Global Advances in Translational Therapeutics & Biomanufacturing

Photography by Deirdre Brennan

NIBRT Research Conference 2026

Conference Report

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*This report is based on original conference coverage by **Danielle Barron**, adapted and edited by NIBRT.*

Message from the Director

The conversations captured in this report reflect an important moment for both NIBRT and the wider life sciences community. Across two days, researchers, clinicians, industry leaders, entrepreneurs and policymakers came together with the shared ambition of understanding how we can accelerate the translation of scientific discovery into medicines that improve patients' lives.

One message emerged consistently throughout the conference. Scientific excellence remains fundamental, but it is no longer sufficient on its own. The greatest opportunities now lie at the interfaces between disciplines, organisations and sectors. Translating innovation into real-world impact requires collaboration, manufacturing expertise, regulatory insight, investment and a workforce equipped with the skills to deliver increasingly complex therapies at scale.

These are precisely the challenges that define NIBRT's mission. As Ireland's national institute for bioprocess research and training, we occupy a unique position within the innovation ecosystem, bringing together internationally recognised research, industry-focused infrastructure and workforce development to help bridge the gap between discovery and commercial manufacture.

The discussions over the course of the conference reinforced my belief that Ireland is exceptionally well positioned to lead in this next phase of biopharmaceutical innovation. Through initiatives such as CONCEPT, the Research Ireland Rinn Centres, and our extensive collaborations with industry and academic partners, we are building the capabilities needed to translate breakthrough science into accessible therapies for patients.

My sincere thanks go to our speakers, delegates, sponsors and organising committee for their openness, expertise and willingness to share their experience. Their insights have shaped a conference that was both intellectually stimulating and practically focused.

I hope this report captures not only the quality of the scientific discussion, but also the optimism, ambition and collaborative spirit that characterised the meeting. I look forward to continuing these conversations as we work together to shape the future of advanced therapeutics.

Dr Fiona Killard-Lynch
Chief Scientific Officer and Director of Research and Innovation
National Institute for Bioprocessing Research and Training (NIBRT)

Introduction

The annual NIBRT Research Conference took place over two days in April 2026, welcoming over 150 global leaders to our facility in Dublin. Bringing together key experts from academia, industry and the clinical community, both in Ireland and abroad, the event sought to explore the challenges and opportunities in translating advanced therapies, including cell and gene treatments, into scalable, accessible solutions for patients.

The conference was timely given that in 2026 Ireland will assume the EU Presidency and unveil its first National Life Sciences Strategy, which will offer a unique opportunity to position the country as a global leader in health innovation. By tracing the known challenges and potential solutions right through from early-stage research to manufacturing and real-world use, the meeting offered an opportunity for Ireland to display its enviable attributes in the field while also highlighting the breadth of opportunity that remains open to us in a rapidly evolving space.

Speakers and attendees at the conference sought to explore the difficulties encountered when translating innovation into therapeutics, and making the conversion from science to real, tangible impact. The obstacles faced by those bringing life-changing medicines to patients are myriad - from the ‘valley of death’ in phase 2 clinical trials to a failure to maximise funding opportunities.

The real challenge is not discovery, but what comes next. We are very good at generating promising science, but turning that into something that can be developed, manufactured and delivered at scale is where it becomes difficult. Too often, that part is treated as an afterthought. This conference is about bringing those challenges into focus and exploring practical solutions, so that more of that science reaches patients.

Dr Fiona Killard-Lynch, NIBRT’s Chief Scientific Officer and Director of Research & Innovation.

Groundbreaking scientific research

Basic science is the foundational resource that fuels translational research. Throughout the conference, scientific researchers at NIBRT and elsewhere gave a flavour of the cutting-edge techniques they are employing, effectively leveraging next generation technologies. The rocky path of bench to bedside and back again was illuminated by researchers explaining how they overcame practical problems in the lab to solve unmet needs in the clinic or simply drive innovation forward.

