CRT Careers Day

25th August

2023

Rapporteur forms

The Careers Day had **5 breakout sessions** on careers in different sectors. Each breakout session had a student rapporteur who provided an oral report on the breakout session to attendees and who also provided a written report. The students written reports on the breakout sessions are provided below and give an excellent overview of the pros and cons of working in different sectors, the skills required and the roles available.

Many thanks to our student rapporteurs!

Breakout sessions and panel members

Breakout session	Panel Members
Startups and VCs	Emmeline Hill (Plusvital)
	Arnaud Autret (Illumina Ventures)
	Alla Federova (Eirna Bio)
	Liam Gallagher (Onc Assure)
	Oran Rigby (Akkure Genomics)
Careers in Health Research and Clinical settings	Susan Byrne (Paediatric Neurologist)
	Eppie Jones (National genetics and genomics office)
	Lucy Burkitt-Gray (UK Biobank)
	Teresa Loftus (Beaumont Hospital)
	Aislinn Cooper, (Mater Misericordiae University Hospital)
Careers in Academia	Rory Johnson (UCD)
	Lina Zgaga (TCD)
	Ed Gilbert (RCSI)
	Darran Walsh (DCU)
Careers in Industry	Gabrielle Wheway (Illumina)
	Simone Coughlan (DNAnexus)
	Ray Moran (Metabolon)
	Dan Crowley (Remedy Biologics)
Public Service and NGOs and Careers outside Genomics Data Science	Dympna Mulroy (Muscular Dystrophy Ireland)
	Christopher Ryan (Head of Research Services & Policy, Dept of Health)
	Patricia Clark HRB Programme Manager: EU Programmes and Policy and HRB open/Publishing
	Aoibheann Bird (Insight public engagement officer)
	Jackie Turner (Genetic Counsellor, Mater Hospital)

CRT Careers Day – 25th August RCSI

Breakout session	**Careers in Start-ups and VCs**
Facilitator	**Denis Shields**
Experts	1 Emmeline Hill, Plusvital
	2 Arnaud Autret, Illumina Ventures
	3 Alla Federova, Eirna Bio
	4 Liam Gallagher, OncoAssure
	5 Oran Rigby, Singularity Alpha
Student Rapporteur	**Ashwini Shanmugam**
Benefits of a career in this area	• Quick career advancement especially if one contributes to the growth of the company • Flat hierarchy in company with easy interactions between teams • Cooperative environment but dynamic and exciting • Chance to work with different teams within company
Drawbacks of a career in this area	• High-risk of failure, especially in the early stages of after starting a company • Requires wearing multiple hats to deal with challenges within company • Less structured when compared to bigger companies • In some cases, salaries may depend on sales that month
Skills currently in demand by employers in this area	• Problem-solving and adapting to new challenges • Ability to communicate effectively with various teams within company and to clients • Must work well in teams. • Understanding market trends
Would suit students that have strengths or interests in	• Those who are passionate, driven and resilient enough to thrive in a high-pressure, dynamic and fast-paced environment. • Those interested in developing and commercialization of products or services in genomics or pharma. • Those who can handle risks and uncertainty well. • Strong entrepreneurial spirit
Other points of note from the discussions	**How do VCs invest?** • Ensure they have a good relationship with the team from start-ups because it takes 5-8 years before they get a return on their investment. • Perform due diligence before investing which might take up to a year. • Understanding the market for a product is important – while the tech developed by a company might be groundbreaking, there needs to be a demand for it. • Hesitant to invest in companies where the founders claim they can do everything. • Hesitant to invest in start-ups based in universities because of IP issues. **Start-up process** • Often frustrating process

	• Need to tailor documents to present based on VC or funding agency because they usually have different requirements / focus • Try to start a company within the university infrastructure only after ensuring the terms are fair. • Also, ensure the funding allocation is very clearly defined in the contracts with the university. • Ensure you have the right team with the necessary expertise. **Before talking to VCs or finding the right funding agencies** • Networking is very important! • It's usually people you meet at conferences or events like it. • To be taken seriously, you need to demonstrate your capacity and area expertise. • Ensure you understand the market and that your product fits a need • Ensure you have a team that works well together. • Very important to have a written agreement in place with the people on your team to avoid issues down the road. **Funding opportunities apart from VCs** • There are plenty of government and EU funding opportunities. • There are additional resources available within universities to help you develop a product and set up a company. • One could potentially use university funds to develop a product and collaborate with external agencies to commercialise products. • Not too many VCs in Ireland • VCs hesitant to invest in Ireland because of small market size. **Factors affecting a venture's success** • Your network is really important. • Partly luck and finding the right partners is important. • Potential international collaborators or partner companies to validate product. • Cleary defined market for product and must demonstrate superiority over currently leading products in market. • Must have clear validation results! **Starting a company in a university** • University incentivises innovation and entrepreneurship. • University will probably put you in touch with experts to help out. • University might own the IP. • Unfavourable terms for the founders • Need to negotiate terms to your favour. **A day's work in a VC** • Go through 1000-3000 deals in a year and maybe invest in 2-3 companies. • 3-12 months for due diligence to ensure the company is sound.

