



ANNUAL REPORT
2025

National Institute for
Bioprocessing Research
and Training (NIBRT)

Front cover image:

Courtesy of Palesa Caroline Mphaka from her PhD "Ovarian cancer 3D engineered model to study role of glycans in chemoresistance" funded via Cúram, MedDevDoc, is a higher magnification scanning electron micrograph of decellularized bovine ovarian cortex showing a loose, highly fibrous extracellular matrix network with interconnecting voids and layered strands forming an open scaffold.



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01 Introduction

1.1 NIBRT Staff

Thank you to all NIBRT team members who contributed to a successful 2025:

- > Aaron Richardson
- > Aasia Batool
- > Abhilasha Rani
- > Adrian Cardot
- > Aji Alex Moothedathu Raynold
- > Al Shahriar
- > Alan Costello
- > Alena Melo
- > Alexander Stotskyy
- > Alexandre Locher
- > Alison Quinn
- > Amy O'Neill
- > Anna Murnaghan
- > Anna Mulligan
- > Anne Moore
- > Ann Marie Donaghy
- > Anthony Raethorne
- > Anuj Shrivastava
- > Aoibhin Ryan
- > Aoife Harbison
- > Archita Biswas
- > Arda Deniz Tugrul
- > Ashok Chidambaram
- > Aswathy Balakrishnan
- > Barry Shortt
- > Brian Philip
- > Caitriona Walsh
- > Caragh Tisdall
- > Carl Birmingham
- > Cathal Ryan
- > Céire McGarry
- > Chun-Hao Hung
- > Ciara McManus
- > Ciara Finn
- > Clair Gallagher
- > Colin Clarke
- > Colin Kelly
- > Coarentin Beaumal
- > Corinne Kai Len Chew
- > Danina Pacurar
- > Darren Walsh
- > Darrin Morrissey
- > David Phelan
- > Dennis Shaw
- > Dermot O'Sullivan
- > Diogo Chagas
- > Diogo Peres Dos Santos
- > Doireann McCurdy
- > Eimear Deeny
- > Eimear Harrison
- > Elaine O'Farrelly
- > Elena Matsa
- > Elizabeth Matthews
- > Elizabeth Topp
- > Ella Dowling
- > Emer Norton
- > Ewa Parzymieso
- > Felipe Guapo De Melo
- > Fergal Wall
- > Filipe Fernandes Horst
- > Fiona Killard Lynch
- > Francesca Tramacere
- > Ganesh Warthi
- > Geethanjali Chandrababu
- > Gemma Grimes
- > Genevieve Greene
- > Hannah Rushe
- > Hazel Acton
- > Hiba Wittmann
- > Imran Gulzar
- > Indrani Bagh
- > Ioanna Tzani
- > Isha Kulkarni
- > Jack O'Shea
- > James Flynn
- > James Ryan
- > James Conheady
- > Jamie Sheils
- > Jaspreet Kaur
- > Jenette Scanlon
- > Jennifer Prior
- > Jennifer Byrne
- > John Milne
- > John Connolly
- > Jonathan Bones
- > Josh Smith
- > Julia Rakovets
- > Julia Serna
- > Kai Delimata May
- > Karen Tsang
- > Karl Kelly
- > Kate Cotter
- > Katya Fraga-Burns
- > Kevin McCormack
- > Kevin Lomasney
- > Khwajah Mohinudeen
- > Kieron McDonnell
- > Killian O'Driscoll
- > Konstantinos Chatzikyriakos
- > Laura Breen
- > Laura Carty
- > Leona Khodabakski
- > Lisa Fuessl
- > Lisa Murphy
- > Louis Darton
- > Maikel Gaitkoski
- > Manuel Alfaro De Pra
- > Marie Bishop
- > Marina Ainciburu Fernandez
- > Mark Smales
- > Mary Flood
- > Maryam Zivari
- > Mateja Mikulcic
- > Meagan McKell
- > Meizhu Yan
- > Melissa Hoare
- > Merlyn Healy
- > Michelle De Oliveira Chain
- > Mike Butler
- > Mohamed Noor
- > Nathan Edwards
- > Nathania Harron
- > Neal Redmond
- > Neha Dalvi
- > Nga Lao
- > Niall Barron
- > Niamh Cryan
- > Noemi Isabel Dorival Garcia
- > Or Skornik
- > Orla Reynolds
- > Osasere Ogiehor
- > Palesa Caroline Mphaka
- > Parbani Chaudhury
- > Patricia Alma
- > Patrick O'Rourke
- > Paul Adams
- > Peter O'Byrne
- > Radka Fahey
- > Robert Byrne
- > Robert Stuart
- > Rogelio Arroyo Benitez
- > Roisin Brennan
- > Sakis Mantalaris
- > Sara Carillo
- > Sarah Keartland
- > Seren Hamsici
- > Shada Warreth
- > Sheryl Lim
- > Silvia Millan Martin
- > Simeng Li
- > Sorcha Egan
- > Stephen Marry
- > Stephen McCann
- > Steven Ferguson
- > Suhani Almal
- > Sundaramoorthi Sarathkumar
- > Tadeusz Tazbierski
- > Tadhg Devlin
- > Theo Kinsella
- > Thomas Byrne
- > Tope Adeshina
- > Vanessa Ramoeli
- > Vijay Ghanshamdas Tejwani
- > Yamsel Barandino
- > Yongjing Xie
- > Zdravko Ivanov
- > Zhijiao Wang

1.2 Who we are

NIBRT is a world-class institute, based in Dublin, Ireland whose mission is to deliver training and research solutions for the global biopharmaceutical manufacturing industry.

NIBRT partners with industry to support international best practice in all aspects of biologics manufacturing training and research.

Established with IDA Ireland and opened in 2011, NIBRT partners with Higher Education Institutes to provide training and research infrastructure facilities not previously available in Ireland.

NIBRT's research and training building (8,300m²) features state-of-the-art pilot scale biopharma manufacturing facilities.

1.3 What we do

Train and educate over 4,800 people annually to work in all areas of biopharma manufacturing.

Collaborate with industry on scientific research to drive innovation in biopharma manufacturing.

Support major biopharma investment in Ireland.

Provide a test bed for new technologies and processes.

1.4 NIBRT's vision

Become a global leader in biopharmaceutical manufacturing research, education and training.

Build out our research and development scale, capability and critical mass to establish NIBRT as a globally recognised centre for industry applied research and process development.

Be the hub for bioprocessing manufacturing research in Ireland and internationally.

Continue to support the growth and development of the biopharmaceutical industry in Ireland and internationally.

02 Impact and Performance

2.1 NIBRT's Impact in 2025



Training and Workforce Development

- > **4,900** trainees
- > **91%** average trainee satisfaction
- > **665** Springboard+ students
- > Launch of NIBRT Global Qualifications



Research & Innovation

*2023–2025 (inclusive)

- > **€28.6m** new research funding secured*
- > **€11.5m** funding from industry*
- > **99** peer-reviewed publications*
- > **20%** publications with 1 + industry partners*



Global Impact

- > **6** Global Partners in USA, Canada, Senegal and South Korea
- > WHO biomanufacturing initiatives
- > **97** countries on NIBRT Online Academy



People & Culture

- > **115** employees, **23** nationalities
- > **54%** female, **46%** male
- > Investors in Diversity Silver Award
- > **80%** employee satisfaction score



Environmental, Social and Governance

- > **53%** CO₂ reduction since 2017
- > **1** lost time safety day
- > Community Engagement programme



Financial Growth and Stability

- > **13%** increase in overall revenue
- > **12%** increase in training revenue
- > **15%** increase in research revenue



Biopharma Industry in Ireland ¹

- > **90+** pharmaceutical companies
- > **45,000** employed in IDA client companies
- > **€116+** billion annual exports
- > Third largest exporter of pharmaceuticals globally

¹ Biopharma: Why invest in Ireland ([link](#))

2.2 Message from NIBRT Chairperson

2025 was a year of delivery, progress and growing strategic significance for NIBRT. In a rapidly evolving global biopharmaceutical landscape – shaped by geopolitical uncertainty, regulatory change, technological acceleration and increasing pressure on supply chain resilience – NIBRT demonstrated both resilience and relevance. The Institute continued to deliver strongly on its mission while positioning itself with confidence for future impact.



Julie O'Neill,
NIBRT Chairperson

The Board was encouraged by NIBRT's sustained performance across training and research activity throughout 2025. Demand from the biopharma industry remained strong, reflected in growth across revenue streams and the expanding reach of NIBRT's activities nationally and internationally. Importantly, this growth has been achieved while maintaining a clear focus on quality, standards and accountability – all central to the Board's governance and oversight responsibilities.

A defining feature of 2025 was NIBRT's continued contribution to Ireland's competitiveness as a leading global biopharmaceutical manufacturing hub. Through its leadership in workforce development, applied research and international partnerships, NIBRT plays a critical enabling role in supporting industry investment, regulatory excellence and long-term skills development. Initiatives such as the launch of NIBRT Global Qualifications and the expansion of the Global Partners Programme illustrate how the Institute is showcasing Irish capability while reinforcing global standards.

The Board continues to place strong emphasis on stewardship and sustainability. During 2025, NIBRT made further progress across Environmental, Social and Governance (ESG) priorities, including measurable reductions in carbon emissions, investment in people and culture, and the ongoing strengthening of governance frameworks. These efforts are essential not only to compliance, but to ensuring that NIBRT operates as a responsible, future-focused organisation with the trust of its stakeholders.

Risk management and oversight remained a central focus throughout the year. The Board and its sub-committees engaged closely with the Executive Team to monitor financial resilience, operational risk, regulatory alignment and strategic execution. This

active engagement provides assurance that NIBRT is well governed, financially sound and positioned to navigate an increasingly complex external environment.

The Board also oversaw continued progress against NIBRT's 2024–2028 Strategy, and an interim review of this strategy conducted in Q2 and 3 demonstrated that there is clear alignment between strategic ambition and operational delivery. The Institute's growing international profile, depth of industry engagement and translational research capability provide a strong foundation for the next phase of development.

I would like to acknowledge and thank Tom Murray (Friel Stafford) and Professor Norelee Kennedy (University of Limerick), who concluded their service on the Board in 2025 after many years of dedicated contribution. Their insight, commitment and governance expertise have been instrumental in supporting NIBRT's evolution, and the Board is deeply grateful for their service. I would also like to welcome our new members, Triona McCormack (UCD), Padraic O'Neill and Kevin Ryan (UL), who joined the Board in 2025.

On behalf of the Board, I would also like to thank Darrin Morrissey, the Executive team, and all NIBRT staff for their professionalism, expertise and commitment throughout the year. Their collective effort underpins NIBRT's success and reputation, both in Ireland and internationally.

As Chair, I am confident that NIBRT is entering the next phase of its development from a position of strength – with a clear strategic direction, strong governance, and an increasingly important role to play in shaping the future of biopharmaceutical manufacturing. The Board remains fully committed to supporting the organisation as it continues to deliver impact for industry, society and patients.

2.3 Message from NIBRT CEO

2025 was a year of significant change and opportunity for the global biopharmaceutical manufacturing sector. Against a backdrop of geopolitical uncertainty, supply chain realignment, and accelerating scientific and digital innovation, the industry demonstrated resilience and continued growth.



Darrin Morrissey,
NIBRT CEO

Ireland's biopharma sector in particular maintained its strong trajectory, underpinned by sustained investment in manufacturing capacity, advanced therapies, and workforce development. For NIBRT, 2025 was a year of strong performance and strategic progress across both training and research. Our core mission—to support the growth, resilience, and global competitiveness of biopharmaceutical manufacturing through worldclass training and applied research—has never been more relevant.

Research excellence and industrial impact

NIBRT's research programme reached new levels of scale and impact in 2025. We supported 32 active collaborative research projects, the highest number in the Institute's history, working in partnership with leading multinational and indigenous biopharma companies. Our researchers secured significant new funding, including major awards through Research Ireland programmes, and delivered 33 peer-reviewed publications, many in high impact international journals with €11.3M new research funding won in the year.

Across our research portfolio, NIBRT continues to prioritise translational, industry-relevant science—research that improves manufacturability, reduces cost of goods, enhances quality, and accelerates the delivery of life-changing medicines to patients.

Workforce development at global scale

NIBRT's training and education activities continued to grow in scale, reach, and impact. In 2025, we delivered over 30,000 learning days to more than 4,800 trainees, supporting biopharma manufacturing operations across Ireland and internationally. Training revenue grew by 12% year-on-year, reflecting strong industry demand for high-quality, practical, and competency-based workforce development. Key

highlights included the expansion of customised training programmes across a record number of Irish and international manufacturing sites; continued growth in academic and Springboard+ programmes; and the delivery of online training through the NIBRT Online Academy, reaching learners in nearly 100 countries.

We also strengthened our international footprint through the NIBRT Global Partners Programme, welcoming new partners in the United States and supporting the launch of licensed NIBRT training facilities in Houston and South Korea.

A major milestone in 2025 was the launch of NIBRT Global Qualifications (NGQs)—internationally recognised, industry aligned training qualifications that establish a new global benchmark for biopharmaceutical workforce development. NGQs provide industry with confidence that skills and competencies are accredited to consistent, world class standards, combining rigorous theory with hands on practical training.