Photography by Deirdre Brennan

For example, Dr Cristina Ruedell Reschke, a lecturer at RCSI and a funded investigator in the FutureNeuro Research Centre, described how translational science can be where fundamental shifts in therapeutic approaches are envisioned. Reschke and her team are manipulating the temporal dynamics of the epilepsy transcriptome, from experimental models to human homebased sampling. Current anti-seizure medications only treat symptoms, and are not disease-modifying, while pharmacoresistance, which occurs in about a third of patients, remains unchanged despite new drug development. Despite the evidence, temporal biology is ignored in most therapeutic decisions. Her lab used a temporal lobe epilepsy mouse model to reveal that epileptogenesis fundamentally disrupts the brain's circadian clock. "*Time matters in transcriptome-based target discovery*," she stated. "*To change outcomes and increase translation, we must align therapies with temporal dynamics and bed to bench to bed approaches, from target discovery to dosing and monitoring*."

Prof. Jaehun Shin, Director of K-NIBRT and Associate Professor of Integrated Science and Engineering Division, at Yonsei University, outlined his approach to integrating organoid and in vivo models to understand colorectal cancer (CRC) metastasis - and ultimately develop effective therapies to halt metastases. Existing CRC models, he said, have limitation in the context of studying metastasis, the primary cause of CRC mortality. His lab developed a new, non-surgical model for studying the full metastatic cascade, which involved rectal transplantation of patient-derived CRC organoids into mice with a pre-treated colon. Not only did this transpire to be a reliable and scalable research tool,

excitingly, the model revealed that CRC cells acquire immune cell membrane proteins via trogocytosis ("*nibbling*"), which inactivates anti-tumour T-cells. "*Using those in-vitro model systems and in-vivo model systems, we are trying to identify and understand the mechanism of trogocytosis, and if that is successful, we want to develop new therapy approaches*."

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NIBRT representatives clearly demonstrated why the Institute is a world leading research institute. Lead scientist Dr Elizabeth Matthews described how she is engineering cellular heterogeneity using metabolomics. While Advanced Cell Therapy (ACT) bioprocesses lack mechanistic control, she explained, leading to batch-to-batch heterogeneity and trial-and-error optimisation, metabolomics provides a dynamic, mechanistic readout of cell function, linking process inputs to functional outputs. "*Through establishment of a new metabolomics lab at the Trinity Translational Medicine Institute (TTMI), combined with infrastructure and validated analytical workflows at NIBRT, we are creating the capability to generate high quality mechanistic metabolic data at scale*."

Ms Palesa Caroline Mphaka, a PhD candidate at the Institute, outlined how she is using decellularised bovine ovary to create a N-glycan-depleted-bioscaffold for studying ovarian cancer chemoresistance. Ovarian cancer, Mphaka explained, is "*one of the deadliest reproductive cancers with over 50% of cases resulting in relapse.*" This experimental approach of creating a novel 3D scaffold to model the ovarian microenvironment seeks to overcome the problem of altered N-glycosylation, which is suspected to drive resistance mechanisms. The next step will be to seed specific ovarian cancer cells into the successful decellularised bovine ovarian extracellular matrix and directly test the effects of a chemotherapeutic agent.

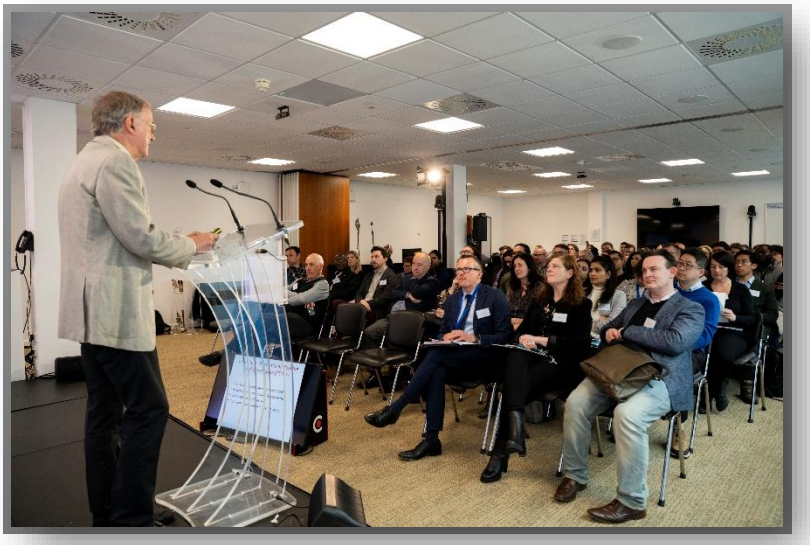
Examples of novel research techniques using next generation equipment to overcome practical barriers in research were also offered. Mr Zdravko Ivanov, another PhD candidate at NIBRT, outlined his research into RNA oligonucleotide degradation patterns using HRAM mass spectrometry. This

