate in the exams provided for in this call, for failure to comply with the provisions given therein or the deadlines specified therein, or for failure to meet the requirements.

The Rector  
Alessandra Petrucci