People, culture and sustainability

Our people remain at the heart of NIBRT's success. In 2025, the Institute continued to grow, with over 115 staff representing 23 nationalities, reflecting the international and collaborative nature of our work. We strengthened leadership capability, introduced new strategic roles aligned with digitalisation and data, and progressed a refreshed set of organisational values to support NIBRT's future growth.

We also made strong progress across our Environmental, Social and Governance (ESG) agenda. NIBRT achieved a 9.6% reduction in CO₂ emissions in 2025 and a 53.2% reduction since 2017, despite significant facility expansion. Our commitment to diversity, safety, and wellbeing was reinforced



■ Minister James Lawless visits the NIBRT Facility. Pictured left to right: Eva Parzymieso (NIBRT), Darrin Morrissey (CEO, NIBRT), and James Lawless, Minister for Further and Higher Education, Research, Innovation and Science.

through high employee engagement scores and continued investment in mentoring, learning, and community engagement initiatives.

Looking ahead

As global biopharmaceutical manufacturing continues to evolve—driven by advanced therapies, digital innovation, and the need for resilient supply chains—the demand for highly skilled people and applied manufacturing science will only increase. NIBRT is well positioned to meet this demand. In 2026 and beyond, we will continue to:

- › Expand and diversify our training and education offering nationally and internationally
- › Strengthen NIBRT’s position as a globally recognised centre for applied biopharma manufacturing research
- › Build leadership in digitalisation, data, and advanced manufacturing technologies

- › Support Ireland’s position as a stable, competitive, and globally relevant biopharma manufacturing hub

A collective effort

I would like to sincerely thank Julie O’Neill, our Chairperson, and the NIBRT Board for their leadership, oversight, and support throughout the year. I also wish to acknowledge the contributions of Board members who completed their service in 2025, and to thank our industry partners, academic collaborators, funders, and stakeholders for their continued trust.

Most importantly, I want to thank the NIBRT team. Their expertise, commitment, and professionalism underpin everything we achieve. I am confident that, together, we will continue to deliver impact for industry, society, and patients—both in Ireland and globally.

2.4 2025: A Year at a Glance

01

JANUARY

- > WHO audit at Institut Pasteur de Dakar
- > Transition Year students at NIBRT

02

FEBRUARY

- > NIBRT joins EuropaBio
- > €1m award for ATU partnership with NIBRT

03

MARCH

- > Prof. Mark Smales awarded over €3.5 million through the Research Ireland Professorship Programme
- > 11th Careers in Biopharma event
- > Strategic Alliance with IADT

04

APRIL

- > NIBRT Research Conference
- > Launch of NGQs
- > Investors in Diversity, Silver Award
- > Best Supplier, Invest in Ireland Awards
- > Training over 70 HPRA and PIC/S auditors

05

MAY

- > 3rd Global Partners Summit
- > 2nd Annual Quality Business Leadership Summit
- > NIBRT exhibit at WHO Local Production Forum, UAE

06

JUNE

- > NIBRT exhibit at BIO, Boston
- > Torbern Bergman Medal awarded to Prof. Pauline Rudd
- > Prof. Elizabeth Topp named as Maxine Spencer Nichols Professor
- > NIBRT exhibit at ASMS, Baltimore

07

JULY

- > Sustainable Laboratory Certification for NIBRT Lab

08

AUGUST

- > NIBRT hosts US research students
- > NIBRT Family BBQ

09

SEPTEMBER

- > EU Researchers Night
- > Minister Lawless visits NIBRT
- > Opening of training centre in Houston
- > Visit from BioMarin Global Tech Ops Leadership

10

OCTOBER

- > €2 million gene therapy research project with APC
- > SSPC Biopharma Knowledge Day
- > Visit from Emer Cooke, Executive Director EMA

11

NOVEMBER

- > Heartland BioWorks joins the Global Partners Programme
- > Opening of K-NIBRT training centre
- > Science Week at NIBRT

12

DECEMBER

- > Asia Matters Partnership Award
- > NIBRT wins two awards at Pharma Industry Awards 2025

03 Strategy

3.1 The Biopharma Industry in Ireland – 2025

Navigating Disruption: Opportunities and Challenges in a Year of Uncertainty²

The Irish biopharma sector has long been recognised for its global success, consistently ranking among the top pharmaceutical exporters worldwide—and often cited as the third largest. Over the decades, the industry has demonstrated remarkable resilience in the face of major challenges, including patent cliffs, the transition to biologics, and the unprecedented disruption caused by the COVID-19 pandemic. In 2025, amid a new wave of global economic disruption, the sector once again showcased its adaptability, innovation, and strength.



Killian O'Driscoll
NIBRT Chief
Commercial Officer

2025 Trends

Disruption: In 2025, a series of economic policy announcements from the Trump administration introduced significant uncertainty and disruption to the global biopharma landscape. The possibility of tariffs, changes to the FDA, pricing pressures and reduction in NIH funding have all created significant unknowns. These developments have coincided with a surge in biopharmaceutical manufacturing investment announcements within the United States³. By some estimates there has been close to \$370 billion of manufacturing investments announced in the US. While there are still many unknowns and the situation changes frequently, there is a requirement for strategic reassessments across all stakeholders.

Growth amid uncertainty: Despite this policy uncertainty, regulatory flux, and shifting global dynamics, the pharmaceutical industry is on track to surpass \$1.75 trillion in prescription drug sales by the end of the decade, a 7.4% CAGR 2024-2030. The continued rise of biologics is a key contributor to this growth. The current supply of mammalian capacity is nearly 6,800kL. Looking to 2028, capacity is projected to increase by 32% to nearly 8,900kL with an annual growth rate of 7.1% per year from 2024.

Therapeutic diversity: At the same time, the pace of innovation in biopharmaceuticals is accelerating. Beyond the well-established classes of protein-based therapies, a new generation of therapeutic modalities

The Continued Rise of Biologics⁴

Large molecule drugs will make up 51% of overall prescription drug value in 2025, rising to 57% in 2030. Over two thirds of the top 100 best sellers in 2030 will be biologics.

- > Sales of biologics are predicted to overtake innovative small molecule drugs by as much as US\$120 billion by 2027.
- > Biologics represent nearly 55% of all innovative drug sales.
- > In 2025, the US FDA saw the approval of 46 new therapeutics, 26% of which were biologics.

is emerging—including highly personalised medicines. Multi-specific antibodies and antibody-drug conjugates remain popular contenders in the race for more effective cancer therapies. They lead the pack among next-generation modalities in projected 2030 sales; each will sell over \$40 billion more in 2030 than in 2024.

The progress of cell- and gene-therapy companies have stuttered as high prices and complex, lengthy manufacturing and administration processes limit product uptake and revenues. But progress in new modalities is often not linear and 13 of the 15 largest

² The full version of this article is available ([link](#))

³ Life Sciences Market Trends Q4 2025 ([link](#))

⁴ Evaluate World Preview 2025 ([link](#))

biopharma companies have significant CGT initiatives with a prediction of 10 therapies with greater than \$500m sales per annum by 2030^{5,6}.

GLP-1s dominate: Obesity drugs are forecasted to post average annual growth of 20% between 2024 and 2030 and are projected to account for nearly 9% of global drug sales by 2030. Tirzepatide, sold by Eli Lilly & Co. as Mounjaro for diabetes and Zepbound for obesity, will be worth close to \$62 billion by 2030. That's three times larger than the peak reached by AbbVie's auto-immune disease blockbuster Humira, and double 2024 sales of Merck & Co Inc.'s cancer behemoth Keytruda. GLP-1 based drugs will make up five of the top ten best-sellers in 2030. First-mover Novo Nordisk lost ground due to factors including manufacturing shortages of Wegovy (semaglutide). Lilly's next generation products are already reporting some remarkable clinical results with an average of 23.7% body weight loss⁷.

Asia's biotech boom: Globally, more regions are prioritising life sciences and deploying innovative incentives to attract multinational investment. Notably, China has made significant strides as a biopharma research hub, with China-based companies now accounting for 20% of drugs in development worldwide—compared to 40% for the US and 11% for the EU. Chinese-origin assets will make up nearly 40% of global licensing deals in 2025 up from less than 3% five years ago. South Korea has also shown remarkable growth especially in CDMO activity with Samsung Biologics having just started in 2011 now established as having the world's largest manufacturing capacity which will increase further to 1.31m litres by 2032⁸.

Patent cliffs ahead: Big Pharma still face over \$300 billion in potential lost sales due to patent expiries over the next five years. This represents 3-4% of the overall market, with a resulting surge in biosimilar activity.

Advanced manufacturing: As always manufacturing continues to evolve in response to these market and pipeline trends. A focus on cost of goods reduction remains a constant. Sites are reporting increased budgets for automation with 35.8% of facilities making bioprocess automation their number one new budget area, while 44.3% of facilities are in

the process of rolling out automated continuous processing systems to enhance efficiency and consistency⁹. Investment in digital technologies continues apace while AI initiatives continue to be assessed. Notably, Eli Lilly and Nvidia are partnering to build the pharmaceutical industry's "most powerful" supercomputer to help accelerate drug discovery and development¹⁰.

A model for digital and AI: Sanofi

In an interview with former NIBRT Chairman, Brendan O'Callaghan, Executive Vice President of Manufacturing and Supply detailed the benefits Sanofi are now accruing from their strategic investment in digital and AI capabilities¹¹.



> Proprietary AI-powered system that uses telemetry from sensors across our bioreactors and production lines. It tracks thousands of data points in real time, which allows us to optimize yield and performance batch by batch. We've seen gains of 5% to 10% in production yield.

> We've seen remarkable returns from putting sensors on production lines to monitor performance parameters like vibration, temperature, and electrical pull. This telemetry approach, inspired by our McLaren Racing partnership, has improved overall equipment effectiveness (OEE) by 20%-25% in some of our lines. Even a modest sensor deployment can yield significant insights without requiring a complete factory rebuild.

> McLaren brought us a mindset of continuous optimization and real-time telemetry that has transformed our operations. Their engineers helped us improve changeover times on our production lines by up to 40% through real-time AI video analysis and achieved 10-times productivity gains on a series of manufacturing processes.



5 Impatient about cell and gene therapy? Progress in biotech is not always linear ([link](#))

6 2025 Cell & Gene State of the Industry Briefing: Introduction and Industry Update ([link](#))

7 Eli Lilly's next-generation obesity drug delivers strong weight loss, reduces knee pain in late-stage trial ([link](#))

8 Samsung Biologics doubles down on global lead under Rim ([link](#))

9 2025 22nd Annual Report and Survey of Biopharmaceutical Manufacturing Capacity and Production ([link](#))

10 Eli Lilly, Nvidia partner to build supercomputer, AI factory for drug discovery and development ([link](#))

11 Sanofi's Digitalization Road Trip Shifts into High Gear ([link](#))

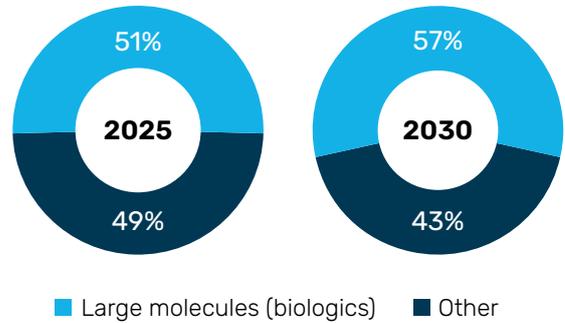
Key 2025 Trends at a Glance

Pledged Biopharma Manufacturing Investment Commitments in US 2025

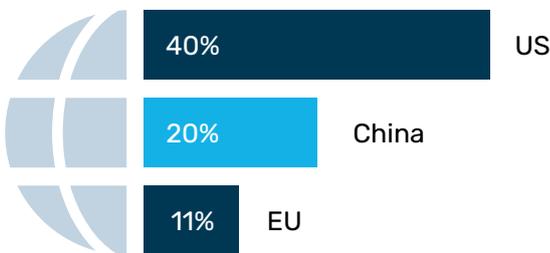


*Announced commitments across multiple companies and typically covers multi-year investment plans, not just expenditures in 2025 alone.

Biologics' Share of Global Prescription Drug Value is Increasing



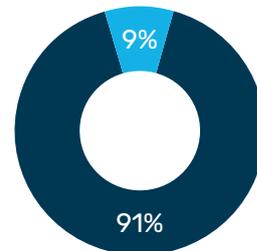
China Is Rapidly Increasing Its Share of Drugs in Development Globally



Rapid Growth in Obesity Drugs Sales

Obesity drugs – projected to account for 9% of global prescription drug sales by 2030

Global Drug Sales Projection 2030



Multi-Specific Antibodies and ADC Sales Growth Predictions



Future of Biopharma in Ireland

The anticipated impact of the US policies have not yet had an adverse impact on Ireland's economic statistics¹². However, as evidenced by the turbulent year for life sciences in the UK (with major pharmaceutical companies having withdrawn or frozen almost \$2.6 billion of planned investment¹³), constant vigilance is required to ensure Ireland maintains its competitive position.

In that regard, the IDA working closely with NIBRT and other stakeholders published a white paper on the **Future of Biopharma in Ireland**¹⁴, which called for sustained action on six interconnected fronts.