	• As a part of the process, sit on the board of the company to understand its inner workings before investing. • Long and time-consuming process • Go to conferences to scope start-ups

CRT Careers Day – 25th August RCSI

Breakout session	**Careers in Health Research/Clinical Settings**
Facilitator	Prof Gianpiero Cavalleri
Experts	1 Susan Byrne (Childrens' Health Ireland)
	2 Eppie Jones (National Genetics and Genomics office)
	3 Lucy Burkitt-Gray (UK Biobank)
	4 Teresa Loftus (Beaumont Hospital)
	5 Aislinn Cooper (Mater Misericordiae University Hospital)
Student Rapporteur	Aideen McCabe
Benefits of a career in this area	• Extremely rewarding- you are often dealing directly with patients so you get to see the positive impact of your job first-hand • Exciting and dynamic- there is no clear definition as to what a clinical bioinformatician is in Ireland, so you will get the opportunity to work in many different areas with many types of data. The area is also very fast moving as the medical field progresses
Drawbacks of a career in this area	• Restrictive- working in the healthcare system means more protocols to follow and more bureaucracy to deal with, compared to what you would encounter in academia or industry • If working in a Biobank, your role is to facilitate other peoples' research rather than conducting it yourself • The public health system doesn't recognize the importance of bioinformaticians as of yet, and as such there are very few in the country, meaning that the role is not very defined or supported • Acquiring funding for developing infrastructure is an uphill battle in the healthcare system
Skills currently in demand by employers in this area	• The ability to work with big data • Working quickly, accurately and efficiently to deliver results to patients • Clinical knowledge for interpretation of results • Ability to set up and validate data analysis pipelines • Streamlining analysis and reporting
Would suit students that have strengths or interests in	• Creativity- as the field of clinical bioinformatics is new in the Irish healthcare system, the ability to come up with ideas on how to do things better is beneficial • If working in a biobank, you need to be okay with facilitating others research rather than doing it yourself
Other points of note from the discussions	• Susan Byrne mentioned that she welcomes researchers attending clinics in Crumlin Children's Hospital to see the downstream benefits of the research

CRT Careers Day – 25th August RCSI

Breakout session	**Careers in Academia**
Facilitator	**Paul Cahill**
Experts	1 Rory Johnson (UCD)
	2 Lina Zgaga (TCD)
	3 Ed Gilbert (RCSI)
	4 Darran Walsh (DCU)
Student Rapporteur	**Amy Ó Brolcháin**
Benefits of a career in this area	• Lots of teaching opportunities available, bioinformaticians are in demand for teaching • Flexible working conditions • More vocational. Easier to pursue the things that interest you than in industry. • Can change what you are doing project-to-project • Lots of opportunities for training, especially at postdoc level • The current knowledge is always changing, so you will always be learning • Open-minded working environment • May end up working on something completely new and innovative • You don't have to decide what you want to do for the rest of your life, lots of opportunities to do something different
Drawbacks of a career in this area	• Teaching is a requirement of academia • May end up working somewhere you don't expect as lots of places need data scientists/ bioinformaticians (e.g., St James' Hospital Trinity campus) • Seemingly random unit shifts are common, so you may have to change where or who you are working with • You have to source your own funding – Requires writing (and being rejected for) lots of grants • Academic job or research opportunities in your area of interest may not be being funded in Ireland or wherever else you are living, possibly requiring you to go abroad to pursue your interests • The current knowledge is always changing, so you have to always be learning – Your job or current subject area may be completely unrecognisable in 10 years
Skills currently in demand by employers in this area	• Data science skills: for teaching bioinformatics and other data science skills to students, for collaboration and data analysis for wet lab scientists, for conducting your own research • Teaching skills: requires public speaking, scientific communication, the ability to translate your research to a lesson or workshop, ability to break a subject down into learning outcomes • Ability to write grant proposals: requires a clear explanation of your research question and approach to answering it, ability to withstand rejection and try again, ability to formulate your question in a way so that the reader is curious about the answer

