PhD Project Title: Understanding how tumours tolerate gene loss

A PhD position is now available in Systems Biology Ireland, University College Dublin, to investigate how paralogs (duplicate genes) contribute to the ability of tumours to tolerate gene loss.

Location: Systems Biology Ireland, University College Dublin, Dublin, Republic of Ireland

Supervisors: Dr. Colm J. Ryan

Project Background & Description:
Systems Biology Ireland (SBI, http://www.ucd.ie/sbi/) established in 2009 under SFI's CSET initiative, has successfully developed an integrated mathematical modelling and experimental research programme focusing on the design of new diagnostic and therapeutic approaches to diseases, primarily cancer, based on a systems level, mechanistic understanding of cellular signal transduction networks. To accomplish these goals, SBI uses mathematical and computational modelling approaches in combination with cutting edge experimental technologies in proteomics, genomics, advanced microscopy and flow cytometry as well as cell biology and molecular biology methods. SBI's expertise, particularly in the area of modelling in systems pharmacology and therapeutics, strategically position it at the crossroads between biology and medicine.

The purpose-built SBI facility, supported by the HEA's PRTLI5 programmes sits in the space between the UCD Conway Institute and the Health Sciences Centre (School of Medicine and Medical Sciences). It is physically linked to both buildings, providing access to existing technology platforms, educational and conference facilities and ideally placed to train allied healthcare professionals. The facility houses a multidisciplinary team of some 50 researchers including bioinformaticians, statisticians, computational scientists and modellers, engineers, biologists, biochemists and physicists.

Gene loss, through mutation or deletion, is a common event in cancer. We are an interdisciplinary research group working to understand 1) how tumours tolerate gene loss 2) how gene loss rewires molecular networks in tumours and 3) how to target tumour cells that have lost specific genes. Our team consists of a mix of experimental (wet-lab) and computational (dry-lab) researchers working in Systems Biology Ireland. The PhD project is funded as part of an IRC Laureate award to understand how paralogs (duplicate genes) contribute to the ability of tumours to tolerate gene loss. The student will learn to computationally analyse large scale 'omics' data – primarily tumour sequencing and CRISPR screen data.

Person Specification:
This position will primarily involve large-scale data analysis and will require excellent quantitative and computational skills. The applicant should have a strong background in Data Science, Statistics, Computer Science, Bioinformatics or Genetics. Familiarity with data analytics in Python, R or similar is a must. Familiarity with genetics, bioinformatics or cancer biology is **not** a requirement but applicants with no background in these areas should be keen to learn.

Stipend: Funding is available for four years. The successful candidate will receive a tax-free stipend of €16,000 per annum. In addition, €5,750 will be made available towards registration fees per annum. Additional funds are available for computer equipment and conference travel.

Application procedure: Please send a CV, brief cover letter, and contact details of two referees to Dr. Colm J. Ryan (colm.ryan@ucd.ie). Informal inquiries to the same address are more than welcome.

Closing date: Applications will be reviewed as they are received, with interviews carried out once suitable candidates are identified. The intention is for the candidate to start in September 2018.

Web:
Ryan group: http://www.ucd.ie/sbi/research/researchgroups/ryangroup/
UCD School of Computer Science: https://www.cs.ucd.ie/
Systems Biology Ireland: http://www.ucd.ie/sbi/