- › Enhancing Ireland's value proposition as a strong, stable, and responsive global manufacturing platform, supporting geographically resilient multinational company supply chains.
- › Lead the adoption of advanced and complex manufacturing processes, creating "factory of the future" proficiencies combining technical competence, digital control, and modular flexibility.
- › Establish a leadership role in next-generation therapy development and commercialisation, from viral vectors to decentralised cell and gene therapy models and offer world-class CMC and MSAT capability.
- › Leverage its robust digital and tech base to become a global centre for biopharma digital transformation, spearheading regulator-aligned AI and data integration.
- › Develop an active start-up and scale-up ecosystem for domestic biotech, filling current funding, and capability gaps to spur indigenous innovation in parallel with multinational anchors
- › All of this should be delivered through the whole-of-Government adoption of an ambitious Life Sciences Strategy, one that aligns national stakeholders across health, enterprise, research, and education, and also positions Ireland to actively shape EU biopharma and biotech policy.

IDA itself reported a positive FDI performance in 2025 with a record number of investments approved at 323, a 38% increase on 2024, which is expected

to create over 15,300 new jobs. 80 research, development and innovation projects accounted for a record €2.5bn in client expenditure reflecting growing recognition of Ireland as a location for innovation and research¹⁵, with some notable life science investments from Astellas, GE and CSL.

Strong activity was also evident in developing the **indigenous life science sector**. Enterprise Ireland emerged as the world's most active life sciences and health tech investor in 2024, participating in 60 deals with Irish life sciences and health tech companies raising €491.3m across 89 venture capital deals¹⁶. In addition, €298m from the €500m Disruptive Technologies Innovation Fund has already been awarded to 68 health and wellbeing projects. In December 2025, the new €31.6 million ARC Hub for Therapeutics with a focus on turning breakthrough Irish research into therapies and companies was launched¹⁷.

A very welcome development was the announcement of the consultation period for the **National Life Sciences Strategy** to ensure the sector remains competitive and that government adopts a coherent and ambitious approach to future opportunities. BPCI and Irish Medtech led key stakeholders in submitting 37 considerations under the core pillars of:

- › Foundations for Competitiveness: The current core enablers.
- › Expanding and Enriching the Ecosystem: Wider considerations for the sector's long-term growth trajectory.
- › Governance and Implementation: How the strategy should be managed and delivered¹⁸.

On a European level, the Commission launched a new strategy to make Europe the most attractive place in the world for life sciences by 2030¹⁹. The strategy focuses on three core areas of optimising the research and innovation ecosystem, enabling rapid market access for life science innovations and boosting trust, uptake and use of innovation – all areas while Ireland can make a significant contribution. On July 1st 2026, Ireland will take on the Presidency of the Council of the European Union

¹² How a blockbuster weight-loss drug made Ireland the fastest-growing economy in the world ([link](#))

¹³ UK risks losing its lead in global pharmaceutical innovation ([link](#))

¹⁴ IDA White Paper The Future of Biopharma in Ireland ([link](#))

¹⁵ IDA Annual Report 2025 ([link](#))

¹⁶ Business Plus, Dec 2025: Irish life sciences and health tech firms raise record €491.3m from VCs ([link](#))

¹⁷ New €31.6 million ARC Hub for Therapeutics to turn breakthrough Irish research into therapies and companies ([link](#))

¹⁸ BPCI and Irish MedTech Association Submission to NLSS ([link](#))

¹⁹ Commission launches new strategy to make Europe a global leader in life sciences by 2030 ([link](#))

03 Strategy

which provides a unique opportunity, in particular as this will align with the publication of the pivotal **EU Biotech Act**.

Conclusion

2025 has been a transformative year for the global biopharma sector, marked by rapid scientific innovation, shifting geopolitical dynamics, and an urgent demand for skilled talent. Ireland continues to

play a central role in shaping this evolving landscape. At the heart of NIBRT’s approach is a deliberate focus on research and innovation, ensuring that we remain ahead of emerging technologies and industry needs. Through world-class research centres, NIBRT Global Qualifications, international partnerships, and cutting-edge facilities like CONCEPT, NIBRT’s aim is not simply responding to global disruption, but to help drive the future of biopharmaceutical manufacturing.



“Through this partnership with NIBRT, we are establishing a world-class biomanufacturing training programme. The NIBRT licence will give access to globally recognised hands-on training, preparing them for in-demand careers in biomanufacturing”.

Edgardo Hernandez, Executive Vice President and President of Lilly Manufacturing Operations



04 Research & Innovation

4.1 Message from the Directors

2025 was a defining year for NIBRT Research. It was a year in which we did not simply advance our science, we strengthened national capability, deepened international trust, and demonstrated that Ireland can play a leadership role in the future of advanced biotherapeutics and biomanufacturing.



Dr. Fiona Killard-Lynch
CSO and Director
of Research &
Innovation



Dr. Jennifer Byrne
Associate Director
of Research &
Innovation

Our research strategy is intentional. We invest where NIBRT can make a meaningful difference to industry, to patients and to Ireland’s research system. And that focus is now paying dividends. With a research community working across cell and gene therapies, RNA modalities, vaccine science, glyco-biology, formulation, systems biology and advanced manufacturing, NIBRT has become a recognised engine of capability for the sector, grounded in industrial relevance, driven by scientific excellence, and connected to European and global networks.

Several national developments funded at scale this year will shape our trajectory for the years ahead. The Research Ireland Research Professorship awarded to Prof. Mark Smales represents a major national investment in AAV biology and manufacturing, leveraging our CONCEPT facility. In parallel, Prof. Niall Barron’s Research

Ireland Strategic Partnership with APC Ltd on viral vector manufacturing will train the next generation of scientists in one of the most strategically important areas of ATMP production. Together, these programmes build critical mass for Ireland in gene therapy development and reinforce NIBRT’s role at the centre of this emerging field.

Our work was also recognised externally. At the 2025 Irish Pharma Industry Awards, NIBRT was named Research Centre of the Year, with the judging panel describing us as a “powerhouse of discovery, collaboration and sustainability” and highlighting our global impact and leadership in industry transformation. This matters. It reflects confidence not only in our science, but in a model that brings research, GMP-simulated manufacturing, training, and policy engagement together for the benefit of the sector.





■ Peter Burke, Minister for Enterprise, Tourism and Employment of Ireland, during a visit to the NIBRT facility, where €17 million in funding was announced for two projects ('Can-Vas' and 'LOTUS') under Call 7 of the Disruptive Technologies Innovation Fund (DTIF).

Underpinning all of this is a culture of excellence. Our metrics clearly demonstrate that over the past three years, NIBRT researchers have delivered high-impact publications, international collaborations, industrial problem-solving, and advanced methodologies that are shaping how next-generation biologics are made. Our Scientific Advisory Board, drawn from international leaders in biotech, academia, and innovation, continues to challenge us, widen our perspective and ensure that our work remains globally aligned and future focused.

We were also present in the discussions that mattered. In 2025 our teams played visible roles in Horizon Europe consortia and Marie Skłodowska-Curie networks, engaged in European biotechnology strategy through platforms such as EuropaBio, IBISBA and EIT Health, and contributed to national dialogue at the Royal Irish Academy's symposium on fundamental biomedical research. We convened our own research conference on Ireland's Role in Europe's Biotech Future, demonstrating that NIBRT is not only participating in the conversation, but we are also helping to lead it. Our commitment to sustainability was recognised through My Green Lab Green Level Certification, and our commitment to

society was evident through European Researchers' Night, patient engagement activities, and education outreach.

As we look to 2026, we do so from a position of genuine strength. With the establishment of two Research Ireland Research Profs at NIBRT, major infrastructure investments such as CONCEPT and the Metabolomics Discovery Lab, deepening industrial partnerships and a growing presence in European initiatives, we are well placed to support Ireland's transition from a world leader in biologics manufacturing to a world leader in advanced therapeutics and the next generation of biomanufacturing.

Most importantly, 2025 was testament to the people of NIBRT, our PI, postdocs, PhD candidates, research assistants, scientists, research office colleagues and collaborators. Their ambition, discipline and creativity made this year exceptional. Their momentum gives us confidence that 2026 will be even more impactful.

Thank you for your work, your commitment, and your belief in what we can build together.

4.2 Research Impact: 2023 - 2025 (Inclusive)



Scientific Excellence

- > **99** research publications
- > **25%** in the top 10% of journals
- > **2** Research Ireland Research Professors
- > **€28.6m** in research funding



Industry Collaborations

- > **€11.5m** funding from industry
- > **20%** publications with an industry partner
- > **18** collaborative projects with industry
- > Pharma Industry Research Centre of the year



Infrastructure

- > **CONCEPT** biotherapy development facility
- > **12** PI-led research labs
- > Metabolomics Discovery Lab
- > In-house core facility for research



Global Impact

- > International and European memberships
- > European Researchers' Night host
- > **141** conference presentations
- > International doctoral and researcher training



4.3 Research Excellence

Research excellence at NIBRT is defined not only by scientific output, but by relevance, translation and influence. Excellence is reflected not just in our publications, but in the partnerships we build and the problems that we help to solve.

Across 2025, our research teams worked closely with industrial, academic and clinical collaborators to advance new technologies, improve manufacturing processes and contribute to the future of advanced biotherapies. This work has strengthened Ireland's capabilities in manufacturing, characterisation, formulation and emerging therapeutic modalities, while expanding the strategic networks that connect Ireland to the global bioprocessing and ATMP ecosystem.

This section highlights a selection of activities that demonstrate how NIBRT's research ecosystem performs in three critical dimensions:

- > Deep and trusted industry engagement, and
- > High-value collaboration across academia, national partners and international networks
- > Continued strengthening of research and biomanufacturing infrastructure to support emerging modalities.

These activities illustrate how NIBRT's research teams operate within, and contribute to shaping, a broader landscape of industrial innovation and strategic collaboration. They also reflect an intentional model of research excellence, where scientific questions, partnerships and capabilities are deliberately aligned to drive translational value for Ireland and the global biopharma sector.

Industry Engagement

Industry Co-Developed Research: Industrial co-development is a central feature of NIBRT's applied research model. In 2025, the Cell Technology Group's work with Canty International, for example, continued to advance live-cell imaging and bioprocess monitoring tools, building on prior peer-reviewed publications and industry recognition. In parallel, work with GlycoSelect, supported by Enterprise Ireland, delivered a published strategy for removing high mannose glycoforms from monoclonal antibodies using recombinant prokaryotic lectins which addressed a long-standing challenge in product quality control and manufacturability.

NIBRT's Scientific Advisory Board

- > **Chair, Dr. Brendan Hughes**, formerly Senior Vice President, Global Manufacturing Operations, BMS
- > **Dr. Marie-Angélique Sène**, Head of the Vaccine Research Center at Institut Pasteur de Dakar
- > **Prof. Manuel Carrondo**, Professor of Chemical and Biochemical Engineering, Universidade Nova de Lisboa, Institute of Experimental Biology and Technology (iBET)
- > **Dr. Robert Baffi**, formerly President of Global Manufacturing and Technical Operations, BioMarin
- > **Prof. Imre Berger**, Professor of Biochemistry, University of Bristol
- > **Dr. Susan Abu Absi**, CTMO, 2seventy bio
- > **Dr. Jim Faulkner**, Venture Partner, Apple Tree Partners
- > **Dr. Patrick Gammell**, VP Global Manufacturing Sciences, Biogen
- > **Prof. Shirley O'Dea**, Associate Professor of Biology, NUI Maynooth
- > **Dr. Richard Snyder**, VP Science and Technology, Pharma Services, Viral Vector Services at Thermo Fisher Scientific

The Formulation and Stability Group also progressed industry-aligned research, including an SSPC-supported study on degradation and stabilisation pathways for a legacy protein drug product in partnership with an industrial sponsor. In related work, a collaboration with Pfizer R&D and Prof. Elizabeth Topp assessed mRNA stability under formulation-relevant conditions and developed standardised QC assays for RNA therapeutics (Molecular Pharmaceutics, 2025).

ThermoFisher SCIENTIFIC

Global Engagements in Research: NIBRT's Characterisation and Comparability Lab (CCL) continued to be a visible international contributor to next generation biotherapeutic analytics. In the United States, CCL supported the launch of Thermo Scientific's Orbitrap™ Excedion™ Pro mass spectrometer at the 73rd ASMS Conference in Baltimore, delivering plenary and invited presentations on analytical workflows for complex Fc fusion proteins, GLP-1 peptide agonists, small interfering RNAs (siRNA) and multispecific antibodies under native MS conditions. Through the same partnership, CCL increased its footprint in India, engaging with major biopharmaceutical companies and contributing to the Biologics Conference, and participating in a United States Pharmacopeia workshop on real-world implementation of Multi-Attribute Methods (MAM). At Thermo Scientific's Orbitrap Summit in Bengaluru, CCL presented to more than 120 industry and research delegates, strengthening analytical capacity-building in a rapidly expanding biomanufacturing market.

Within Europe, NIBRT collaborators presented process monitoring innovations with Canty International at the Bioprocessing Summit in Barcelona, and continued participation in European advanced manufacturing networks across RNA modalities, continuous manufacturing and quality analytics.



