Postdoctoral Position in Neuronal Bioenergetics Systems Biology (24 months plus 12 months)

**Location:** Centre for Systems Medicine (CSM) and Department of Physiology and Medical Physics, Royal College of Surgeons in Ireland (RCSI)

**Reporting to:** Prof Jochen Prehn

**Project background and description:** The research group of Prof Jochen Prehn at the Centre for Systems Medicine and the Department of Physiology and Medical Physics investigates cell fate decisions. The mission of the Centre for Systems Medicine is to provide a translational research environment to identify signalling processes implicated in human disease and to utilize systems biology and mathematical approaches in combination with quantitative experimentation in order to develop new prognostic tools for the treatment of cancer, diabetes and neurological disorders. The research infrastructure of the Centre includes a team of systems biologists, clinical researcher, preclinical animal researcher and cell biology researchers, as well as state-of-the-art instrumentation including RPPA and protein arrays, Cellomics, high throughput Flow Cytometry, single cell microscopy, two-photon intravital microscopy and small animal bioluminescence and PET/CT facilities.

Many neurodegenerative disorders are accompanied by alterations in mitochondrial function and bioenergetics. However further research is required to understand a) in which neurodegenerative diseases impairments of mitochondrial function and bioenergetics are sufficient to trigger neurodegeneration, b) in which disorders alterations in mitochondrial function and bioenergetics constitute additional risk factors ('second hit' hypothesis), and c) whether mitochondria and bioenergetics represent ‘true’ therapeutic targets and deliver novel disease biomarkers for future clinical management. We have assembled a team of international experts with a track record in animal models of neurodegenerative disorders, quantitative analysis of mitochondrial function and bioenergetics, as well as computational modelling and high throughput approaches. We will apply a systems-based target analysis to determine the contribution of mitochondria and cell bioenergetics to disease progression in three common neurodegenerative disorders. The postdoctorate will develop and apply previously established metabolic flux models of mitochondrial respiration (Huber et al., 2011; Huber et al., 2012) and cellular bioenergetics, including AMPK signalling. The strength of the Centre for Systems Medicine is that modelling approaches can be quantitatively validated using single cell imaging approaches (Connolly et al., 2014; Huber et al., 2011).

The position will be available from December 1st, 2014, or at a later time point.

**Person Specification:** The candidate should have a PhD in Bioinformatics, Systems Biology, Software Engineering or a related field, with programming experience in at least one higher programming language (C/C++, Visual Basic or MATLAB preferred). (S)he should have research experience or background knowledge in the subject areas described above, and should have demonstrated research accomplishments documented by publications and/or awards. (S)he will be required to work independently and to integrate into a strongly interdisciplinary research environment. Good communication skills are required to team up with project partners.

**Salary:** The successful candidate will be appointed on the salary scale at a point commensurate with qualifications and experience.

**Application procedure:** Please send a CV and accompanying documentation (certificates, publications) to jprehn@rcsi.ie
**Closing date:** Applications are reviewed at an ongoing basis but should be received no later than Dec 31st, 2014.

**Other information:** Further details can be obtained from the Project Leader, Prof Jochen Prehn prehn@rcsi.ie

www.systemsmedicineireland.ie

**Relevant publications from the group:**