knowledge will aid in the rational design of novel RNA medicinal products that are more stable. Application of size exclusion chromatography in characterising the purity and composition of extracellular vesicles was discussed by NIBRT research scientist, Dr Aji Alex. He explained that exosomes have significant therapeutic potential but are difficult to isolate purely from complex biofluids like serum, leading to contamination and thus unreliable results. He has developed a robust isolation and purification method for brain-targeting exosomes.

RNA-based therapeutics featured strongly throughout the meeting, with NIBRT PhD candidate Mary Flood presenting work on stabilising RNA therapeutics using glutathione-responsive self-immolative linkers for controlled RNA activation in cells, resulting in a prolonged therapeutic half-life of modified RNA. PhD candidate Marie Bishop described an optimised template ligation method for synthesising modified tRNAs, while PhD candidate Zhijiao Wang presented research on enhancing suppressor tRNA therapeutics through directed evolution to treat disorders caused by nonsense mutations.

Collaboration and building bridges

The conference repeatedly heard that innovative science, however groundbreaking or impressive, is only the first step. To achieve true translational impact, and harness the power of digital innovation and AI, collaboration is essential. This is where the vision of the people involved is realised.



Photography by Deirdre Brennan

The first step is thinking beyond the science, and Prof. Garret FitzGerald, Director of the Institute for Translational Medicine at the Perelman School of Medicine, University of Pennsylvania, outlined his blueprint for translational success. Having developed ITMAT from an almost insignificant translational infrastructure, implementing their strategic vision over the past two decades has yielded 48 FDA-approved therapies, demonstrating a clear path from institutional investment to clinical impact.

At the heart of this measurable success is what FitzGerald termed the "*connectome*", the coordinated tangle of individuals and institutions which has grown in tandem with the Institute. "*We were really trying to drive a real culture change that we knew would take decades, and we wanted to break down the divide between basic science and clinical science*."

From initial and tentative collaborations with researchers, where they were persuaded that the institute would amplify their ability to carry out translational science and add value to their efforts, to targeted programmes in partnership with other schools, such as developing medical therapeutics with the School of Engineering at UPenn. "*These were catalytic opportunities to bring together people who were scattered across the institution*." Education and training was also a strategic objective as they sought to increase the number of translational scientists, particularly physician scientists, who are "*like snowflakes in summer*". This was achieved by creating clear pathways for undergraduates, such as the master's programme in translational research, as well as a master's programme in regulatory science. "*Now we have got perhaps the best and most diversified translational educational suite of offerings that exist in the country and perhaps in the world*," FitzGerald noted. The impact of these efforts to bridge basic and clinical science cannot be understated, particularly with regard to increased interdisciplinary collaboration, "*People make things happen*."

Also emphasising the power of collaboration was Prof. Brian Glennon, Professor of Chemical Engineering at UCD and Senior Director and Co-founder of APC Ltd. His talk on digital innovation in biotherapeutics laid bare the necessity for collaboration, given the speed at which science and technology is evolving. "*The increase in the complexity of the science that is now being harnessed to deliver medicines is extraordinary*," he told the conference. "*We are now routinely applying science to medicines that even 10 or 15 years ago sounded like science fiction*."

This is particularly pertinent given how their entire business model is based on working with the global pharmaceutical industry to help them refine and improve the processes by which they manufacture their medicines. APC itself is collaborating with NIBRT and UCD on novel modelling and chromatography techniques. "*This is to better understand how we can leverage modelling to help us design and optimise processes more efficiently, particularly for advanced therapeutics, such as AAVs (adeno-associated viruses)*."