Co-Funded Studentships & Joint Training

Models: Industrial investment in talent development continued, with Prof. Matsa securing a new Eli Lilly-funded PhD studentship launched in partnership with the Tyndall Institute and UCC. The project called 'FLiNK', focuses on fluorescence lifetime and electrochemical sensing for in-line monitoring of iPSC-to-NK differentiation, exemplifying the convergence of analytics, cell therapy process development and industry co-supervision.



Commercialisation Pathways & Advanced

Manufacturing: NIBRT's contributions to advanced manufacturing also reached commercialisation-

relevant milestones. Prof. Ferguson's next-generation laser photoreactor designed for scalable industrial synthetic processes progressed from laboratory prototype to industrial evaluation, with a full-scale unit fabricated and tested at Merck & Co. in Rahway, New Jersey. The underlying methodology was presented at AIChE (2025), reflecting growing interest in continuous and digital manufacturing approaches for complex modalities.

Strategic Collaborations

In 2025, NIBRT strengthened its role as a credible and valued partner in European and international research. Our groups were not only collaborators, but invited contributors, trusted hosts, and network leaders across funded programmes spanning biotherapeutics, infectious disease, nucleic acid technologies and advanced therapies. These activities reflect growing recognition of NIBRT's scientific expertise, its relevance to the future of biotherapeutics, and its ability to bring Irish capabilities into European research ecosystems in meaningful ways.

One example is the Horizon Europe Aureus MSCA Doctoral Network, coordinated by the University of Naples Federico II, where Prof. Jonathan Bones' CCL Group contributes advanced analytical workflows, including hydrogen-deuterium exchange mass spectrometry, to support immunotherapy development targeting multi-drug-resistant *Staphylococcus aureus*. NIBRT's involvement underscores the strategic value of its analytical leadership in both infectious disease and translational biomanufacturing research.

The GlycoScience Group, led by Dr. Radka Fahey, further expanded NIBRT's European collaboration footprint through the TULIP MSCA Staff Exchange, coordinated by the Karolinska Institute, which positions NIBRT as both a host and sending institution for researcher secondments.

NIBRT also strengthened its role in European talent development through participation in INT2ACT (Innovative Nucleic Acids Technologies for Analysis, Detection and Treatment), a MSCA Doctoral Network coordinated by the University of Udine. Beginning in 2026, the network will train 15 PhD researchers in nucleic acid technologies spanning diagnostics and therapeutics. NIBRT's participation, led by Prof. Niall Barron, aligns directly with our strategic emphasis on RNA modalities, engineered cell systems, and translational biomanufacturing.



Complementing these initiatives, NIBRT researchers contributed expertise at the intersection of immunology, vaccine access and public health. Through Prof. Anne Moore, NIBRT joined the VaxHub Global network, reinforcing the organisation’s role at the interface of vaccine formulation, delivery and societal uptake. Prof. Colin Clarke collaborated with UCD researchers to identify a distinct DUOX2-expressing neutrophil subtype linked to reactive oxygen signalling, illustrating how NIBRT’s single-cell and systems biology capabilities are informing immune and inflammatory science.

Within the advanced therapy ecosystem, Prof. Elena Matsa deepened NIBRT’s involvement in European ATMP networks through BTCs4ATMP, a COST Action linking Blood, Tissue and Cell processing centres across Europe. She also continued active participation in Haplo-iPSC and CorEuStem, leveraging continental platforms for standards alignment, infrastructure access and regulatory knowledge exchange. Domestically, the UCC iPSC Hub, established by Prof. Matsa, continued to convene interdisciplinary expertise across UCC and NIBRT, supporting Ireland’s emerging iPSC research ecosystem.

At the molecular end of pandemic preparedness, the Formulation and Stability Group continued contributions to EvaMobs, an EU-funded consortium led by ITQB NOVA Lisbon and focused on stabilising evolvable monoclonal antibodies. Research secondments undertaken by Arda Tugrul and Neha Tushar facilitated knowledge transfer in Mob expression, derivatisation and stability screening—demonstrating the value of researcher mobility in strengthening European preparedness pipelines.

Alongside programme-level participation, 2025 marked deliberate expansion of NIBRT’s institutional engagement in European innovation, research and policy networks. These affiliations, spanning EuropaBio, EIT Health, IBISBA, VaxHub, and a new interdisciplinary agreement with the Institute of Art, Design and Technology (IADT), serve as strategic enablers that position NIBRT within the forums where manufacturing standards, regulatory approaches, skills pipelines and innovation agendas for advanced biotherapies are being shaped. This positioning ensures NIBRT can collaborate more effectively, accelerate translation, and contribute to shaping Ireland’s role in the global biotech landscape in 2026 and beyond.

HIGHLIGHT



Emeritus Prof. Pauline Rudd

Recognising Foundational Research Leadership

In 2025, NIBRT Distinguished PI Emeritus Prof. Pauline Rudd was awarded the Torbern Bergman Medal by the Swedish Chemical Society, one of the field’s most respected honours. Prof. Rudd founded NIBRT’s Glycoscience programme and built analytical capability that remains central to our research strengths today. With more than 450 publications and over 400 invited talks internationally, her work in glycosylation and analytical science continues to influence disease biology and biopharmaceutical manufacturing. This recognition reflects the calibre of scientific leadership that has shaped NIBRT’s research ecosystem from its inception.

HIGHLIGHT



Prof. Mark Smales

Research Ireland Research Professorship

In 2025, Prof. Mark Smales launched a research programme funded at over €3.5 million through the Taighde Éireann - Research Ireland Research Professorship Programme, marking a major national investment in the future of advanced biotherapeutics. Holding a joint appointment between NIBRT and the University of Kent, Prof. Smales will lead a five-year programme based at NIBRT, building a dedicated team to advance gene therapy production, RNA therapeutics and engineered protein biomanufacturing. The programme targets one of the most pressing challenges in modern medicine, the complex, inefficient and costly manufacture of advanced therapies, by integrating cell biology, RNA design and bioprocess engineering.

HIGHLIGHT



Prof. Elizabeth Topp

Global Recognition of Formulation & Manufacturing Leadership

NIBRT PI Prof. Elizabeth Topp was named the Maxine Spencer Nichols Prof. in Chemical Engineering at Purdue University, a distinguished Professorship awarded in recognition of sustained contributions to pharmaceutical engineering. Prof. Topp’s career has shaped global understanding of formulation, stability and lyophilisation science, through her leadership of the William D. and Sherry L. Young Institute and as co-founder of LyoHUB, the leading industry–university consortium advancing freeze-drying technologies for biopharmaceuticals. The appointment reflects the international standing of her work and highlights the calibre of scientific leadership embedded within NIBRT’s research ecosystem.

TRANS-AM: A significant highlight for CEG this year was the announcement of a new Research Ireland Strategic Partnership Project called TRANS-AM, jointly funded with APC Ltd and formally launched by the Minister for Further and Higher Education, Research, Innovation and Science, James Lawless. This multi-institutional initiative brings together scientists from NIBRT, APC Ltd. and the UCD School of Chemical and Bioprocess Engineering to develop improved approaches for the manufacture and characterisation of viral (AAV) gene therapy vectors. The programme, led by Prof. Niall Barron, will train a cohort of six PhD candidates and two postdoctoral scientists over the next five years, strengthening national capability in a strategically important area of ATMP manufacturing science.

Enabling Infrastructure

CONCEPT



NIBRT's research mission is underpinned by infrastructure that enables early-stage discovery, translational development and industrially relevant characterisation. In 2025, this ecosystem expanded significantly, further strengthening Ireland's capacity in emerging biotherapeutic modalities and positioning NIBRT as a national platform for next-generation manufacturing and analytical science.

CONCEPT, NIBRT's core facility for early-stage biotherapy development, advanced its role as an interdisciplinary hub for biologics, cell, gene and RNA therapeutics. In 2025, NIBRT became part of a newly funded €10.7 million Can-Vas DTIF project, led by HAON Life Sciences, to advance a first-of-its-kind placental cell therapy for neonatal brain injury. Supported under Call 7 of the Disruptive Technologies Innovation Fund, the programme unites HAON Life Sciences, UCC's INFANT Research Centre and



■ TRANS-AM project launch. Pictured: Representatives and team members from Research Ireland, APC, NIBRT and University College Dublin.

NIBRT, each contributing complementary strengths across clinical research, GMP manufacturing and analytical development. NIBRT's role, delivered through CONCEPT, focuses on building release and characterisation assays required for clinical progression of emerging cell therapies.

Alongside this, CONCEPT supported translational work with RCSI, developing in-vitro assays for a polymer-based gene therapy platform and benchmarking delivery performance against lipid nanoparticle formulations. CONCEPT and NIBRT are partners with Neogen and Novus Diagnostics on a project that has been awarded €4.1million through DTIF funding. BioDesign will focus on development of a machine learning- and AI-powered platform that will help create and study protein-like enzymes and antibodies to support better treatments and health outcomes.

Beyond bioprocess infrastructure, 2025 marked a step-change in analytical capability with the establishment of the Metabolomics Discovery Lab at the Trinity Translational Medicine Institute (TTMI), led by BSEL's Dr. Elizabeth Matthews. The installation of Ireland's first Agilent RapidFire QTOF LC-MS system provides high-throughput metabolomics capacity not previously available in the country, creating a national resource with strong relevance to drug development, systems biology and clinical research. The lab's launch, delivered through an Agilent-supported symposium, drew strong academic, clinical and industrial participation, demonstrating both unmet demand and the scientific potential of this new platform.

4.4 Research Influence and Engagement

The excellence of NIBRT's research is also reflected in how our work influences industry, informs national strategy, engages the public, and contributes to Ireland's future STEM talent pipeline. In 2025, NIBRT researchers played visible roles in national policy forums, delivered public-facing scientific engagement, and received external recognition for research excellence and impact. Select highlights are outlined below.

National Engagement & Policy Influence

A major convening milestone in 2025 was NIBRT's two-day research conference, Ireland's Role in Europe's Biotech Future, which brought together more than 200 senior representatives from industry, academia, government, clinical networks and European institutions. The conference examined Ireland's strengths and strategic positioning in advanced therapeutics, biomanufacturing, talent and innovation, and explored the actions required to sustain competitiveness in a rapidly evolving global landscape. Participation from EuropaBio, the European Commission, Princeton University, Children's Health Ireland and national research platforms highlighted the value placed on NIBRT as a neutral convener of science, policy and industry perspectives. The programme also celebrated emerging talent through an early-career poster showcase, reinforcing that Ireland's future leadership in biotech rests on both strategic alignment at system level and deep investment in the next generation.

NIBRT also contributed to national policy discourse on the future of biomedical and translational research. In February 2025, Prof. Anne Moore and Dr. Alan Costello participated in the Royal Irish Academy Symposium on [Fundamental Biomedical Research](#), which brought together scientific leaders, funders, clinicians and policymakers to assess Ireland's research capabilities, infrastructure needs and strategic priorities. Their involvement reflects NIBRT's role not only as a research performer, but as a trusted stakeholder in conversations that shape Ireland's research ecosystem, innovation agenda and long-term health and industrial strategies.

Public Engagement & Scientific Literacy

A standout engagement activity in 2025 was NIBRT's participation in September's European Researchers' Night, delivering the open-lab event Inside NIBRT Research. As part of this Europe-

wide programme to promote public understanding of science, NIBRT opened its facility to audiences of all ages, offering hands-on demonstrations and interactions with our research and training teams. Visitors learned about the science behind medicines, from proteins and DNA, to cell culture and bioreactors, with activities ranging from a *'How Are Medicines Made?'* talk by the NIBRT training team to early-career researcher sessions on cell therapy and AAV manufacturing. The event also featured a science-themed escape room and guided tours of NIBRT's pilot-plant, highlighting the real-world environments in which biopharmaceuticals are produced. By making complex biomanufacturing concepts accessible, providing a direct connection to our research community and showcasing the next generation of Irish scientists, the event reinforced NIBRT's commitment to public-facing science, STEM awareness and societal engagement.

Science and Society

Engagement with society continued to be a distinctive feature of NIBRT's research culture in 2025. Across the institute, researchers contributed to public-facing events, education programmes and patient-centred initiatives that broadened understanding of advanced therapeutics and the careers that support them.

NIBRT scientists participated in outreach activities such as Pint of Science, European Researchers' Night, Transition Year Youth Programmes, and STEM Passport for Inclusion, where they delivered hands-on demonstrations and accessible talks on bioprocessing, vaccine science, and the emerging fields of cell and gene therapy. These interactions helped demystify advanced therapeutics for non-specialist audiences and offered practical insight into STEM pathways for young people.

Patient engagement was a complementary strength in 2025, particularly through Dr. Aoife Harbison's programme on glycosylation in endometriosis. Dr. Harbison a HRB-funded research Fellow, convened a patient-focused research seminar at NIBRT, bringing together patients, clinicians, researchers and advocacy groups for accessible discussion around the science of endometriosis. A national patient survey, conducted with Endometriosis Ireland, generated responses from more than 200 participants, with preliminary findings presented during the PPI Ignite Network's National PPI Festival and disseminated through a

dedicated project website to maintain transparent communication with stakeholders.

