

## SFI Centre for Research Training in Genomics Data Science

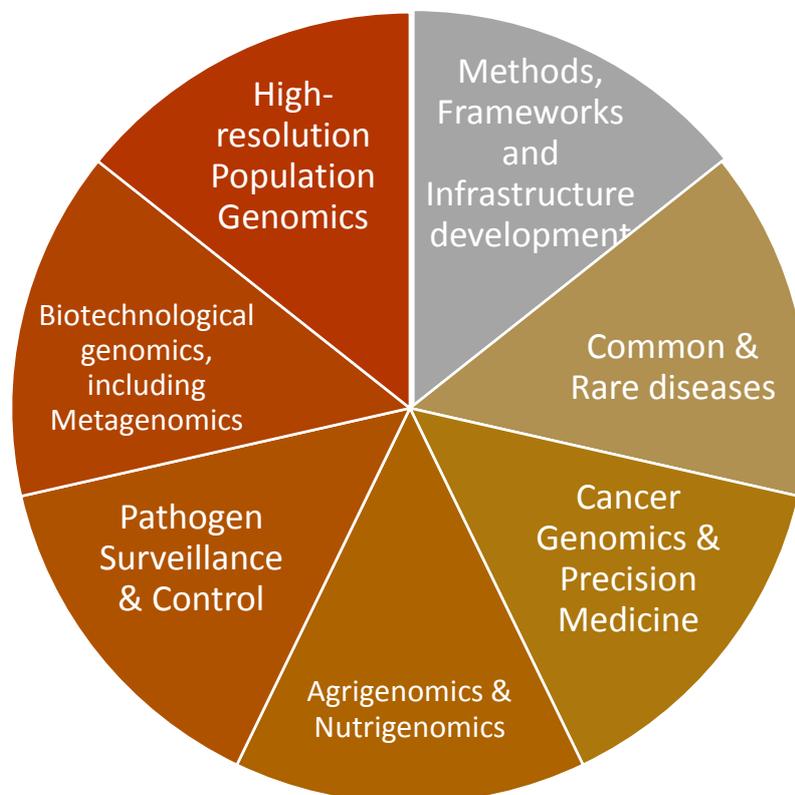
### Vision

Our vision is to train a generation of highly skilled genomics data scientists, who will harness the potential of genomics and data science to the benefit of a wide range of sectors of the Irish economy and society.

Genomics provides a particularly rigorous training ground for data scientists as it involves the analysis of large, multifarious datasets resulting from noisy measurements of noisy underlying processes. Our vision is to produce tight-knit cohorts of PhD graduates capable of engaging collectively and individually with these challenges within the many application areas of genomics and beyond.

### Overview of the Programme

The SFI Centre for Research Training in Genomics Data Science is a PhD training programme, linking together approx. 90 genomics data science group leaders based at six Irish institutions. Expertise within the group spans from statistical modelling and machine learning to the full range of application of genomics. This Research Centre is focussed on 7 Research Themes:



This CRT is a unique programme that gives students the opportunity to select their project and supervisor from the more than 90 named supervisors across the 6 partner institutions (NUI Galway, UCC, UCD, RCSI, TCD and QUB). Training courses and workshops in the 1<sup>st</sup> semester give students an excellent opportunity to interact with the CRT supervisors, become familiar with their research area and discuss the projects they have on offer. This will put students in the unique position of being very well informed about supervisors/projects/research areas so they can select the best option to suit their talents and interests.

As part of the programme, all students will spend the 1<sup>st</sup> semester at NUIG Galway on a residential training course. This course has been specifically set up to develop data science skills and expose students to the many application areas of genomics. Experience of this intensive residential training programme as part of a cohort with shared goals and challenges, will ensure that students get to know one another well enabling students to develop a collective, interdisciplinary, approach to solving problems. Being part of a cohort with a wide variety of skills to call on for support will be of great benefit when students encounter challenges during the course of their PhD.

We have developed a training programme based on original research complemented with structured taught modules and workshops providing scientific knowledge, technical skills and complementary skills.

- 1) Each student will have an individual research project, which forms the primary basis of PhD training. The research project will reinforce the acquisition of both scientific knowledge and the technical skills and will foster the development of independence and critical thinking, giving students an opportunity to demonstrate their abilities by engaging successfully on a challenging research project. However, this programme also has the advantage that students will belong to a large cohort, all facing similar challenges arising from the analysis of genomics data across a broad range of domains. The emphasis on ongoing skills development and collective problem solving throughout the training programme will enable an enriching and rewarding PhD experience.

- 2) The taught courses will be delivered (1) in form of a mandatory Residential Training Programme forming the semester 1 training for each student cohort and (2) by optional, local training modules and technical workshops offered at the participating institutes during years 2-3.

## Process

- In this programme students are centrally recruited into the programme by a recruitment committee which is made up of co-applicants from each of the partner institutions, industry representatives and the programme manager.
- All students accepted onto the programme will register for a PhD at NUI Galway and complete a 1<sup>st</sup> semester Residential Training Programme (RTP) at NUI Galway. During the RTP they will be accommodated on campus which will be paid for by the centre and they will complete 30 ECTS of taught modules in the form of an intensive series of short workshops, presented by leading experts in their fields.
- Over 90 researchers, including many of Ireland's top genomics scientists, are associated with the programme and available as PhD supervisors. Project proposals submitted by these supervisors will be made available to students.
- The students choose the project/supervisor/institution where they want to carry out their PhD from the list of project proposals. If the supervisor is based at an institution other than NUI Galway the student will deregister from NUI Galway at the end of semester 1 and reregister for a PhD at their chosen institution for the remainder of their training (credit for the 30 ECTS from the RTP will be transferred thereby fulfilling any taught components of structured PhD Programmes in the partner institutions).
- Students will also go on a placement typically for 3 months in year 2/3 of their training. Host institutes can be academic organisations outside Ireland or non-academic entities with no geographical restriction.