In this era of essential interdisciplinary collaboration, Glennon emphasised the need for both individual scientists and research centres to focus on their own strengths. "*We're not a data company, so spending all our time at the data level is really not where the value is*." The scientific context, he said, is more important than raw data, APC's iAchieve Platform captures all experimental data, rationale, decisions, and insights in a single, structured framework and ultimately enables AI-driven interrogation by any scientist, preserving knowledge and acting as a 'co-scientist'.

Photography by Deirdre Brennan

Prof. Jimmy Gollihar, Chief of Translational Science and Head of the Antibody Discovery & Accelerated Protein Therapeutics (ADAPT) Laboratory at the Houston Methodist Research Institute in Texas, outlined his laboratory's approach to AI-assisted immunogen design, essentially solving a problem that can then be transitioned to developers around the world for scaled-up production. Again, he stressed the need for cross-disciplinary collaboration, noting that AI and machine learning tools have "*drastically*" reduced the time required for antigen design, his laboratory specialises in the development of vaccine libraries, and produces approximately 10-15 vaccine designs per month using highly refined techniques of "*pooled library cloning and hit picking leads*". "*The success of these tools is supported by collaboration among experts in structural virology, protein engineering, molecular immunology, bioinformatics and virology*."

In Ireland, the unique offering of NIBRT, encompassing both groundbreaking research and state of the art industry-focused training, offers a "*natural bridge*" between scientific innovation and commercial reality. The Institute is committed to advancing both fundamental understanding and the transformation mission of getting therapeutics to patients by tackling multidisciplinary scientific challenges. "*NIBRT is open for business and open for collaboration*", said Killard-Lynch. "*We have a key role to play in the biotech transformation mission*".

I am really fascinated by the creation of NIBRT, where it sits in the system, how catalytic it is, and how even more catalytic it can become.

Prof. Garret FitzGerald

Failure and funding opportunities

When it comes to translating innovation into therapeutics, success means navigating many visible, and some invisible, hurdles. Dr Manuel Alfaro, Senior Research Scientist at NIBRT, set the scene by outlining the myriad challenges to translational innovation, explaining that while new therapeutic modalities such as gene therapies, cell therapies, and RNA therapies are transforming medicine, translational barriers remain significant. These include a lack of clinical efficacy or safety and toxicity issues but also poor drug-like properties. Commercial or strategic issues are responsible for about 10% of drug development failures.

Photography by Deirdre Brennan

So how does science move to impact when an excellent scientist does not have the entrepreneurial nous or indeed the financial backing to transform their discovery into a commercially viable product or service? Setbacks are the norm, whether the drug fails in clinical trials, or the business model simply doesn't work.

An honest account of this was given by Prof. Helen McCarthy, who is Northern Ireland's Chief Scientific and Technology Advisor, as well as Chair of Nanomedicine at Queen's University Belfast, and founder of pHion Therapeutics. She described how her company pHion Therapy failed due to

problematic equity structures where universities claimed maximum stakes, causing her to lose control of her technology. Failures, while unfortunate, and often painful, build resilience and provide valuable lessons, she said, comparing this to how negative experimental results often yield the most powerful insights. "*I actually think some of the most powerful experiments we do are the ones that give us negative results, because we learn so much from that in the process.*"

Strategic investment is key to building an infrastructure that supports scientists to bring their discoveries all the way. At the university level, FitzGerald openly admitted they used money to drive behaviour, with generous grants encouraging translational research projects. The fact that ITMAT had a ringfenced budget "*gave it a place at the table*". "*The amount that we invested to capitalise into discipline and science was relatively small, but vital in terms of its timing*."

When it comes to scaling biotech innovation, connecting co-founders with venture capital is the key. Dr Ayokunmi Ajetunmobi, Head of Ventures at Pioneer Group outlined the venture engine as it pertains to emergent therapeutics, highlighting the attractiveness of biotech as an investment opportunity for venture capitalists.