My Green Lab

Sustainability remained a priority for NIBRT’s research ecosystem in 2025. The Characterisation and Comparability Lab, led by Prof. Jonathan Bones, achieved Green Level Certification from My Green Lab, the internationally recognised benchmark for sustainable laboratory practice. The team participated in Research Ireland’s Sustainable Laboratory Certification Pilot Programme, delivered in partnership with Impact Laboratories and My Green Lab, which supported labs in making

evidence-based improvements to energy, water, waste and procurement practices. This certification positions CCL among a small number of Irish research laboratories formally recognised for sustainability leadership.

Such activities throughout 2025 highlight how NIBRT’s research community contributes not only to scientific discovery, but to public understanding, patient voice and the development of Ireland’s future biopharma workforce, reinforcing the institute’s role as a research organisation engaged with, and accountable to, society.



■ NIBRT wins Research Centre of the Year at the Pharma Industry Awards 2025. Pictured left to right: Fiona Killard-Lynch (NIBRT); Matt Moran; and Julia Rakovets (NIBRT).



At the Irish Pharma Industry Awards 2025, NIBRT was named **Research Centre of the Year**. In their assessment, the judging panel characterised NIBRT as a “powerhouse of discovery, collaboration and sustainability setting the gold standard for research and industry transformation” and highlighted “world-class research excellence, global impact on the biopharmaceutical industry, and leadership at national and international level”. They noted the combination of cutting-edge innovation, GMP-simulated manufacturing environments and policy influence as key differentiators. This external recognition reflects the excellence of NIBRT’s PIs, the strength of NIBRT’s research ecosystem, its relevance to industry, and its growing contribution to the future of biomanufacturing.

Researcher Profile: Ms Palesa Caroline Mphaka, PhD Candidate (CÚRAM MedDevDoc)



Ms Palesa Caroline Mphaka represents the type of globally competitive early-career researcher who embodies NIBRT's research mission. After joining NIBRT's GlycoScience Group in 2024 as an MSc summer student, she returned in 2025 to undertake a MedDevDoc-funded PhD (Marie Skłodowska-Curie Doctoral Training Network), coordinated by CÚRAM. Her research uses 3D engineered ovarian cancer models to uncover mechanisms of chemoresistance, a frontier area that bridges glyco-biology, cancer biology and next-generation therapeutic development. Palesa also exemplifies the societal and translational dimension of research. Alongside her scientific work, she contributes to education, outreach and PPI activities, engaging with schools, early-career audiences and the wider public, and supporting institutional initiatives such as the NIBRT HRS4R Working Group and the CÚRAM Postgraduate Council.

Researcher Profile: Dr. Aswathy Balakrishnan



Dr. Aswathy Balakrishnan completed her PhD in Chemical and Bioprocess Engineering at UCD in 2025, through the EPSRC-SFI Centre for Doctoral Training in Transformative Pharmaceutical Technologies. Co-supervised by Prof. Steven Ferguson and Prof. Elizabeth Topp, her doctoral work focused on the formulation and stability of mRNA and mRNA-lipid nanoparticle (LNP) systems, with experimental work conducted at NIBRT. This research provided new insight into how mRNA behaves within formulation-relevant environments, including LNPs and lyophilised preparations, an area of growing importance as RNA therapeutics transition from pandemic-driven deployment to broader clinical use. Following completion of her PhD, Dr. Balakrishnan joined NIBRT's Formulation and Stability Lab as a postdoctoral researcher, where she is now contributing to the development of digital tools and experimental frameworks for understanding degradation pathways in emerging RNA-based medicines.

Researcher Profile: Dr. Aji Alex Moothedathu Raynold, MedTrain+ Fellow (CÚRAM)



Dr. Aji Alex Moothedathu Raynold joined the ABCF group at NIBRT in 2024 as a CÚRAM MedTrain+ Fellow, bringing an exceptional international track record in advanced drug and gene delivery. He completed his PhD at the Indian Institute of Technology (IIT) Delhi, one of the world's leading science and engineering institutions, before continuing his research across India, the UK and the US in areas spanning polymer chemistry, formulation science and translational therapeutics. Aji's achievements include three granted patents in next-generation drug delivery systems, first-author publications in journals such as Nature Communications, and hands-on formulation experience aligned with both FDA and ICMR regulatory guidance. His specialist expertise in brush-type polymer architectures for nucleic acid delivery places him at the frontier of gene therapy innovation internationally. At NIBRT, Aji is developing a new platform for brain-targeted delivery by integrating extracellular vesicles with smart polymer systems and evaluating their performance using in vitro blood-brain barrier models, with preclinical progression planned for lead candidates.

Spotlight: Dr. Silvia Millán-Martín



Dr. Silvia Millán-Martín is leading the expansion of NIBRT's analytical capability for emerging RNA-based therapeutics, with a focus on chromatographic and high-resolution mass spectrometry platforms that enable rigorous characterisation of modalities such as antisense oligonucleotides (ASOs) and small interfering RNAs (siRNAs). Within CCL, Silvia's work addresses a growing pharmaceutical need for robust analytical strategies that can support the quality, comparability, impurity profiling and regulatory assessment of RNA therapeutics as they advance towards clinical and commercial manufacture.

In 2025, Silvia and colleagues, in collaboration with Thermo Fisher Scientific, developed a sensitive ion-pair LC-HRMS approach for ASO analysis that mitigates in-source artefacts and accommodates a wide range of chemical modifications and strand lengths. This work, recently published in the *Journal of Pharmaceutical and Biomedical Analysis* (2026), demonstrates not only methodological innovation but also NIBRT's ability to co-develop analytical solutions with industry partners. Silvia has also conducted forced degradation studies across multiple ASO scaffolds to map decomposition pathways and identify degradation products, generating insights directly relevant to quality control and stability assessment. Looking ahead, she is exploring ion-pairing-free analytical strategies aligned with EU REACH and green chemistry principles, highlighting the group's commitment to sustainable analytical science.



05 Training and Education

5.1 NIBRT Training in 2025

NIBRT Training Team

The NIBRT Training team supports biopharmaceutical manufacturing and workforce development across its two core focus departments; *Training Alliances and Innovation* led by John Milne and *Training Delivery* led by Kate Cotter. In 2025, the team delivered training to 4,900 trainees with an average trainee satisfaction score of 91%.

The *Training Alliances and Innovation* department focuses on building strategic partnerships with industry leaders, technology providers, and academic institutions to ensure the sector is future-ready to embrace new opportunities.



John Milne
Director of Training Partnerships and Innovation



Kate Cotter
Director of Training Delivery

Training Course Feedback in 2025²⁰



A major milestone was the launch of the NIBRT Global Qualifications, establishing a globally recognised standard of excellence in biopharma training. These efforts, combined with the NIBRT Global Partners programme, reinforced NIBRT's commitment to supporting multinational companies and shaping the future of biopharmaceutical training worldwide.

The *Training Delivery* department focus on designing and delivering comprehensive curricula, practical competencies, and access to state-of-the-art equipment. This team ensures that NIBRT's



²⁰ Data based on end of course trainee feedback forms from 126 customised and short courses delivered in 2025.

05 Training and Education

partnerships, innovations, and strategic initiatives are supported through world-class training delivery. Customised training programmes were provided to national, international, and multinational biopharma manufacturers and their support organisations.

NIBRT partnered with leading Irish universities to deliver both theoretical and practical modules across undergraduate and postgraduate programmes in institutions including ATU, DCU, DkIT, MTU, NUIG, RCSI, TCD, TUS, UCC, UCD, and TUD. Many of these programmes were supported by Springboard+, an upskilling initiative co-funded by the Government of Ireland and the European Union, which offers courses at certificate, degree, and master's level in areas with strong employment opportunities.

In addition, NIBRT delivered over 40 short, intensive courses throughout the year, covering critical areas such as manufacturing operations, quality and regulatory compliance, digitalisation, advanced therapies, and quality control testing.

Key Training Highlights in 2025

- › Launch of NIBRT Global Qualifications (NGQs)
- › Installation of the new NIBRT state-of-the-art filling line with isolator technology
- › Winner of the Partnership Alliance of the Year award at the Pharma Industry Awards 2025
- › Winner of the Best FDI Supplier award at the 2025 Invest in Ireland Awards
- › ATU awarded €1M for biopharma industry and education partnership with NIBRT
- › Addition of new training areas for Grade B gowning training and increased capacity for downstream drug substance training
- › Launch of three new e-learning courses on NOA (mRNA, Upstream and GMP)
- › Delivery of training to the PIC/S group in collaboration with the HPRA. 72 inspectors were trained across 2 weeks consisting of 84 mock audit sessions for regulatory participants from 38 countries.
- › Continued growth of the NIBRT Global Partner Programme (section 5.2)

NIBRT Training Metrics 2025



4,893

Trainees



30,330

Training Days
Delivered



665

Springboard+
Students



9,030

Number of registered
users on NIBRT Online
Academy (NOA)



97

Global reach of NIBRT
Online Academy (NOA)



NIBRT Global Qualifications (NGQs): In 2025, NIBRT developed and launched its NIBRT Global Qualifications²¹ initiative. NGQs are internationally recognised training qualifications setting a new benchmark for biopharmaceutical education and workforce development. Combining theoretical knowledge with hands-on practical training, NGQs equip professionals with the expertise needed for

success in the biopharma sector. Developed by NIBRT and accredited by Atlantic Technological University (ATU), each NGQ earns 5 European Credit Transfer System (ECTS) credits. NGQs offer a route to:

- > Globally Respected Certification
- > Accreditation and Stackable Credentials
- > Industry Alignment
- > Hands-On Experience
- > Flexible & Manageable learning options



■ NIBRT Customised Training Clients in 2025

²¹ NIBRT Global Qualifications ([link](#))

Training Curriculum Development: In response to the market trends identified in section 3, the NIBRT Training team continued expanding and improving curriculum, equipment, and competencies to meet the evolving needs of the industry. Significant growth was achieved in critical areas such as mRNA, antibody-drug conjugates (ADCs), vaccine manufacturing, quality and regulatory compliance, vial inspection, and cell therapy. To address these emerging priorities, NIBRT developed 114 new curriculum sessions across 13 process areas and seven modality categories. In addition, the team implemented 187 quality-approved minor updates and 75 major updates, ensuring that training content remains current, compliant, and aligned with industry best practices. This level of investment in curriculum development underscores NIBRT's commitment to equipping the workforce with cutting-edge skills and maintaining Ireland's position as a global biopharma hub.

For example, in 2025 training launched new and updated short courses in:

- > Biopharma Manufacturing
- > Annex I: A Practical Perspective
- > Operator Inspection Readiness: A Practical Perspective
- > Introduction to Biodecontamination of Isolators for Biopharma
- > Future Trends in Biopharma Manufacturing
- > Flow Cytometry for Advanced Therapy Manufacturing
- > Introduction to QC Analytics for Cell Therapy Manufacturing
- > Introduction to mRNA Manufacturing

Drug Product Investment: While NIBRT Training delivered a broad range of programmes in 2025—from drug substance to quality control, advanced therapies, and digitalisation—one standout area was drug product and sterile fill finish training. Recognising the growing global demand for expertise in sterile manufacturing, in recent years NIBRT made a significant strategic investment in state-of-the-art filling and isolator technology, supported by IDA Ireland. In 2025, the impact of this investment was clear: over 50 customised courses were delivered on the new fill finish equipment, supporting seven key Irish manufacturing sites. Additionally, the NIBRT Fill

Finish short course became the most in-demand short course offering of the year

Policy: Throughout the year NIBRT has been delighted to participate in the EGFSN Implementation Group to drive the comprehensive recommendations from their 2024 report. The team working closely with IDA and other stakeholders also contributed to the white paper on the *Future of Biopharma in Ireland*²², which called for sustained action on six interconnected fronts to “enhance Ireland’s value proposition as a strong, stable, and responsive global manufacturing platform, supporting geographically resilient multinational company supply chains”. In addition, the team were delighted to submit recommendations to the forthcoming National Life Sciences Strategy and EU Biotech Act.

NIBRT Training Advisory Board (TAB): The TAB provides advice to the NIBRT Board and to the NIBRT Executive on the strategic direction of the training activities of NIBRT with a particular focus on the evolving needs of biopharma manufacturing companies.

NIBRT’s Training Advisory Board:

- > **Mike Thien – Takeda**, NIBRT Board member and TAB Chair
- > **Breda O’Toole – IDA Ireland**, Head of Client Talent Development & Digitalisation
- > **Conor Delaney – BioMarin**, Vice President Network Strategy & Partnerships
- > **Dave Maraldo – Merck**, Senior Vice President, Operations
- > **Jens Vogel – Merck**, Vice President, Operations
- > **Jane Wyatt – GSK**, VP R&D Quality
- > **Mary Butler – Atlantic Technological University**, Senior Lecturer
- > **Thomas Potgieter – BMS**, Senior Vice President of Cell Therapy Development and Operations
- > **Barry Heavey – Sartorius**, Head of Data Analytics
- > **Regis Gervier – Sanofi**, Global Head RNA Center of Excellence

22 IDA White Paper The Future of Biopharma in Ireland ([link](#))



Look ahead at training plans for 2026: To support workforce development and biopharma manufacturing in Ireland and internationally, NIBRT training will drive key initiatives in 2026 including:

- > New curriculum development (and associated equipment procurement) in process intensification, high containment processing, PUPSIT, tech transfer and AI and digitalisation.
- > Ongoing curriculum revision and updates in fill finish, lyophilisation, isolator bio-decontamination, support operations and contamination control.
- > Continued development and expansion of the NIBRT Global Qualifications programme.

