



## Call for 4 Early Stage Researcher Fellowships in "Doctoral Industrial School for Vaccine Design through Structural Mass Spectrometry"

### INTRODUCTION

VADEMA (Doctoral Industrial School for Vaccine Design through Structural Mass Spectrometry) aims at delivering industry-oriented PhD training in the field of structural mass spectrometry applied to vaccinology. The four selected Early-Stage Researchers (ESRs) will experience an intersectoral training programme encompassing a 18-months internship in Glaxo Smith Kline Vaccines (GSKVACSRL), based in Siena, Italy, and 18-months internship at Department of Pharmacy, in University of Copenhagen (UCPH), DK. The students will be enrolled in the Graduate School of Health and Medical Sciences and affiliated to the graduate programme in pharmaceutical sciences, the Drug Research Academy PhD school at UCPH. All students will engage in training-by-research, and will participate in a series of scientific, technical and complementary skills training events.

### RESEARCH PROJECTS

VADEMA (Doctoral Industrial School for Vaccine Design through Structural Mass Spectrometry) is a European Industrial Doctorate (EID) funded by the Marie Skłodowska-Curie Actions of Horizon 2020, with the aim of training four young scientists in the structural mass spectrometry and vaccinology fields. The scope of the Project is to develop a Structural Mass Spectrometry platform, and exploit its application to compare conformation and dynamics of antigens in their native states (membrane) with their recombinant soluble forms (vaccines) and to get a better understanding of the humoral response raised against the two forms. The outcome of such studies will be the identification of antigen portions accessible to the host immune system and those epitopes that can be recognized in the native form of the antigens to design efficient vaccines.

It represents a good opportunity for students that are willing to grow both in basic science as well as in innovative and applicative experimental research.

Specifically, students will be involved in two work packages aimed at:

- Development of a Structural Mass Spectrometry platform for vaccine design. The HDX-MS techniques will be used to study membrane-bound protein antigens in their native lipid environments and for epitope mapping with monoclonal and polyclonal antibodies.
- Application of a Structural Mass Spectrometry platform to improve vaccine design. Each ESR will develop one aspect of the Structural Mass Spectrometry using one of the Bexsero® antigen as proof of concept. The same antigen will be kept by each ESR to be characterized in more detail and potentially improved by the application of the Structural Mass Spectrometry platform.

The four projects have been defined in:

**ESR1: Structural Mass Spectrometry to study membrane antigens of low abundance**

**ESR2: Structural Mass Spectrometry to investigate the humoral response to vaccination**

**ESR3: Investigating the humoral response to vaccination through mass spectrometry**

**ESR4: Structural mass spectrometry to study membrane antigens in their native state**



### STUDENTS SUPERVISION

All the fellows will be supervised by four senior scientists (1 main supervisor and 1 co-supervisor for each host institution) who will form the so-called Thesis Committees (TC).

The TC for the 4 positions are:

**TC ESR1:** Isabel Delany and Nathalie Norais (GSKVACSRL)/ Kasper Rand and Tam Nguyen (UCPH)

**TC ESR2:** Kasper Rand and Tam Nguyen (UCPH)/ Nathalie Norais and Danilo Donnarumma (GSKVACSRL)

**TC ESR3:** Maria Scarselli and Nathalie Norais (GSKVACSRL)/ Kasper Rand and Tam Nguyen (UCPH)

**TC ESR4:** Kasper Rand and Tam Nguyen (UCPH)/ Danilo Donnarumma and Nathalie Norais (GSKVACSRL)

### TRAINING PROGRAMME

The training programme comprises:

- 1) Research training activities, performed locally, leading to award of the PhD title.
- 2) Scientific/technical training courses and activities performed locally and at the project level to train the ESRs in scientific topics, advanced technology and methodologies necessary for the project implementation.
- 3) Transferable skills training to prepare the ESRs for an academic or industrial career will be provided through local and joint training courses.
- 4) Scientific events, such as 3 annual project meetings and 1 mid-term meeting, where the fellows will be required to present their achievements and progress to a senior audience.

**The PhD programme at the Faculty of Health and Medical Sciences, UCPH comprises:**

- An independent research project under supervision
- Scientific articles and the PhD thesis on the grounds of the research project
- PhD courses or other equivalent education corresponding to approx. 30 ECTS points
- Experience with teaching or other types of dissemination related to the PhD project
- Undergraduate teaching of students in pharmaceutical sciences
- National and international congresses and scientific meetings
- Stay at an external research institution, preferably abroad

The successful applicants will be requested to formally apply for enrolment as a PhD student at the Faculty of Health and Medical Sciences according to the rules stipulated in the Ministerial order on the PhD programme at the universities (PhD order) from the Ministry of Science, Innovation, and Higher Education, Denmark and the guidelines for the [PhD programme at the Faculty of Health and Medical Sciences, UCPH](#) and is expected to be affiliated to the graduate programme in pharmaceutical sciences, [Drug Research Academy](#).