	• Breaking down computational subjects to a non-computational audience: good for teaching, scientific communication to the public and communicating with wet-lab scientists
Would suit students that have strengths or interests in	• Teaching • Are very curiosity-driven • Like to work collaboratively with others • Like to work in an environment with lots of young people • Have a desire to impact the next generation • Prefer to work within a less rigid structure • Have data science skills • Vocational/ interest-driven work • Want to do many different things, as academics work on multiple things at once
Other points of note from the discussions	Teaching: • Start teaching as early as possible: Keep an eye out for mentorship or demonstrating opportunities (e.g. Supervising a 4th year research project). • To learn teaching, ask someone if who has been doing the same lecture for years would let you cover it. They may be able to provide notes, slides and go through how they usually give the lecture. • Look at the requirements of the jobs you want in the future and start training for them now. • Teaching is changing a lot at the moment, the field is moving away from didactic teaching and towards workshops and directly engaging students • Different universities and countries will have different requirements for the amount of teaching or research required from an academic Grants and Funding: • There are smaller grants and awards available at PhD level, these usually have simpler, more structured applications. It would be good to start applying for these now as they will give experience of grant writing, will look good on a CV and will make getting future grants easier. • It is possible to get training for things like writing grant proposals at postdoc level, which would be very useful if you wish to stay in academia. Make sure to get training for things you need. • Once you get funding you have 3-5 years to prove the award was justified. Make sure to think about how what you are doing during this time will help you get the next grant, and always be preparing for it. • There may be funding for special circumstances (e.g., a fund for researchers moving back to their home country) keep an eye our for these opportunities • Some grant proposals will be broken into sections to fill out, others will be more freeform “sell us in 5 pages” • Writing a grant is somewhat like writing a paper, in that they both are about answering a question, but while a paper is about how you put the puzzle pieces together to answer it, a proposal is showing how you will answer the question in the future Other:

	• Doing a postdoc doesn't mean that you can't go on to do something other than academia in the future, but it is required for a career in academia. If you don't know what to do next or are unsure of whether you want to be an academic it could be a good idea to do a postdoc. • In the past, data scientists were contracted to do analysis led by wet-lab scientists, now it is also done the other way around • Look for fellowship opportunities at postdoc level, they often have advantages that an ordinary postdoc position doesn't have

CRT Careers Day – 25th August RCSI

Breakout session	**Careers in "Industry"**
Facilitator	Eva Szegezdi
Experts	1. Gabrielle Wheway (Illumina)
	2. Simone Coughlan (DNAnexus)
	3. Ray Moran (Metabolom)
	4. Dan Crowley (Remedy Biologics)
Student Rapporteur	Bhavya Dkaka
Benefits of a career in this area	- Industry has a collaborative and supportive culture. - Offers a welcoming environment. - Transitioning from academia to industry can lead to personal growth and skill diversification. - There is strong emphasis on personal values and team work and training/support is provided for professional development
Drawbacks of a career in this area	- Industry roles might require more execution, communication, and teamwork skills than academic roles. - The pressure to perform, deliver results and meet deadlines may be higher in the industry environment. - Not all industry roles involve research, which might be a drawback for those seeking research-intensive work. - Projects can be dropped on a short notice if deemed non-profitable/not timely, etc.
Skills currently in demand by employers in this area	- Coding skills (can be showcased by adding GitHub reference in CV). - Adaptability and willingness to learn new skills. - Strong communication and teamwork abilities. - T-shaped skills: A combination of specialised/scientific/technical skills and broader/soft skills.
Would suit students that have strengths or interests in	- Students interested in utilizing a wider range of skills beyond their research focus. - Those who value collaborative and supportive work environments. - Individuals who are open to transitioning from academia to industry and adapting to new challenges. - Individuals who work meticulously and reproducibly.

Other points of note from the discussions	- Industry offers collaborative and supportive environments, suitable for various backgrounds. - Networking, referrals and personal contacts are crucial for landing industry roles. - A personalized cover letter that aligns with the company's values is important. - Industry roles often involve contributing to multiple projects. - Postdoc experience is not necessary, industries prefer earlier career stages for training purposes. - Diverse roles exist in industry beyond research, requiring a broad skill set.