Development and delivery of new courses for in demand topics including:

Short courses

- > Introduction to Antibody Drug Conjugate Manufacturing
- > QC Analytics for Antibody-Drug Conjugates
- > Manual Visual Inspection Essentials: Navigating Regulations, Identifying Defects, and Analysing Root Causes
- > Pharmaceutical Quality Systems: A Risk-Based Perspective

NIBRT Partner courses

- > Technical Writing (+Regulatory Aspects) with Irish Quality Centre
- > Good Distribution Practice with Virtual Quality Partners

NIBRT Online Academy

Launch of new Fill Finish course in Q1. This will also lead to a bundling of GMP, Upstream, Downstream and Fill Finish courses into a learning path for students.

5.2 Global Partner Programme

The Global Partners Programme (GPP) is a NIBRT strategic initiative designed to address the growing global shortage of skilled professionals in biopharmaceutical manufacturing. As the industry continues to expand the need for high-quality, standardized training remains critical. The GPP enables selected international partners to commercially license and deliver NIBRT’s world-class curriculum, methodologies, and operational models, thereby building regional capabilities and ensuring global consistency in workforce development.

In 2025, NIBRT was delighted to welcome Heartland BioWorks (involving Purdue University, Lilly and others), as the latest member of the Global Partner Programme²³. Supported by funding from the US Economic Administration’s Regional Tech Hubs Programme, delivery of NIBRT’s world-leading training programmes will position Indiana as a central nexus for biomanufacturing training and innovation, solidifying the state’s role in the growing life sciences industry.



■ U.S. Senator Todd Young, Killian O’Driscoll, Michelle Dennis and Vince Wong at the BioCrossroads Life Sciences Summit.



“This transformative agreement with NIBRT is a testament to Indiana’s commitment to leading the way in biomanufacturing workforce development. By partnering with industry leaders and educational institutions, this will not only prepare our workforce for the jobs of tomorrow but also ensure that Indiana remains a vital hub for life sciences innovation.”

United States Senator Todd Young (R-Ind), Chair of US Congress National Security Commission on Emerging Biotechnology.



23 NIBRT Welcomes Heartland BioWorks Tech Hub as the Newest Member of the NIBRT Global Partners Programme ([link](#))

05 Training and Education

Heartland BioWorks joins NIBRT’s expanding network of global partners²⁴, which includes CASTL (the Canadian Alliance for Skills and Training in Life Sciences, Canada), San Jacinto College Center for Biotechnology (USA), BioHub Maryland (USA), Institut

Pasteur de Dakar (Senegal), and Korean-NIBRT (South Korea).

Additional key achievements in the Global Partner Programme for 2025 included:

Hosting the successful 3rd Annual Global Partners Summit, May 2025.

Successful Quality Audits of two NIBRT Global Partners CASTL (Montreal) and K-NIBRT.

Opening of K-NIBRT Bioprocessing Training Centre on Yonsei University’s International Campus.

Hosting a 2 day WHO audit as part of NIBRTs submission to be awarded Regional Training Centre status.

Opening of Centre for Biotechnology, San Jacinto College, Generation Park Campus, Houston, Texas.

A particular interesting project with our partners in Houston focused on a specialized training programme to support the manufacture of biopharmaceuticals in low orbit space.



²⁴ See Appendix 3 for profiles of each Global Partner.

05 Training and Education



■ Peter O'Byrne with BioHub Maryland's Bowie State University students.



■ NIBRT & CASTL team members at the conclusion of the NIBRT quality audit.



■ John Milne & Killian O'Driscoll with Institut Pasteur de Dakar and WHO team members.



■ Darrin Morrissey and Shada Warreth pictured with IPD and K-NIBRT Global Partners at the Global Partners Summit.



■ Killian O'Driscoll, Maryland's Lt Governor Aruna Miller and John Milne pictured at BIO Boston.



■ San Jacinto College Center for Biotechnology opening.



■ NIBRT with members of the K-NIBRT and KHIDI delegation visit IDA Ireland.

5.3 Industry Case Study 1

GRIFOLS

In 2025, Grifols partnered with NIBRT to deliver a major workforce development initiative. The programme focused on aseptic processing, audit readiness and advanced sterile drug product biopharmaceutical operations, preparing employees for the scale-up of Grifols Dublin fill-finish site.

About Grifols: Founded in 1909 Grifols is a global leader in plasma-derived medicines and biopharmaceutical innovation. With a commitment to sustainable growth, continuous innovation and ethical leadership, Grifols is active in >110 countries, with ~400 donation centres worldwide. Focus areas for the company include neurology, immunology, hepatology, intensive care, pulmonology, haematology, infectious diseases.

Training Requirements: Grifols required customised training solutions with modules tailored to their unique equipment, operational realities, site-specific processes, and quality systems. Flexible delivery of the training was key to accommodating shift patterns. The training also needed to demonstrate measurable learning impact by focusing on hands-on learning in realistic GMP environments to maximise knowledge transfer.

NIBRT Training Response: The Grifols team, leveraging internal Skills Gap Survey insights, co-developed with NIBRT a 5-day intensive *Aseptic Processing* courses delivered over 8 weeks to 50 employees. In addition, a 1-day workshop was developed on *Operator Inspection Readiness* to prepare teams for regulatory inspections.

Contents

- > Cleanroom design and classification
- > Contamination control strategies
- > Microbiology & environmental monitoring
- > Barrier technologies (RABS, isolators)
- > Fill-finish operations & aseptic process simulation
- > Grifols-specific case studies and process walkthroughs
- > Annex 1 and regulatory guidance
- > Operator inspection readiness
- > *Practical Sessions:* Gowning audits, environmental sampling, utilities and equipment preparation, filter integrity tests, barrier systems, aseptic process simulations.
- > *Delivery:* Training schedules coordinated with production teams to minimise disruption.



Trainee Feedback

How do you rate the NIBRT trainers?	9.3/10
How do you rate the NIBRT facilities?	9.1/10
How do you rate your overall training experience at NIBRT?	9.1/10

The training has been very helpful as I am a recent graduate and it helped me bridge academic knowledge with industry expertise.

Simbi Ayoola, Quality Analyst

I really enjoyed the way the trainers delivered the training. I feel they were really qualified.

Isabel Nieves, Continuous Improvement Senior Specialist

Outcomes & Impact: The outcomes from this training partnership included:

- > A strengthened competence and compliance in aseptic operations at Grifols.
- > Enhanced team-based learning and cross-departmental collaboration.
- > An established foundation for sustainable workforce development.
- > Boosting employee confidence and operational readiness.
- > Positioning Grifols to meet regulatory expectations and scale operations effectively.

Grifols Management

“Partnering with NIBRT has been instrumental in elevating the quality and impact of our training programs at Grifols Ireland as we scale up our operations. As a global centre of excellence in biopharmaceutical manufacturing, NIBRT brings unmatched expertise, innovation, and credibility to every aspect of our learning and development initiatives.

Their team of highly experienced trainers many of whom have deep industry backgrounds consistently deliver training that is both technically rigorous and practically relevant. This ensures our teams are not only well-informed but also confident in applying their skills in real-world production environments.

What truly sets NIBRT apart is their flexibility and agility. They work closely with us to customise training content and delivery formats that align with our unique processes and operational demands. Whether it’s adapting modules to reflect our site-specific workflows or scheduling sessions around busy production timelines, NIBRT always finds a way to make it work.

This collaboration has enabled Grifols to maintain high standards of quality and compliance while fostering a culture of continuous improvement. NIBRT’s support has been a key driver in helping us build a skilled, resilient workforce ready to meet the challenges of a dynamic industry.

We value this partnership deeply and look forward to continuing our shared commitment to excellence.”

David Roche, Quality Manager, Grifols

Conclusion: The Grifols–NIBRT partnership demonstrates that strategic, co-developed training can accelerate workforce readiness, enhance compliance, and foster a culture of learning and operational excellence. Through customisation, flexibility, and immersive learning, Grifols is equipped to scale its operations while ensuring employees have the skills, knowledge, and confidence to deliver excellence.

5.4 Industry Case Study 2



In a transformative partnership, Bristol Myers Squibb Cruiserath Biologics and NIBRT have set a new benchmark for workforce development in the biopharmaceutical sector. A joint initiative, launched in 2025, is not just a training programme—it is a strategic investment in the skills, confidence, and collaboration needed to deliver life-changing medicines to patients across Europe and beyond.

Strategic Expansion Meets Workforce Innovation

This collaboration coincides with a \$400 million expansion of the BMS Cruiserath Biologics campus in Dublin, which will add 350 new roles and establish their first European biologics sterile drug product facility. The campus, already recognised for its sustainability and zero-to-landfill policy, is now poised to become a hub for cutting-edge manufacturing and talent development.

Inside the Training Program: Customisation, Flexibility, and Impact

At the heart of this partnership is a bespoke workforce development programme, meticulously crafted by NIBRT in close collaboration with BMS Cruiserath. The training strategy is tailored to the site's unique processes, technologies, and operational realities, ensuring that every participant gains practical, job-ready skills.

Key Features of the Training Program:

- › Hybrid Delivery Model: Training is delivered through a mix of half-day live, instructor-led virtual classroom sessions and full-day, hands-on practical training at NIBRT's advanced bioprocessing facility. This flexible approach minimises operational disruption while maximising learning outcomes.
- › Curriculum Depth: The courses are designed to closely replicate the equipment, operations, and processes of the new Drug Product Facility at BMS. Topics range from the foundations of aseptic processing and cleanroom behaviours to advanced modules on formulation, filling, process simulations, quality control, lyophilization, and process validation.
- › Immersive Practical Experience: After theoretical instruction, participants engage in five days of

intensive hands-on training at NIBRT, working with state-of-the-art syringe filling lines equipped with isolator and RABS technology. This ensures full competency in sterile drug product manufacturing.

- › Operational Alignment: Training schedules are coordinated with BMS production teams to ensure seamless integration with ongoing operations and to support the transition from drug substance to drug product manufacturing.

Voices from the Frontline

The impact of this partnership is already evident. Cross-functional teams at BMS Cruiserath have upskilled, strengthened interdepartmental collaboration, and improved operational readiness ahead of the facility's start-up. The training framework is designed not just for today's needs but to support future expansion, ensuring that new talent—whether from within BMS or joining from other industries—can quickly gain the competencies required for success in sterile drug product manufacturing.

Feedback from participants is overwhelmingly positive, with trainers praised for their expertise and engagement. Satisfaction ratings for trainers, facilities, and overall experience consistently exceed 9 out of 10. Leaders at BMS Cruiserath highlight the strategic value of early, practical training:

"NIBRT training is an integral part of building a team with the right capabilities to deliver the products that will transform patients' lives into the future."

Gavin Doyle, Associate Director Operations

"At Cruiserath, we pride ourselves on being uniquely positioned with both Drug Substance and Drug Product capabilities co-located on our campus. In line with our 'One Campus' talent strategy, we are committed to providing our colleagues with developmental opportunities within the new Sterile Drug Product Facility. NIBRT training has been pivotal in this transition, equipping our team with essential DP process knowledge that effectively complements their existing skills. As our organization continues to grow, we will leverage NIBRT to establish foundational DP process knowledge for new talent joining us from various industries."

Eoghan Greene, Associate Director, Operations



Trainee Feedback

How do you rate the NIBRT trainers? **9.4/10**

How do you rate the NIBRT facility? **9.7/10**

How do you rate your overall training experience? **9.2/10**

A Blueprint for Industry Collaboration

The BMS–NIBRT partnership stands as a model for how industry and academia can co-create solutions to workforce challenges. By aligning training with real-world processes and operational needs, the collaboration ensures that employees are not only

technically proficient but also confident and ready to drive innovation.

As the new sterile drug product facility comes online, BMS Cruiserath Biologics is set to deliver on its mission of excellence—supported by a workforce trained for the future.

06 Environmental, Social and Governance (ESG)

6.1 Sustainability Strategy

NIBRT’s commitment to our people, our community and our responsibility towards the environment has always been an intrinsic part of our values and goals. NIBRT’s sustainability strategy and roadmap coordinates existing initiatives and efforts, enhances monitoring and identifies areas for development. This strategy was developed with EY through a

process of stakeholder interviews, industry, and best practice review. The result is a three pillar approach, as outlined below, that reflects NIBRT’s priority topics on environmental, social and governance factors (ESG), as well as their linkage to the UN Sustainable Development Goals.

