



National Institute for  
Bioprocessing Research  
and Training



# Training Catalogue 2023



# About Us

National Institute for Bioprocessing Research and Training (NIBRT) is a global centre of excellence for training and research in bioprocessing. NIBRT's unique bioprocessing training facility provides trainees with the opportunity to learn and practice complex technical bioprocessing procedures.

NIBRT provides a range of programmes which are specifically tailored to meet the needs of trainees who wish to develop their careers in the bioprocessing industry.

**[www.nibrt.ie](http://www.nibrt.ie)**



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# 01

## Why train with NIBRT?

**Welcome to the NIBRT Training Catalogue for 2023. We are pleased to present a wide variety of course options and training solutions to meet your learning requirements.**



NIBRT leverages a variety of options for training delivery that suit our client's specific needs. In 2022, we successfully delivered our training portfolio to over 4,000 people based in industry and academia, that included both national and international based trainees.

### State-of-the-art Training Facilities

NIBRT's pilot-production training facility remains the centre piece of our training offering, and all our trainees spend time with our subject matter experts in an active engaged learning environment to achieve their learning outcomes. We offer training courses in drug substance manufacturing utilising both traditional stainless-steel infrastructure and modern flexible single-use technologies. Our core curriculum also includes a suite of programs addressing drug product operations namely aseptic fill-finish and lyophilisation, and courses addressing the quality control disciplines of bioanalytical characterisation and contamination/microbiological control. We have just commenced an expansion to increase the capability of our facility to embrace the growing interest in advanced therapies and personalised medicines that support our ongoing curriculum design.

### Customisation of Training Content

NIBRT continues to offer flexibility in course design and the ability to customise content is of key interest to our clients. NIBRT can work with training sponsors to refine both theoretical and practical content. This customisation affords our clients the ability to tailor course content to suit the needs of their trainees and wider company skills development objectives. This ensures that our training courses remain informative, stimulating and interactive for all trainees.

All our courses are designed to be competency-based to focus on the individual learning needs of the trainee so that they can attain the required level of competence to successfully develop their careers in their selected discipline.

### Delivery Options

NIBRT can provide training programmes online via our NIBRT Online Academy. In person classroom and practical training is provided at our site in Dublin, Ireland or via our global partners in USA, China, Australia, South Korea and Canada.

### NIBRT - A Global Leader

NIBRT is a global leader in the provision of biopharmaceutical manufacturing training with international established global partnerships in USA, China, Australia, South Korea and Canada. Our training curriculum and delivery options and new course offerings outlined in this catalogue shows the breadth of our offering and building on our success to date we look forward to further expanding our offering and client base in 2023.

*We look forward to welcoming you to a NIBRT training course in 2023.*



**John Milne PhD**  
NIBRT Training Director



## 02

# Which training programme should I choose?

**NIBRT provides a broad range of flexible training solutions to meet the diverse range of learning requirements of our clients.**

Please contact us at any time to discuss the most appropriate programme for you or your organisation.

Learning requirement	Recommended programme	Options*	Section
Bespoke training programmes that are customised to a Client's requirements	Customised courses	O, PT	5
Short classroom and practical courses (1-3 days) to provide deeper levels of understanding on a particular biopharma manufacturing topic	NIBRT short courses	O, PT	6,7
An online, introduction to a broad range of biopharma manufacturing topics	NIBRT Online Academy (NOA)	O, PT	8
Continuous Professional Development programmes	Certificate, Diploma, BSc and MSc options available	O, PT, A	9,10
Continuous Professional Development programmes: 90% funded	Springboard+	O,PT, A	11
Short courses and bespoke customised courses on advanced therapies including cell therapies, gene therapies, mRNA based medicines and novel vaccines.	Advanced Therapies	O, PT	13
Short courses and bespoke customised courses on Industry 4.0 technologies and how they can be implemented in biopharma manufacturing to drive sustainable operational efficiencies.	Biopharma 4.0	O, PT	12

\*Online options available (O); Part-time options available (PT), Accredited via Higher Education Institutes<sup>1</sup> (A).

## Contact NIBRT:

### General Training Enquiries

Email: [training@nibrt.ie](mailto:training@nibrt.ie)

Phone: +353 1 215 8100

Book a course directly: <https://www.nibrt.ie/training-and-education/training-courses/>

### NIBRT Online Academy (NOA) Enquiries

Email [admin.noa@nibrt.ie](mailto:admin.noa@nibrt.ie)

Phone + 353 1 215 8100

Book a course on website at: [noa.nibrt.ie](http://noa.nibrt.ie)

For more information, please visit our website at [www.nibrt.ie](http://www.nibrt.ie). Here you will find up-to-date information about course schedules, descriptions, registration, location and contact information.