CRT Careers Day – 25th August RCSI

Breakout session	**Careers in Public Service, NGOs and Careers outside Genomic Data Science**
Facilitator	**Aoife McLysaght**
Experts	1. Dympna Mulroy (Research Officier, Muscular Dystrophy Ireland)
	2. Christopher Ryan ((Head of Research Services & Policy, Dept of Health)
	3. Patricia Clark (HRB Programme Manager, HRC Open Publishing)
	4. Aoibheann Bird (Insight public engagement officer)
	5. Jackie Turner (Genetic Counselor, Mater Hospital)
Student Rapporteur	**Kseniia Maksimova / Hannah Nyarko**
Some Careers and associated role in these areas	• **Health Research Services and Policy:** Health research funding and governance Applied research to support decision making • **Programme Manager in health research boards:** Coordinating policies for funding agencies Writing and reviewing policies • **Public engagenemt officer for a research center:** Bringing the research to the public and the public into the research • **Research officer for an NGO (Muscular dystrophy Ireland):** Developing reserch strategies Doing research that would make a difference Translating and diseminating information to the community through events and newsletters • **Gentic Counselling:** Diagnosing patients with genetic condition and providing counsel for patients
Use of Genomics or Genomics data science skills in these areas	• **Health Research Services and Policy:** Genomic data scientists can play a crucial role in providing data for evidence-based applied research, particularly in health research services and policy making. • **National Genetics and Genomics Office:** The establishment of a new bioinformatics team and the upcoming National Laboratory will expand genomic data analysis opportunities in Ireland, with

	potential affiliations with biobanks for data transmission. ● **Publishing Genomics Research:** Significant opportunities exist within the domain of publishing genomics research, as research publications actively seek individuals possessing this specialized skill set. ● **Data Management and Policy:** Professionals specializing in data management and data policy are in demand for various data-related roles. ● **Public Engagement:** The capacity to effectively convey scientific concepts, a skill often acquired during PhD training, is vital for careers in public engagement.
Benefits of a career in this areas	● The autonomy to seek and secure grants for pursuing one's passionate endeavors. ● Pursuit of research aligned with personal passions. ● Collaboration with a diverse group of people from various backgrounds. ● Dynamic and non-repetitive nature of public engagement/NGO roles. ● Opportunities for both independent and collaborative work. ● Ample room for professional development and growth. ● Less constraints compared to the health or clinical sectors. ● Work flexibility and autonomy. ● Direct exposure to public experiences, enabling impactful contributions. ● Cultivating relationships with communities or patients, and journeying alongside individuals.
Drawbacks of a career in this area	● Roles, such as Genetic counseling, are highly specialized and niche, demanding a robust educational background. However, presently, there is no genetic counseling training program available in Ireland (though it is currently offered in Wales). ● Opportunities in Genomics or Genomics Data Science within Public Service, NGOs, and Careers outside Genomic Data Science are currently limited in Ireland, although expansion plans are in progress. ● Some roles in these sectors, particularly within non-profit organizations, may involve navigating funding challenges.
Skills currently in demand by employers in this area	● Skill in conveying scientific concepts to the general public. ● Comprehensive understanding of both research systems and the public.

	• Proficiency in project management and execution. • Strrong management and leadership skills. • Knowledge to comprehend and communicate genomic science. • Critical and analytical thinking skills • Assertive communication skills. • Skills often acquired during PhD training.
Would suit students that have strengths or interests in	• Engaging with the general public. • Operating in an independent capacity.
Other points of note from the discussions	• Transitioning from diverse backgrounds is possible, emphasizing the importance of a unique skill set alongside passion in establishing a career in these sectors. • In contrast to industries, NGOs, as non-profit organizations, encompass various charity groups with diverse funding sources and management structures. • A current national emphasis on Genetic Counselling and Genomic Data Analysis is expected to create significant job opportunities within the HSE in the future. • Ongoing initiatives are exploring the establishment of a national laboratory in Ireland that combines clinical and research aspects, promising substantial advancement in the genomics field. • Crosstalk between NGOs and HSE includes partnering with clinicians on research projects, potentially leading to community-focused article contributions. • It may no longer be sufficient to have a research team comprised just of researchers; there is now a requirement for personnel with knowledge of data, data regulation and patient public involvement.