### IMPLEMENTATION

ESR1 and ESR3 will be employed by GSK for the first 18 months of their fellowship, and by UCPH for the second period of the fellowship (months 19-36).

ESR2 and ESR4 will be employed by UCPH for the first 18 months of their fellowship, and by GSK for the second period of the fellowship (months 19-36).

All the fellows will be enrolled in the Graduate School of Health and Medical Sciences and affiliated to the graduate programme in pharmaceutical sciences, the Drug Research Academy at UCPH.

The ESRs will be contractually employed according to Danish and Italian legislation and will be covered under the social security scheme of Denmark and Italy. They will monthly receive a Living Allowance, a Mobility Allowance and a Family Allowance (where applicable) compliant with the applicable EC Marie Skłodowska-Curie Actions – ITN general conditions

(see [http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014\\_2015/main/h2020-wp1415-msca\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-msca_en.pdf) - page 49).

Salary and other terms and conditions of appointment as to the employment at UCPH are set in accordance with the Agreement between the Ministry of Finance and AC (Danish Confederation of Professional Associations) or other relevant professional organizations. Minimum monthly salary is DKK 25,579 (taxable) + pension contribution + mobility allowance and family allowance (where applicable).

### APPLICATION PROCEDURE

The applicants must send the following documents to [info@vadema.eu](mailto:info@vadema.eu) before the deadline (**February 28<sup>th</sup>, 2017**):

- 1) an updated CV;
- 2) a motivation letter describing their interest for the position;
- 3) reference letter(s) from at least one former supervisors and/or lecturers;
- 4) a preference list of the projects for which the applicant is eligible (see below);
- 5) the scan of the degree (usually the Master Degree) which would formally entitle him/her to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the researcher will be recruited. In case the degree has not been obtained yet, it is necessary to send a declaration of the university stating that the degree will be obtained before **April 30<sup>th</sup>, 2017** for applicants to ESR1 and ESR2 and before **July 15<sup>th</sup>, 2017** for applicants to ESR3 and ESR4;
- 6) transcript of records (document indicating their ranking and marks within their last year at their Master Degree as well as the courses/modules they have followed).

Applications will be evaluated against the following criteria:

- CV
- Educational record;
- scientific quality;
- expected individual impact and benefit of the training to the fellow and to the project;
- teaching attitude

The candidates will be evaluated on the basis of received documents and the best 3 candidates for each position will be invited for a Skype interview that will take place in the period between **March 15<sup>th</sup>** and **March 31<sup>st</sup>**. During the Skype interview the candidates' teaching attitude will be taken in account for the selection.



For each position a shortlist will be prepared and notified to the applicants. The first candidate identified will be invited for a face to face interview with representative of both GSK and UCPH. The face-to-face interviews of the 4 candidates will be completed by end of April.

After the notification, the selected candidates are requested to prepare and submit their application for the Graduate School of Health and Medical Sciences at UCPH by June 1<sup>st</sup> (ESR1 and ESR2) and by August 1<sup>st</sup> (ESR3 and ESR4).

The recruitment date is set on **July 1<sup>st</sup> 2017** for ESR1 and ESR2, **September 1<sup>st</sup> 2017** for ESR3 and ESR4

VADEMA supports equal opportunity and encourages female researchers to apply for positions.

### ELIGIBILITY RULES

At the time of recruitment, i.e., **July 1<sup>st</sup> 2017** and **September 1<sup>st</sup> 2017** applicants must fulfil the following rules:

#### Experience:

- 1) applicants must be in possession of the degree (usually the Master Degree) which would formally entitle them to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the researcher will be recruited.
- 2) applicants must be ESRs, i.e. must be in the first four years (full-time equivalent research experience) of their research careers and have not yet been awarded a doctoral degree.
- 3) applicants will be preferred that have experience within specifically

#### Mobility:

ESR1 and ESR3: applicants can be of any nationality but, at the time of recruitment, may not have resided or carried out their main activity in Italy for more than 12 months in the 3 years immediately prior to the enrolment. Short stays such as holidays are not taken into account.

ESR2 and ESR4: applicants can be of any nationality but, at the time of selection, may not have resided or carried out their main activity in Denmark for more than 12 months in the 3 years immediately prior to the enrolment. Short stays such as holidays are not taken into account.

#### Other requirements:

- 1) **ESR1:** Basic knowledge: protein chemistry, protein structure and analytical chemistry  
Specific skills: molecular biology, liquid chromatography and mass spectrometry  
**ESR2:** Basic knowledge: protein chemistry, protein structure and analytical chemistry  
Specific skills: liquid chromatography and mass spectrometry  
**ESR3:** Basic knowledge: protein chemistry, protein structure and analytical chemistry  
Specific skills: liquid chromatography and mass spectrometry  
**ESR4:** Basic knowledge: protein chemistry, protein structure and analytical chemistry  
Specific skills: liquid chromatography and mass spectrometry.
- 2) The CV must be without gaps, in order to easily check the mobility and experience rules. CVs that either do not clearly show the applicant's past experience, or have unexplained gaps, will be considered ineligible.