Sustainability vision statement	<i>Delivering high-quality skills development and ethical research for industry in an inclusive, net-zero environment</i>		
Pillars	Protecting the planet by minimising our environmental impact	Leading with innovation and investing in talent	Building an ethical, transparent and compliant culture
Objectives	Reducing NIBRT’s environmental footprint and transitioning to a net-zero organisation by promoting resource efficiency, reducing waste and plastic consumption.	Advancing industry through cutting edge research and training. Upskilling local communities to help broaden career prospects. Embedding a diverse, inclusive and equitable culture for employees and communities, while promoting a safe workplace.	Aligning governance, policies, strategies and performance with NIBRT’s cultural values and focus areas. Managing ongoing ethics and compliance, and transparency in ESG performance reporting.
Delivering performance outcomes across the UN SDGS			

6.2 Environmental: Sustainability, Safety and Facilities

Sustainability

NIBRT is committed to conducting our business in an environmentally sustainable manner by tracking our activities and managing and improving our environmental performance across all business activities. Some key achievements in 2025 included:

- › A further 9.6% reduction in NIBRT’s CO₂ emissions (53% reduction since 2017), a notable achievement as the facility footprint was increased by 2,000m² in 2023.
- › Significant work on the calculation of NIBRT’s Scope 1,2 & 3 emissions for 2024 and 2025 to drive the achievement of a 10% annual reduction between 2024 and 2028.

- › Opening of four new EV charging stations in NIBRT car park.
- › The Green Labs Certification was awarded to the Jonathan Bones group with others in the application process.
- › Continued work with the on-site biodiversity including pond development, bulb planting, wildlife zones and planting of native trees.
- › Improvements in the reduction and responsible management of GMO waste.

Facilities Facts and Figures

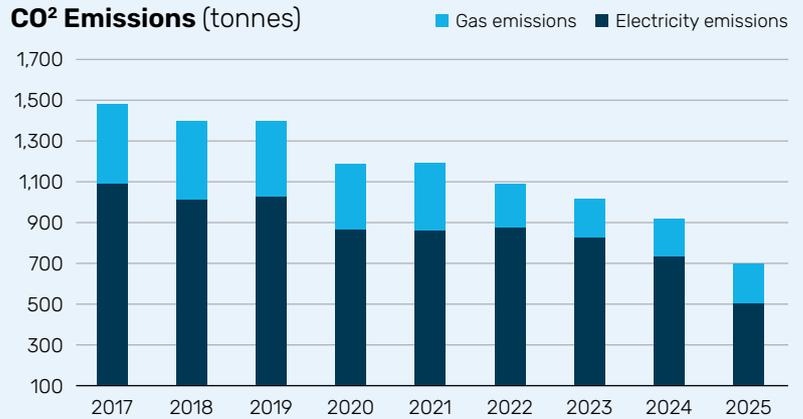
Building size
8,300m²

Lost time safety incidents
1 day

CO² reduction in 2025
9.6%

CO² reduction since 2017
53.2%

CO² Emissions (tonnes)



Note: In 2023 the size of the NIBRT facility increased from 6,200m² to 8,300m² with the opening of the new advanced therapies extension.

Key areas of focus for 2026 include:

- Waste reduction and management across 14 separate waste streams (general, recyclable, compost, glass, clinical, hazardous, GMO solid, GMO liquid, solvent, batteries, polystyrene, bulk waste, chemical and paper).
- Completion of the calculation of NIBRT’s Scope 1,2 & 3 emissions for 2024 and 2025.
- Implementation of voluntary European Financial Reporting Advisory Group (EFRAG) ESG reporting requirements for SMEs.
- The continued end of life replacement of several pieces of facilities infrastructure including air compressors, air handling units and parts washers/ autoclaves with more up to date energy efficient models.



Safety

Safety is a cornerstone of NIBRT’s organisational culture. Every day, our teams proactively work to maintain a safe and environmentally responsible workplace through robust procedures, safe work practices and positive engagement at all levels of the organisation. In 2025, NIBRT recorded one lost time accident, and a total of 172 hours of safety training were delivered to staff, reinforcing awareness and competence across the Institute.

A major focus during 2025 was the enhancement of NIBRT’s risk assessment framework. Through the Safe Labs initiative, and in close collaboration with laboratory points of contact, significant improvements were made to risk assessment processes, templates and training. This resulted in

increased volume, consistency and quality of risk assessment documentation across the Institute.

This programme of work will continue into 2026, supporting the local implementation of consistent standards of excellence and further strengthening NIBRT’s culture of safety and accountability.

Facilities

At the heart of the NIBRT building is the bioprocessing pilot plant, consisting of extensive upstream, downstream, fill finish, associated analytical facilities and process utilities that can support both stainless steel and single use bioprocessing strategies. New equipment and technology were added to the facility in 2025 to further enhance our service offering, including:

- › Rebel Device - benchtop bioprocess analyser
- › Jess Automated Western Blot System
- › CytoFlex - High-specification Flow Cytometer
- › MauriceFlex System - Imaged Capillary Electrophoresis System
- › Capillary Electrophoresis Interface
- › Automated Liquid Handling System
- › Prometheus Panta
- › Chromium 10X
- › Axichrom Column Controller
- › Heracell VIOSi & 250i
- › Automated Downstream Processing Platform
- › Quantum Flex System
- › Finia System
- › Meissner AcuFlux



In addition, during the year, NIBRT completed significant upgrades to improve the safety and accessibility of our facilities. These enhancements included the installation of a modern lift system, a redesigned reception area to streamline visitor

management, and new access barriers to strengthen security controls. Together, these improvements ensure a safer, more inclusive, and secure environment for staff and visitors alike.

6.3 Social: NIBRT People and Culture

Our People and Culture strategy is a cornerstone of organisational success, underpinning growth, innovation and long-term sustainability. In 2025, every HR initiative was shaped by a clear focus on our people, reflecting our commitment to building a skilled, engaged and agile workforce that drives operational excellence and future readiness.

People – NIBRT’s talent acquisition and global reach: In 2025, NIBRT strengthened critical capability areas through the successful recruitment of 31 new employees, with 55% sourced internationally and relocated to Ireland to join the organisation. These hires were delivered within an efficient time-to-hire framework, ensuring continuity and excellence across research and training activities.

Transformation: To support organisational scalability and enhance the employee experience, NIBRT implemented a leading cloud-based Human Resources Information System (HRIS) in 2025. This transition delivered a fully paperless, modern platform for both employees and managers, reinforcing our commitment to operational efficiency, digital innovation and data-driven decision-making.

Employee learning – technical and developmental growth: In 2025, employees benefited from a total of 242.5 learning days—an average of two learning days

per employee—across a comprehensive programme of technical and developmental training. This included both role-specific skills development and leadership capability building, equipping employees to respond effectively to evolving client and industry demands while strengthening NIBRT’s organisational capability with a clear future focus. Investment in NIBRT’s Mentoring Programme increased again during the year, supporting more structured career planning and enhanced professional development for participants.

Diversity and Inclusion: With 23 nationalities represented across the organisation and a gender balance of 54% female and 46% male, NIBRT continues to cultivate an inclusive and globally diverse workforce. This sustained commitment was formally recognised in 2025 with the achievement of the prestigious *Investors in Diversity Silver Award*, reflecting the effectiveness of NIBRT’s diversity and inclusion initiatives.

- > 115 employees and 23 different nationalities
- > 54% Female | 46% Male
- > 57% Irish | 43% Other Nationalities
- > 23 PhD Students



Our Values, Our Future: In 2025, NIBRT undertook a comprehensive refresh of its organisational values to ensure they remain relevant and reflective of the distinctive culture that underpins the Institute. The redefined values clearly articulate what it means to work at NIBRT and establish shared expectations for both the organisation and its people.

Wellbeing and Engagement: NIBRT’s wellbeing programme continued to go from strength to strength throughout 2025. A range of on-site initiatives, including acupuncture and yoga, provided practical, restorative wellbeing supports. These activities were informed directly by employee feedback and underscore NIBRT’s commitment to a holistic approach to employee wellbeing.



■ NIBRT staff celebrate Diwali.

HR Strategic Research Alignment and Compliance:

In 2025, the HR team further strengthened alignment with international best practice in research and employment standards. With the support of NIBRT’s research community, significant progress was made in renewing the prestigious Human Resources Strategy for Researchers (HRS4R) Award. The first stage of reaccreditation was successfully completed, with a European expert site visit now scheduled for Q1 2026.

In parallel, the HR team prepared the organisation for the forthcoming EU Pay Transparency Directive and delivered the 2025 Gender Pay Gap Report. This work provides transparency and actionable insights that will inform NIBRT’s equality and inclusion priorities in 2026 and beyond.

NIBRT Annual Employee Engagement Survey²⁵

- 80% of staff agree or strongly agree that NIBRT is a great place to work.
- 81% of staff experience a positive, inclusive culture in NIBRT.
- 90% of staff agree or strongly agree that “My coworkers and I have a good working relationship”.
- 80% of staff recognise the Benefit of flexibility at NIBRT as a key factor in positive work/life balance.

6.4 Social: Community Outreach and Public Engagement

In 2025, the Community Engagement Working Group continued to strengthen NIBRT’s public outreach programmes, with a strong focus on increasing awareness, accessibility and impact across diverse audiences. The Group’s work centred on several key themes:

- Promoting career opportunities in biopharma, particularly entry-level pathways and routes from non-traditional backgrounds.
- Raising public awareness of major scientific advances and emerging challenges within the biopharma sector.

- Communicating the positive impact of biopharma on patients, the economy and wider society.

Throughout the year, the team—led by Laura Breen—delivered a wide range of high-impact outreach activities and events.

A highlight of the programme was the continued success of the Transition Year (TY) Programme. This popular initiative provides ten TY students each year with the opportunity to spend a week in NIBRT’s training and research laboratories, gaining first-hand insight into the breadth of careers available within the biopharma industry.

²⁵ Based on NIBRT Annual Employee Engagement Survey (n=89)

06 Environmental, Social and Governance (ESG)

NIBRT also participated in **European Researchers' Night 2025**, Europe's largest public engagement event for research and innovation. The event provided an excellent platform for NIBRT researchers to engage directly with the public through interactive demonstrations on DNA, cells, blood and antibodies, alongside a series of talks and guided tours of NIBRT's training facilities.



■ NIBRT Transition Year Programme 2025.

The Community Engagement Team was also delighted to present NIBRT's annual donation to its charity partner, the **Alzheimer's Society of Ireland**. This occasion provided an opportunity to learn more about the Society's invaluable work, particularly the important research initiatives that it supports.

Separately, the NIBRT Marketing Team successfully delivered the 11th annual **Careers in Biopharma** event at a new venue, the O'Reilly Hall at University College Dublin. This flagship event offers students, recent graduates and career-changers a unique

Additional outreach activities included **hosting school visits** – such as Citywise, Collinstown Park Community College, Ballinteer Community School and Firhouse Community School—alongside judging at SciFest, mentoring as part of the STEM Passport for Inclusion initiative, and supporting local schools through equipment donations.



■ Citywise School Visit to NIBRT.

opportunity to engage directly with the biopharma sector. Attendees were able to meet leading employers, attend company presentations, explore training and upskilling opportunities, and network with industry professionals. Companies participating in the 2025 event included AbbVie, Amgen, APC Ltd, BioMarin, Bristol Myers Squibb, Cognizant, CPL, DPS Group, Eli Lilly, Eurofins, Janssen, KPC International, LSC, MSD Ireland, PDA Ireland, Pfizer, Sanofi, Takeda Ireland, WuXi Biologics, VLE Therapeutics and Zoetis.



■ J&J Innovative Medicines team at NIBRT Careers in Biopharma

6.5 Governance

NIBRT is a private company limited by guarantee (company number 413711). The NIBRT CEO, Darrin Morrissey, reports into the Board of Directors of NIBRT. There are 13 Board members with representatives from industry, academia and government agencies, as well as the CEO. The Board is chaired by Julie O'Neill. The Board meets five times annually for scheduled meetings and there are three subcommittees of the Board:

- > The Audit and Risk Oversight Committee, which met five times in 2025 in advance of the main NIBRT Board meeting.
- > The Resource Oversight Committee, which met nine times in 2025.

- > The Governance and Nominations Committee, which met once in 2025.

NIBRT Services Limited (NSL), company number 556310, is a limited liability company and 100% subsidiary of NIBRT. It holds all NIBRT's commercial activities which include training, education services and industry funded research. There are four members on the NSL Board which met twice in 2025.

NIBRT's external auditors are Crowe while EY are the internal auditors.

A Scientific Advisory Board and a Training Advisory Board also provide advisory strategic direction with respective bi-annual meetings.

NIBRT Board 2025

- > **Chairperson: Julie O'Neill**
Non-Executive Director
- > **Emma Callinan**
Director of Commercialisation, Enterprise Ireland
- > **Prof. Sarah Culloty**
Head of College, Science, Engineering and Food Science, University College Cork
- > **Dr. Aine Hanly**
Chief Technology Officer, Amgen
- > **Prof. Anne Marie Hely**
Professor of Pharmaceuticals and Pharmaceutical Technology, Trinity College Dublin
- > **Dr. Brendan Hughes**
Non-Executive Director, formerly Senior Vice President, Global Manufacturing Operations, BMS
- > **Prof. Jacqueline McCormack**
Vice President for Equality, Diversity & Inclusion and Online Development, Atlantic Technological University

- > **Dr. Darrin Morrissey**
CEO NIBRT
- > **Rory Mullen**
Head of Biopharma and Food, IDA Ireland
- > **Dr. Michael Thien**
Non-Executive Director, formerly Head of Pharmaceutical Services R&D, Takeda

New Board Members in 2025:

- > **Triona McCormack**
UCD Vice-President for Strategy & External Engagement
- > **Padraic O'Neill**
Non-Executive Director, formerly President of Pfizer Global Business Services (GBS)
- > **Prof. Kevin Ryan**
Vice President for Research at the University of Limerick

07 Awards



■ Representatives of Eli Lilly and NIBRT with Michael Lohan, CEO IDA Ireland on receipt of their Invest in Ireland Awards.