<sup>1</sup> Quality and Qualifications Ireland <https://www.qqi.ie/>

# 03

## NIBRT Training Facilities

**The NIBRT training facility (6,500 m<sup>2</sup>) is a purpose-built, multi-functional building which replicates the most modern industrial bioprocessing facility.**

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 for both stainless steel and single use bioprocessing. These facilities are all operated in a realistic GMP simulated, operational manufacturing environment.

### Upstream

- ▶ Upstream aseptic processing and cell culture lab
- ▶ Cell culture analysis: Vi-CELL XR, YSI, Cedex HiRes, microscopes, NC-202 cell counter (Chemometec), Vi-CELL BLU and Kern digital light microscopes
- ▶ Inoculum Lab & Upstream Suite
- ▶ Bioreactors: 10L+20L Biostat Cultibags, 30L & 2x150L stainless steel, 200L single use STR, perfusion system, Capacitance probes (Aber)
- ▶ Harvest: disc stack centrifuge, stainless steel and single use depth filtration; 3M Zeta Plus + Pods (3M), Pall Stax, Millistak+ POD Millipore, DiscStar Bio SD, Panda Plus 2000 Laboratory Homogeniser, BioOptimal MF filters (Asahi Kasei)

### Cell and Gene Therapy

- ▶ Via Thaw, Sepax C-Pro, Xuri W25, Via Freeze (Cytiva)
- ▶ Sefia Cell processing system (Cytiva\*)
- ▶ Scale-X™ carbo system (Univercells Technologies)
- ▶ NantXL (VivaBioCell\*)



## Downstream

- ▶ Protein purification lab and downstream processing suite
- ▶ Bench top UF systems and pilot scale UF/DF automated systems
- ▶ 2 x automated process chromatography systems, automated column packing technologies including AxiChrom Master and column
- ▶ Viral Inactivation Vessels, Planova cellulose filters including gold particle testing set up, Planova filter 4m<sup>2</sup> (Asahi Kasei)
- ▶ 6 x Filter Integrity Testers from various vendors
- ▶ In Line Dilution Skid (Avantor)
- ▶ Pressure sensors and mobile diaphragm pump (MasterFlex)
- ▶ Endress and Hauser Automated Rig

## NIBRT-Cytiva Single Use Centre of Excellence

- ▶ Fully integrated biomanufacturing platform including Wave 25's, XDR-50 and XDR-200, ÄKTA Ready and Readyflux and associated single use technologies. (Cytiva)
- ▶ Quantum 600 Universal Pump (Watson Marlow)
- ▶ Xcellerex XDUO Single-Use Mixing System (Cytiva)
- ▶ XCell TM ATF6 system controller with SU ATF6 Device (Repligen)
- ▶ Terumo Sterile Connector tube welder and Terumo T-Seal Tube Sealer Sartorius BioWelder TC and BioSealer TC

## Fill Finish & Lyophilisation

- ▶ Vial Filling Machine under LAF and RABS
- ▶ Modular aseptic workstation with integral HPV Biodecontamination (Bioquell QUBE)
- ▶ Telstar Lyobeta 3PS Lyophilisation Technology
- ▶ Benchtop Lyobeta Mini lyophiliser
- ▶ Lyostat-5 freeze drying microscopy
- ▶ AFM 35 Cleanroom Fogger
- ▶ Mettler Toledo Differential Scanning Calorimeter
- ▶ **Coming Soon!** Syringe filling line with isolator technology

## Manufacturing Support & Utilities

- ▶ Buffer and Media preparation suites using both Stainless steel and disposable technologies
- ▶ Equipment preparation area including parts washer and autoclave, COP/SOP station, down flow booth preparation area
- ▶ Central clean utilities including highly purified water, clean steam, CIP system and clean air generating system
- ▶ Dirty Utilities including Biokill and Waste Neutralisation systems

## QC Micro & Bioanalytics Labs

Suite of analytical laboratories for environmental monitoring, sterility, raw material, drug substance and drug product testing training courses

### QC Analytics:

- ▶ Raw material testing - Mettler Toledo C20 Coulometric Karl Fischer Titrator
- ▶ Drug substance/drug product testing - Waters Acquity H Class Bio UPLCs, Beckman Coulter PA 800 plus CE, c-Technologies Solo VPE, qPCR QuantStudio5, Miltenyi MACSQuant 10 flow cytometer
- ▶ Laboratory management system training - LIMS/LES software (Orbis and Thermo Fischer)

### QC Micro:

- ▶ Particle Counters (Climet, Lighthouse, BioTrak APC 100LPM from PMT, MET ONE 3400+ series 100LPM)
- ▶ Active Air samplers (MAirT, AirIdeal 3P Air Sampler from Biomerieux, MAS-100 Air Samplers)
- ▶ Microscopy – Gram staining, phenotypic ID methods, Kern Digital Light Microscopes
- ▶ Bioburden testing – membrane filtration method (Millipore Oasis Bioburden systems)
- ▶ Rapid Sterility testing - BACT/Alert 3D System by Biomerieux
- ▶ Rapid Mycoplasma Testing-BioFire Rapid Mycoplasma Tester (Biomerieux)
- ▶ Endotoxin testing – Recombinant Factor C (rFc) method (Synergy HTX Endotoxin Plate Reader from Biomerieux, rapid Kinetic Chromogenic method (Charles River PTS)
- ▶ UV Torches for contamination checks (Ecolab)
- ▶ **Coming Soon!** DNA Sequencing for Microbial ID

