



**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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### **ESR8: Virtual Screening of Fragment Libraries of Covalent Binders**

**Host:** RCNS, Hungary (PhD enrolment at Budapest University of Technology and Economics)

**Academic supervisor:** Prof. dr. György M. Keserű (RCNS)

**Industrial supervisor:** Prof. dr. Mike Hann (GSK)

#### **Synopsis**

Computer-aided drug design (CADD) approaches are able to generate accurate molecular models that integrate available structural data with biochemical and biophysical screening data. In this project, we will develop computational chemistry protocols for modelling covalent protein binders and fragment hit evolution.

#### **Objectives**

1. Designing a docking and scoring scheme for fragment sized covalent binders. These binding results will be complemented with reaction kinetic data.
2. Designing a computational protocol to extend the covalent fragments to covalent lead like compounds.
3. Virtual screening of commercially available reactive fragments against various proteins including Janus kinases.
4. Extending covalent binders that are identified by ESR3 and confirmed by ESR8 to lead like compounds

#### **Approach**

In this project, computational chemistry, molecular modelling, drug design and experimental technics to observe and quantify covalent binders will be combined. These studies will lead to computational methods to identify fragment sized covalent binders. It will also establish computational methods to extend covalent fragments to lead like compounds, e.g., for the identification of inhibitors of FragNet targets, including Janus Kinases (see ESR9).

#### **Qualifications**

Applicants must have experience with computational chemistry with a focus on molecular modelling. Familiarity with drug discovery concepts will be an advantage.

#### **Key publications**

1. Singh *et al.* *Nature. Rev. Drug Discov.* **2011**, 10, 307
2. Allen *et al.* *Med. Chem. Commun.* **2014**, 5, 180.
3. Mah *et al.* *Bioor. Med. Chem. Lett.* **2014**, 24, 33.



#### 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](mailto: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](mailto: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](mailto: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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