Global medicine spending is projected to reach $2.6 trillion by 2030, largely driven by our rapidly aging population. Ajetunmobi explained that while most of current innovation is being developed and originated by biotechs, the majority of commercialisation is driven by large pharmaceutical companies. With many of these teetering on the edge of a large patent cliff, novel therapeutics will be the lifeblood of large pharma, meaning there is a high demand for biotech innovation. This also means failure is not an option: "*The number one reason why venture-backed startups broadly fail is that, A, they run out of cash, and the reason they run out of cash is, B, they tend to build something that no one wants. In biotech, that shouldn't be an issue because we know there's a huge market need for novel therapies*."

The past 15 years has seen a steady rise in the allocation of venture capital into biotech as an asset class and Blackstone recently announced the largest ever private fund dedicated to life science, at $6.3 billion. Yet Europe is failing to exploit this significant opportunity: pharma R&D investment into Europe has diminished from almost 50% to 26%, and Europe receives only 7% of global life science venture capital, compared to 63% for the U.S. and 14% for China.

Pioneer Group, which is hoping to further expand into Ireland, has a multifaceted offering that includes provision of lab infrastructure for commercial entities, for biotech, startups, and other enabling elements. Companies that it has supported have raised over $800 million in venture funding and they have a 68% five-year survival rate, compared to an industry average of about 35%, Ajetunmobi noted. "*We provide venture building, so we run programs that support founders from ideas on the back of the napkin all the way through to market adoption, scale, and eventual exit, and we manage venture funds that invest in early-stage companies, helping with their technical and commercial de-risking*."

Ireland is well-positioned to be an anchor, Ajetunmobi said, by leveraging its strong manufacturing base and research infrastructure, as well its supportive innovation ecosystem. "*That opportunity lies in better capitalisation in venture markets and a better infrastructure that translates fantastic academic science into commercially viable entities*."

There are some notable examples in the Irish context. Present at the conference was Jack O'Meara, CEO and co-founder of biotech start-up Aerska, who recently closed a $39 million (€33 million) funding round that will help further advance its cutting-edge sRNA technology designed to treat degenerative neurological diseases. Biotech innovation is expensive, thus capital investment is critical, said O'Meara.

> *We need more global capital to look at Irish companies, this would be a huge boon, to help capitalise more innovation, more transactional research, and more start-ups.*
>
> **Jack O'Meara**

The future of translational science

What does the future hold for those at the translation coalface? The conference did not shy away from the critical question of how harnessing the promise of emerging modalities is continually juxtaposed with the challenges of making them a therapeutic and thus a commercial reality.

NIBRT's Dr Alan Costello spoke of the drive to find new solutions to existing problems, noting that new modalities continue to outpace conventional ones in terms of revenue growth. While groundbreaking technology is fundamentally altering this process, Costello said it is all "*funnelled into an old structure*". There is also a basic problem of perception, he also noted the need to reframe the public perception of technologies like gene editing, shifting from viewing them as controversial to recognising them as precise genetic surgery with potentially unprecedented outcomes. "*A lot of the approval processes that we have today are based on blockbusters. Some ways to think about this are, is it harder to change the policy or is it harder to change people's mindsets about these technologies?*"

Photography by Deirdre Brennan

Nonetheless the landscape is transforming. The integration of technologies such as AI into these embedded processes is proceeding at pace, Prof. FitzGerald outlined his work on how UPenn is modelling human behaviour using large complex data sets, while Costello offered the example of BindCraft, a state-of-the-art protein design model that excels at creating novel proteins to bind specific target molecules. Gollihar's ADAPT lab is using AI-assisted immunogen design to deliver tangible examples of success, including the development of triple-negative breast cancer vaccines that will soon enter phase I clinical trials, while another for osteosarcoma is also showing promise.

Prof. Emmanuel Tsanakakis, Professor of Chemical and Biological Engineering at Tufts University in Massachusetts, outlined his work on developing bioprocesses, and employing techniques such as digital twins, to scale up production of human pluripotent stem cells and their derivatives. By shifting the focus to process optimisation, he is addressing a widely known but underreported problem: switching from expansion to differentiation causes approximately 50% cell loss that cannot be recovered since differentiation reduces proliferation. Machine learning, combined with digital twins, can be used to predict the differentiation outcomes. Tsanakakis explained that this approach allows for not only prediction and optimisation of bioprocess outcomes, but also a reduction in the overall cost of development and production.

