



The objectives of FragNet are to (a) train a cohort of ESRs across FBLD methods and (b) develop individual skills in research into either new methods in FBLD or to apply FBLD to interrogate biological systems.

We are looking for highly motivated and talented students with a MSc degree who are interested in an ambitious multidisciplinary project on Fragment-Based Lead Discovery (FBLD).

At this moment we have 15 vacancies



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ESR6: FBLD experimental methods

Host: Beactica AB, Sweden (PhD enrolment at Uppsala University)

Industrial supervisor: Prof Helena Danielson (Beactica, Uppsala University)

Academic supervisor: Prof Xavier Barril (University of Barcelona)

Synopsis

FBLD technologies are continuously being improved to capture new opportunities. This project will study the use of biosensor-based technologies to study ligand-protein binding events.

Objectives

1. Develop biosensor-based assays for epigenetic target proteins interacting with histones.
2. Screen proprietary FragNet fragment libraries against selected target proteins.
3. Characterize fragment hits using same biosensor-based methods and orthogonal assays.
4. Use experimental data in computer-assisted drug design.
5. Optimise fragment hits.

Approach

New biosensor instruments and methods will be used for development of highly sensitive and informative assays suitable for epigenetic targets that interact with and modify histone proteins. The methods will address the challenges associated with detection of weakly interacting small molecules (fragments) and will be focused on distinguishing ligands with a functional effect from binders that simply interact with the protein. The assays will be designed for direct or indirect detection of fragments that can directly block interactions with the protein substrate/binding partner or that have enough binding energy to induce the required conformational changes for allosteric inhibition of protein-protein interactions. Biophysical methods will be developed for identifying ligand binding sites, *i.e.*, binding to the protein-protein interaction surface (corresponding to the active site for non-enzyme targets) or an allosteric site. Computational studies of hits will be performed as a complement to experimental studies, with a focus on identifying potential binding sites, binding modes and interaction features of weakly interacting ligands. The design of any new ligands can be supported by computer-aided drug design studies and synthesis will be performed in collaboration with other ESRs.

Qualifications

Required diploma: MSc degree in Biochemistry, Biophysics or related Molecular Life Science degree. Required expertise: Experience in biochemical and/or biophysical characterization of proteins. The candidate has a strong background in biochemistry or biophysics, and has experience in variety of methods for producing proteins and characterizing their structural and functional properties. Recommended expertise: Use of advanced biophysical instruments and development of new biochemical and biophysical assays. An interest in computer-aided drug design and mathematical modelling and statistical analysis of biochemical data would be an advantage. The candidate needs to be able to discuss and develop methods in collaboration with other ESRs.



Key publications

1. Winqvist *et al.* *Biochemistry*, **2013**, 52, 613-626.
2. Gossas *et al.* *Med. Chem. Commun*, **2013**, 4, 432 – 442
3. Seeger *et al.* *Journal of Molecular recognition* **2012**, 25, 495–503.
4. Geitmann *et al.* *J. Med. Chem.* **2011**, 54, 699-708.
5. Elinder *et al.* *J. of Biomolecular Screening*, 2011, 16, 15-25.



FragNet offers:

- Generously funded positions (duration 36 months) for 15 Early stage researchers (ESRs)
- High profile research projects in an Innovative European Training Network Program
- Excellent facilities for research and education
- Research training in both academic and industrial settings
- Training in state-of-the-art scientific and transferable skills
- Intensive contacts with international collaborators & secondments in other research laboratories

FragNet is looking for candidates that:

- are highly motivated and talented
- are able to work in a multidisciplinary team
- are keen on intra-European mobility to perform PhD research abroad
- have good communication skills

Selection criteria of the candidate:

- fulfil the eligibility criteria (ESR, international mobility) for Marie Skłodowska-Curie Innovative Training Networks (Horizon 2020)
- have a MSc degree in Life Sciences or obtain a MSc degree by September 2016
- have completed a research internship with relevant expertise
- have obtained high grades during his/her studies
- be fluent in English

Application procedure:

1. Send your application mentioning the **ESR number** in the subject line to hrm@fragnet.eu.
2. **Deadline for applications: 31 January 2016.**
3. Please send all the necessary information as **one pdf file** to hrm@fragnet.eu.
 - Detailed **CV** (include information on your BSc and MSc studies, languages, achievements, expertise)
 - **Motivation letter**, addressed to the FragNet selection committee, explaining your motivation why you apply with us. You have to indicate which FragNet ESR project(s) you are interested in (please motivate your selection and indicate which has your preference).
 - Provide contact details of at least 2 references (names, addresses, emails).
 - **Reference letter** from one of the enlisted references
 - Copies of your key educational certificates
 - **Transcript of Records** (i.e. documents enlisting your performance as BSc and MSc student over time by listing the course units or modules taken, credits gained and the grades awarded). If you have not completed your MSc degree yet include all grades obtained so far.
4. You may apply to more than one ESR position. If you do, submit a separate and dedicated application file for each position.
5. If applicable provide a language certificate Application is OPEN 3. The applications will be assessed by the FragNet selection committee, in which all group leaders are represented. Candidates are in particular evaluated on creativity, originality, intellectual capacity and quality of CV and motivation letter. The selection committee also takes into account interdisciplinary and gender balance.
6. Potential (Skype) interviews will be arranged with the group leaders associated with the ESR projects.
7. The ultimate starting date for the ESR projects is: **1st September 2016**, as the complete Fragnet ESR cohort will participate in the first Fragnet workshop that will be organized in York, UK in September 2016.

For other FragNet related questions please contact: info@fragnet.eu

Eligibility criteria

Eligibility criteria of Marie Curie Initial Training Networks apply. Only applicants who comply to the following conditions will be considered:

Conditions of experience (ESR)

Candidates must be, at the time of recruitment by the host organisation, in the first four years (full-time equivalent) of their research careers and have not yet been awarded a doctoral degree. This is measured from the date when they obtained the MSc degree which would formally entitle them to embark on a doctorate.

Conditions of international mobility

Eligible candidates may be of any nationality but must not, at the time of recruitment have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 last years immediately prior to the reference date.



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