Postdoctoral positions in
Protein structural dynamics and folding using
single molecule FRET
Rega Institute, KU Leuven, Belgium

The Laboratory of Molecular Bacteriology, Rega Institute, KU Leuven (https://rega.kuleuven.be/bac/economou) wishes to recruit two postdoctoral fellows.

The available projects focus on:

a. Structural dynamics basis and regulation of delayed secretory protein folding and its comparison to cytoplasmic protein folding and interaction with chaperones.

b. Structural dynamics of membrane associated/embedded channels and motors

We study protein trafficking through the Sec and the Type III secretion systems (Vandenberk 2018 Structure; Chatzi 2017 JCellBio; Portaliou 2018 EMBO J; Saio2014 Science 344, 6184; Gouridis 2013 Molecular Cell 52, 655; Chen 2011 Molecular Cell 44, 734; Gouridis 2009 Nature 462, 363; Gelis 2007 Cell 131, 756) and disordered/flexible human proteins involved in disease and chaperoning (e.g. Bcl-2, prolyl oligopeptidase, γ-secretase; Monaco 2017 FEBS; Tsirigotaki 2017 SciReports). We have a very international lab environment and use multi-disciplinary approaches that combine molecular microbiology and genetics, recombinant DNA technologies, enzymology, protein chemistry, protein biophysics (including Hydrogen Deuterium Exchange/Native/nanoLC mass spectrometries, Isothermal Titration Calorimetry, Circular Dichroism, ensemble fluorescence, size exclusion chromatography coupled online to static and dynamic laser light scattering detection) structural biology, single molecule FRET. All methods are applicable on lab equipment. Successful candidates should:

• hold a PhD in Physics/Chemistry/Biochemistry or related degree with experience in using confocal (FRET) or TIRF microscopies to analyze protein structural dynamics, interactions or folding particularly at single molecule level using solution or surface-immobilization.
• experience in the preparation/handling of proteins and biochemical assays
• additional experience in biophysical methods, data analysis or programming is welcome.
• have a genuine interest in research and scientific discovery and a good command of English

Our lab's smFRET equipment consists of a Microtime200 (Picoquant) confocal microscope equipped with piezo scanners (xy and z) and dual channel detection, operating in a dedicated temperature controlled room. We currently have a fully set-up pipeline for smFRET measurements from protein modification, expression, purification, labeling, surface immobilization, microscopy measurements to data analysis using both literature methods as well as in-house developed software. We also have direct access to light-sheet microscopes (SPIM, SIM), as well as super-resolution microscopes (PALM/STORM, Abberior STED) through KU Leuven core facilities.

The position is available immediately. Applications including a complete CV, with a list of scientific publications, a short summary of performed research project(s) and hands-on experience with microscopy instruments, and the names and contact details of 2-3 referees should be sent to: Prof. Tassos Economou (tassos.economou@kuleuven.be, subject: smFRET_2020_LMB)