This is particularly pertinent in the area of emerging therapeutics. Aerska's O'Meara is exploring sRNA techniques in tackling CNS disease, and he explained how sRNA has shown a nearly tenfold improvement in translational success across clinical phases versus the industry average. This de-risking is driving significant pharma interest. sRNAs can cross intracellularly, allowing gene silencing at the source of pathology, he noted, "*It is an ideal modality that has historically been hindered by delivery*."

The theme of practical obstacles was exemplified in NIBRT's Shada Warreth's presentation on her research into ATMP manufacturing barriers and skills needs. Even after all the elements of successful commercialisation of an advanced therapy are in place, there can be hidden obstacles that can stall production and thus delay patient access.

Warreth's research explored whether existing biopharma skills can be adapted for the manufacture of ATMPs, and identified the additional competencies required. The research involved two surveys, one targeting industry professionals and a follow-up targeting regulators, alongside a literature review. A key output was a heat map ranking skill gaps and manufacturing barriers across 40 respondents. Aseptic processing and aseptic manipulation emerged as the highest-priority concerns, alongside a notable need for 'soft skills' within the workforce. Regulatory gaps were also highlighted, with existing frameworks considered too broad and insufficiently tailored to cell and gene therapies.

Based on these findings, two accredited micro-credential courses were developed through ATU Sligo. The first is a five-day practical course for manufacturing staff, covering equipment familiarisation, troubleshooting, and soft skills. The second targets regulatory professionals, with a focus on understanding ATMP workflows to enable more effective facility inspections and better-targeted regulation. The creation of these training programmes, she said, demonstrates a tangible step towards strengthening workforce capability in the ATMP sector.

Warreth emphasised that improving both manufacturing competence and regulatory understanding are complementary goals that together reduce process risk and accelerate patient access to these therapies. "*For example, when we write procedures, they have to be written in a way so that anyone that picks them up can understand them*," she asserted. "*But [one respondent said] they had a procedure that was 60 pages long. And obviously, we all know that nobody's been reading a procedure that's 60 pages long*."

The reality of translation

Before the conference closed, a panel discussion took place where national and international panellists sought to articulate the challenges faced in executing translational medicine throughout the entire value chain and suggest potential solutions based on their varied experience.

Moderated by Stuart Jackson, Director in Business Consulting at EY, he noted that his experience in the pharmaceutical industry, first at Roche then AstraZeneca, gives him an acute understanding of the challenges involved in translating "*great science into medicines and commercial value*". The core challenge, he believes, is "*bridging the gap between scientific ambition and practical execution*", noting that while 80% of innovation happens outside large pharma, the translation process remains the critical bottleneck.

Photography by Diogo Peres Dos Santos

Echoing earlier speakers, Noel Daly, Senior Client Advisor at Enterprise Ireland, noted that while science is essential, it is not sufficient for successful translation. He advised early-stage researchers to engage with commercial and regulatory experts through university technology transfer offices (TTOs), as well as industry contacts.

Vincent Kelly, academic director of the ARC Hub for Therapeutics, identified the initial design phase as the most critical juncture where translation programmes stall, emphasising that early-stage insights must be properly validated and developed. The solution involves not just simply providing cash injections, he said, but drawing upon the wider ecosystem to support projects through this vulnerable phase, ensuring that promising science doesn't fail due to inadequate early-stage infrastructure or expertise.

When asked what differentiates the ecosystems that consistently translate this innovation into companies or into patients, and those that fail to achieve this, Dr Montse Daban, Strategic Foresight and International Relations Director at Biocat, described how Catalonia has built a solid life-science

ecosystem over 20 years by focusing on orchestrating the entire ecosystem rather than just funding science. Key success factors, she said, include rewarding different layers of the ecosystem, professionalising translational work, creating strategic collaborations, and treating the regional pipeline as integrated infrastructure. Successful ecosystems, she explained, track molecules from discovery through to market, viewing this as systemic infrastructure rather than isolated "*heroic efforts*".