NIBRT was pleased to win the following prestigious awards in 2025:

Invest in Ireland Best Supplier Award: The award celebrates excellence in Irish foreign direct investment, recognising the contributions of organisations that drive growth, innovation and talent development across key industries.

Pharma Awards Research Centre of the Year: The judges praised NIBRT for its world-class research excellence, global impact, and leadership in innovation and policy. NIBRT was described as

a “powerhouse of discovery, collaboration, and sustainability setting the gold standard for research and industry transformation.”

Pharma Awards Partnership Alliance of the Year recognising the 13-year partnership between NIBRT and Atlantic Technological University as an outstanding example of innovation and collaboration. The judges noted its role in building a strong connection between academia and industry and contributing to the development of the northwest as a growing hub for biopharma and medtech excellence. This award highlights the commitment of both organisations to creating opportunity, supporting regional development, and providing future-focused education aligned with industry needs.

Asia Matters Global Partnership Award: which recognises NIBRT’s global partnership with Yonsei University in the creation of Korean-NIBRT.



■ Asia Matters Award.

Key dates in 2026 include:

- › **Research Conference, April 14-15th 2026**
- › **Careers in Biopharma, April 25th 2026**
- › **NIBRT Global Partners Summit, May 27-28th 2026**

08 Appendices

8.1 NIBRT Strategy 2024-2028

NIBRT’s mission is to address the important needs of the biopharmaceutical manufacturing industry in Ireland and internationally, and ultimately to help bring biologic-based medicines to patients. To deliver this mission, we:

- > Train the people who make life changing medicines.
- > Undertake research that grows the fundamental understanding of complex biopharmaceuticals.
- > Deliver impactful solutions that improve the processes for manufacturing biologic medicines.
- > **Priority 1:** NIBRT will continue to grow and diversify our world-leading training and education activities through an expanding range of customised training services for clients both nationally and internationally.
- > **Priority 2:** NIBRT will build a strong international reputation as an open research institute that partners with companies and other leading research institutes to conduct highest quality

research, delivering innovation in biopharma manufacturing science and technology.

- > **Priority 3:** NIBRT will improve and upgrade its own digital environment, infrastructure and capabilities and provide biopharma digitalisation training services to meet the needs of our clients, while conducting research that develops new approaches to analysing and harnessing data.
- > **Priority 4:** NIBRT will be a well-recognised and highly attractive employer for professionals in biopharma manufacturing research and training, based on its core workplace values and its dynamic and supportive working environment.
- > **Priority 5:** NIBRT will strive to ensure financial resilience of the Institute by delivering consistent and sustainable revenue growth through diversified research and training activities, while operating at the highest standards of environment, social and governance practice.

NIBRT STRATEGY 2024-28

Strategic Priority 1:

Training and Education. Excellence, Growth and Diversification

Strategic Priority 2:

Research excellence, reputation, and impact through partnership

Strategic Priority 3:

Embracing and helping drive digitalisation in biopharma manufacturing

Strategic Priority 4:

Our people. Employer of choice

Strategic Priority 5:

Financial resilience. Consistent and sustainable growth

Long-term Reputational Objective:

To build NIBRT’s reputation as a trusted opinion leader in biopharma manufacturing

8.2 Key Performance Metrics

NIBRT successfully achieved or exceeded all its key performance metrics for 2025 across Financial, Training, Research and Reputational categories.

Strategic Key Performance Metrics at end of 2025

Financial	Category	Basis	2025
Group financial targets	1	Exceed	Achieved
IDA core investment	1	Not to exceed	Achieved
Capital expenditure funding	1	Match	Achieved
Approval of clean audited group accounts	1	Board approval	Achieved
Core grant funding target (deficit plus capital)	2	Not to Exceed	Achieved
Competitive grant funding target (Irish public and EU)	2	Exceed	Achieved
Industry funding target (awards/contracts/donations)	2	Exceed	Achieved

Training

Training income	1	Exceed	Achieved
Trainees per year	2	Exceed	Partially Achieved
Training days (onsite, offsite, plus online)	2	Exceed	Partially Achieved
Active international franchising agreements	2	Exceed	Achieved

Research

Funded and collaborative research Income	1	Exceed	Partially Achieved
Number of principal Investigator teams	2	Exceed	Achieved
Number of researchers	2	Exceed	Achieved
PhDs completed	2	Exceed	Partially Achieved
Applications for large funded/collaborative awards	2	Exceed	Achieved
Conference presentations	2	Exceed	Achieved
Proportion of research between TRL 4 and TRL 9	2	Match	Achieved

Reputation

Lost time injuries target	2	Not to exceed	Achieved
Net promotor score achieved for training	2	Exceed	Achieved
NIBRT support for major Biopharma events	2	Exceed	Achieved
Collaborations (Industry, Academia, sector bodies)	2	Exceed	Achieved

8.3 NIBRT Global Partners

BioHub Maryland, Maryland, USA



BioHub Maryland is accelerating the life sciences industry for companies and career seekers to expand the state's global innovation advantage.

NIBRT formed a partnership with BioHub Maryland in November 2023 and has grown from strength to strength since.

An initiative of the Maryland Tech Council, the largest technology and life sciences trade association in the state, BioHub Maryland helps residents of all backgrounds pursue rewarding careers in life sciences by offering skills training, career resources, and access to 1,200+ job openings in life sciences. BioHub Maryland also helps life sciences companies to grow by showcasing their career opportunities, training the next generation of life sciences talent, and providing strategic resources for raising capital.



Noteable BioHub partnerships in 2025 include those with Bowie State University on summer life science training, the Worksource Montgomery course on biopharmaceutical manufacturing, vendor training days and customised training for industry clients. The training center continues to expand its impressive equipment portfolio and customised training offerings to all lifescience companies in the region at their facility.

Website: www.biohubmaryland.com **Email:** info@biohubmd.com

Canadian Alliance for Skills and Training in Lifesciences (CASTL), Canada



CASTL is a national skills and training organisation formed to address the talent needs of the Canadian life sciences sector.

Specialising in biopharmaceutical manufacturing, CASTL delivers on the economic and sectoral demand for individuals who have the technical skills to enter, thrive and meet the needs of the fastgrowing Canadian biomanufacturing industry. With multiple GMP-simulated biomanufacturing training facilities, CASTL provides industry- informed hands-on training, theoretical knowledge and e-learning.



CASTL is the exclusive provider of the National Institute for Bioprocessing Research and Training (NIBRT) licensed training programs in Canada. CASTL is supported by the National Lead Partner adMare BioInnovations and its adMare Academy. The adMare Academy is dedicated to providing the specialized training required to foster the next generation of highly qualified personnel who will drive the growth of Canadian life science companies. CASTL continues to deliver popular hands-on training programs such as the British Columbia Bioscience Reskilling Program - Elevate, which is CASTL's national biomanufacturing training program. Other notable training program offerings include the PEI Bioscience reskilling program, the RNA Therapy Training:Factory-School program, BioWorks training program and tailored nanotraining delivery in relevant scientific disciplines. CASTL successfully completed a NIBRT Quality audit of the CASTL Montreal Biomanufacturing Training Facility in July 2025.

Locations: Charlottetown (PEI), Montreal (QC), Richmond (BC)

Website: www.castlcanada.ca **Email:** info@castlcanada.ca

Heartland BioWorks, Indiana, USA



Heartland BioWorks (HBW) is a U.S. Department of Commerce–designated Regional Technology and Innovation Hub focused on advancing biotechnology and biomanufacturing across Indiana and the broader Midwest.

Launched in 2024 and led by Indiana’s Applied Research Institute (ARI), Heartland BioWorks brings together industry leaders, universities, workforce organizations, and government partners to strengthen America’s domestic bioeconomy, supply chain resilience, and national security.

Heartland BioWorks’ mission is to accelerate innovation, workforce development, and commercialization in next-generation biotechnology and biomanufacturing. The hub builds on Indiana’s unique strengths as a national leader in life sciences: the state is a top U.S. exporter of pharmaceutical and life-science products and home to global bioindustry leaders such as Eli Lilly, Corteva, and Elanco. Heartland BioWorks was selected in 2023–2024 as one of only 31 Regional Tech Hubs nationwide, and among a smaller group to receive implementation funding under the CHIPS and Science Act via the U.S. Economic Development Administration (EDA).

A cornerstone of Heartland BioWorks is its emphasis on world-class workforce training. In November 2025, HBW signed a landmark Global Partners Agreement with NIBRT. This agreement makes Heartland BioWorks the exclusive provider of NIBRT’s globally recognized biomanufacturing training curriculum across the U.S. Midwest, significantly elevating the region’s talent pipeline. HBW is building a dedicated training centre which is scheduled to open in Q2 2027.

Website: www.heartlandbioworks.com **Email:** heartlandbioworks@theari.us

Institut Pasteur de Dakar, Senegal



IPD brings together key capabilities and functions to address public health challenges in Africa.

Created in 1924, Institut Pasteur de Dakar works to accelerate equitable, sustainable and affordable access to health in Africa. As a Senegalese not-for-profit foundation recognised as being of public utility, IPD provides communities with healthcare solutions and laboratory services, engages in cutting-edge biomedical research and innovation, manufactures vaccines and diagnostics essential to African populations, develops human capital, and engages in public health activities such as epidemic intelligence, outbreak response, and surveillance.



IPD joined the NIBRT Global Partner Programme in May 2024 and began offering training programs in late 2024. Institut Pasteur de Dakar has been growing and diversifying their training offering to the African region throughout 2025. This partnership, established within the context of IPD’s efforts to create a Regional Biomanufacturing Training Hub and made possible through the support of the Mastercard Foundation, marks a pivotal moment for the African continent as it strives to locally increase vaccine manufacturing to meet the growing demand for essential vaccines.

Website: www.institutpasteurdakar.sn **Email:** communications-ipd@pasteur.sn

Korean-NIBRT (K-NIBRT), Incheon, South Korea



In July 2021, NIBRT announced a new global partnership with K-NIBRT to develop a world class biopharma manufacturing training and research centre in Incheon, South Korea.

K-NIBRT has developed into Korea's bioprocessing workforce development institute by licensing NIBRT's world-leading training and education curriculum in biopharmaceutical manufacturing.

K-NIBRT facilities consist of the K-NIBRT Education centre with extensive mRNA facilities and two new K-NIBRT facilities. The Bioprocess Workforce Training Centre (mAbs centre) and the Bio-Pharmaceutical Convergence Center (Cell and Gene therapy facilities) became operational in 2025 with the vision of establishing the leading biopharmaceutical manufacturing training in the Asia- Pacific region. K-NIBRT delivers didactic training in General Introductory courses all the way to more complex areas of Pharmaceutical Regulation and Safety Management.

K-NIBRT's hands-on training provides practical experience for job seekers and employees in the biopharmaceutical industry through modules covering key manufacturing technologies such as upstream processing, downstream processing, formulation, and quality control. K-NIBRT have developed specialised training programs for high school students, industry professionals and women scientists in recent years.

K-NIBRT successfully completed a NIBRT Quality audit of their Bioprocess Workforce Training Centre in August 2025.

Website: www.knibr.com **Email:** knibr@yonsei.ac.kr

San Jacinto College, Texas, USA



San Jacinto College and NIBRT formed a partnership in October 2023 making San Jac the exclusive provider of NIBRT-licensed training in the southern part of the United States. The new training center offers regional biomanufacturing onboarding training, certificate, and degree programs.

The biotechnology program opened at the San Jacinto College South Campus in January 2024. The program offers an onboarding certificate to equip new biomanufacturing professionals with the skills and knowledge they need to seamlessly enter the field. Additional training offerings encompass all aspects of biomanufacturing, specialised instrumentation, equipment training, and advanced techniques.

San Jacinto College opened The Center for Biotechnology, on the San Jacinto College Generation Park Campus in Sept 2025. This state-of-the-art facility will provide comprehensive, hands-on training with realistic good manufacturing practices (GMP) simulated environments. The Center will offer an associate of applied science degree in Biomanufacturing Technology - San Jacinto College, and shorter credentials for post-graduates, to meet workforce needs.



Website: www.sanjac.edu **Email:** Robyn.Cardwell@sjcd.edu

8.4 NIBRT Snapshots 2025



■ NIBRT Careers in Biopharma 2025 hosted at O'Reilly Hall in UCDC.



■ NIBRT and ATU win Partnership Alliance of the Year at the Pharma Industry Awards 2025.



■ Speakers at NIBRT Research Conference 2025 – Ireland's Role in Europe's Biotech Future.



■ Shada Warreth speaking at NIBRT Global Partner Summit.



■ Participants at the NIBRT Hosted Endometriosis Seminar.



■ The Small Advanced Economies Initiative (SAEI) delegation visit NIBRT.



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