Dr Moayed Hamza, co-founder of HAON Life Sciences, offered his insights into the critical transition from scientific insight to building a viable company. The essential mindset shift, he said, is recognising from day one that the goal is creating a clinically and commercially viable medicine, not just answering research questions. This requires early consideration of regulatory pathways, manufacturing scalability, and clinical trial design - "*holistic planning*".

The necessity of international collaboration was emphasised by Daban, who warned no single region can execute the entire value chain, thus requiring European-level coordination. "*Looking at the whole landscape at the European level, challenges are shared and solutions must come from connection among regions*".

Panelists also discussed how translational hubs must be agile, adapting to emerging technologies such as cell therapy, RNA, and advanced modalities. Kelly suggested modular, scalable frameworks, with research centres that can scale both up and down. "*You don't know where the next stage of innovation is actually going to come from… it's important to set the design for various stages*." At the national level, Daly agreed organisations must remain flexible and diverse in their investments since technology trajectories are unpredictable over 5-10 year horizons. The key, he said, is building connectivity and infrastructure that can accommodate multiple pathways simultaneously.

In response to an audience question about data and modelling, Hamza noted the importance of generating high-quality data from the beginning and building in expertise early. He highlighted an upcoming project with NIBRT and its CONCEPT facility, which is focused on generating robust data and having regulatory/manufacturing expertise embedded from inception, enabling the team to reference historical data and adapt to unexpected challenges that emerge years later.

The changing funding landscape was also discussed, with Daly noting that investment is increasingly trans-European, with investors following the best science regardless of geographic location, leading

to distributed development across multiple countries. Daban countered that Europe must balance national and regional strategies, as translation starts locally and patients are treated locally. Establishing a "*European Translational Council*", she added, could address project failures that are caused by non-scientific factors (manufacturing, regulatory, clinical trial design) rather than scientific merit, and create a specific funding stream for the translation phase, which she said currently lacks systematic support across Europe.

Sector-specific funding challenges were also discussed, with panellists highlighting that investment availability fluctuates with market trends and "*hype cycles*". They also noted a gap in Ireland around bio-incubator scale facilities where companies can transition from university labs to commercial scale - this is critical, given that 80% of new investment in Europe goes to university spinouts. Current gaps include inadequate support for undergraduates, postdocs, and PhD students interested in commercialisation, as well as insufficient incentives for academics to engage in translation without risking their academic careers.

Conclusion

Over the two days of the conference, the common theme was that while excellent science is essential, and clearly abundant, it is simply not enough if we are to bring this innovation to patients. There is an urgent need to connect scientific discoveries across disciplines, organisations, and development phases. The real impact lies in orchestrating these connections systematically, with strategic collaborations underpinning the journey from molecule to medicine and strategic funding at every step.

In a global context, the conference highlighted a number of competitive advantages for Ireland, including its cost-competitive research environment, highly skilled workforce and continually strengthening research infrastructure. If challenges in funding and coordination can be addressed, there is much to gain. Ireland's pivotal role as a global biopharmaceutical manufacturing hub was front and centre, with acknowledgement from attendees that NIBRT is uniquely positioned to bridge science and scale through its industry-aligned research and training offering. The imminent publication of Ireland's first national life sciences strategy is also eagerly awaited, with its development being seen as particularly timely.

The conference also teased out how artificial intelligence and machine learning are transforming the drug discovery and translation processes in hugely positive ways. While these disruptive tools can help accelerate the often onerous and drawn-out process of target identification and drug optimisation, the clear message came through that these are tools that assist, and will not replace the work of a skilful, knowledgeable and diligent scientist.

Funding and infrastructure are perennial problems, but the meeting explored how potential solutions are not only realistic, but imminent. Ireland has a golden opportunity to take a slice of the enormous boom in biotech innovation if it can capitalise on its skills and attributes and develop and implement a long-term strategic vision. As Killard-Lynch said as she closed the conference: "*The real challenge is not discovery, but what comes next*".

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