### Emerson DeltaV Control Room

- ▶ 5 Thinclient operator stations
- ▶ DeltaV proplus station
- ▶ DeltaV Control Panel (S-series controllers & CHARMS I/O)

### Biopharma 4.0

- ▶ QC Lab of the Future: RFID Sample Identification, Dynamic Smart Scheduling (Binocs), AR-guided QC testing (Tulip)
- ▶ Evolved Upstream: Technical and behavioural VR training (Oculus Rift S, Oculus Quest 2), Big Data analytics, AR process performance and remote maintenance (Realwear HMT-1, Microsoft HoloLens), Axon Body cameras (Axon)
- ▶ QA Centre: Process Mining and Optimisation, Robotic Process Optimisation, Scheduling and Time Management

### Scale-up Systems

- ▶ Dynochem licenses (Dynochem)

*\*Equipment kindly donated to NIBRT in 2022 under partnership loan agreements.*

To explore an online virtual tour of our facilities, please click on <https://www.nibrt.ie/nibrt-virtual-tour/> or scan the following QR code.





# 04

## NIBRT Training Team

**NIBRT's training team has a broad range of industry and academic experience. See below for profiles of our team.**



**John Milne**  
**PhD**  
Director of Training



**Parbani Chaudhury**  
**BSc, BEd, MSc**  
Bioprocessing  
Trainer



**Paul Adams**  
**MSc**  
Senior  
Bioprocessing  
Trainer



**Kate Cotter**  
**PhD**  
Associate Director  
of Training



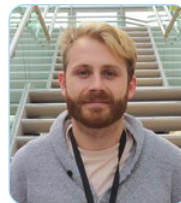
**Conor Barry**  
**BA (Mod)**  
Bioprocessing  
Technician



**Tadhg Devlin**  
**PhD**  
Bioprocessing  
Trainer



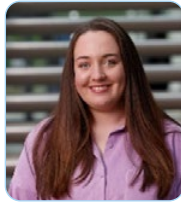
**James Berhanu**  
**BSc**  
Bioprocessing  
Trainer



**Daniel Downing**  
**BSc**  
Bioprocessing  
Trainer



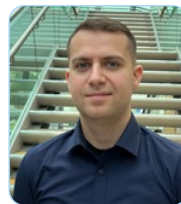
**Carl Bermingham**  
**MSc**  
Senior  
Bioprocessing  
Trainer



**Ciara Finn**  
**BSc**  
Bioprocessing  
Trainer



**Robert Byrne**  
**BSc**  
Senior  
Bioprocessing  
Trainer



**Ales Grundzi**  
**BSc, MSc**  
Bioprocessing  
Trainer



**Melissa Hoare**  
**PhD, PGDE**  
Senior Training  
Manager



**Dermot O'Sullivan**  
**PhD**  
Senior Bioprocessing  
Trainer



**Kevin Lomasney**  
**PhD**  
Bioprocessing  
Training Team  
Lead



**Adam Pritchard**  
**PhD**  
Bioprocessing  
Training Team Lead



**Stephen McCann**  
**MSc**  
Senior  
Bioprocessing  
Technician



**Hannah Rushe**  
**Phd**  
Bioprocessing  
Trainer



**Anita Murphy**  
**PhD**  
Bioprocessing  
Training Team  
Lead



**Dennis Shaw**  
**BSc, MSc**  
Bioprocessing  
Trainer



**Lisa Murphy**  
**BSc**  
Training  
Administrator



**Carlos Tamaray**  
**BSc**  
Bioprocessing  
Technician



**Mohamed Noor**  
**PhD**  
Digitalisation  
Manager



**Tadeusz Tazbierski**  
**MSc**  
Senior Bioprocessing  
Trainer



**Peter O'Byrne**  
**PhD**  
Bioprocessing  
Trainer



**Shada Warreth**  
**BSc, MSc, Dip.**  
**BsMgmPsyc**  
Senior Training  
Manager



**Aleksandra  
Ostropolska MA,  
CAPM**  
Online Training  
Specialist



**Hayden Wilkinson**  
**BSc, MSc**  
Bioprocessing  
Trainer

# 05

## Customised Courses

**NIBRT specialises in designing, developing, and delivering customised training programmes to meet the requirements of industrial clients.**

All aspects of the course can be customised in discussion with the client including:

### Customised Content

- ▶ We will develop and implement course content to your specifications in order to replicate how operations, processes and procedures are applied in your organisation.

### Customised Scheduling

- ▶ We can organise training courses to suit your business priorities and work schedules.

### Customised Delivery

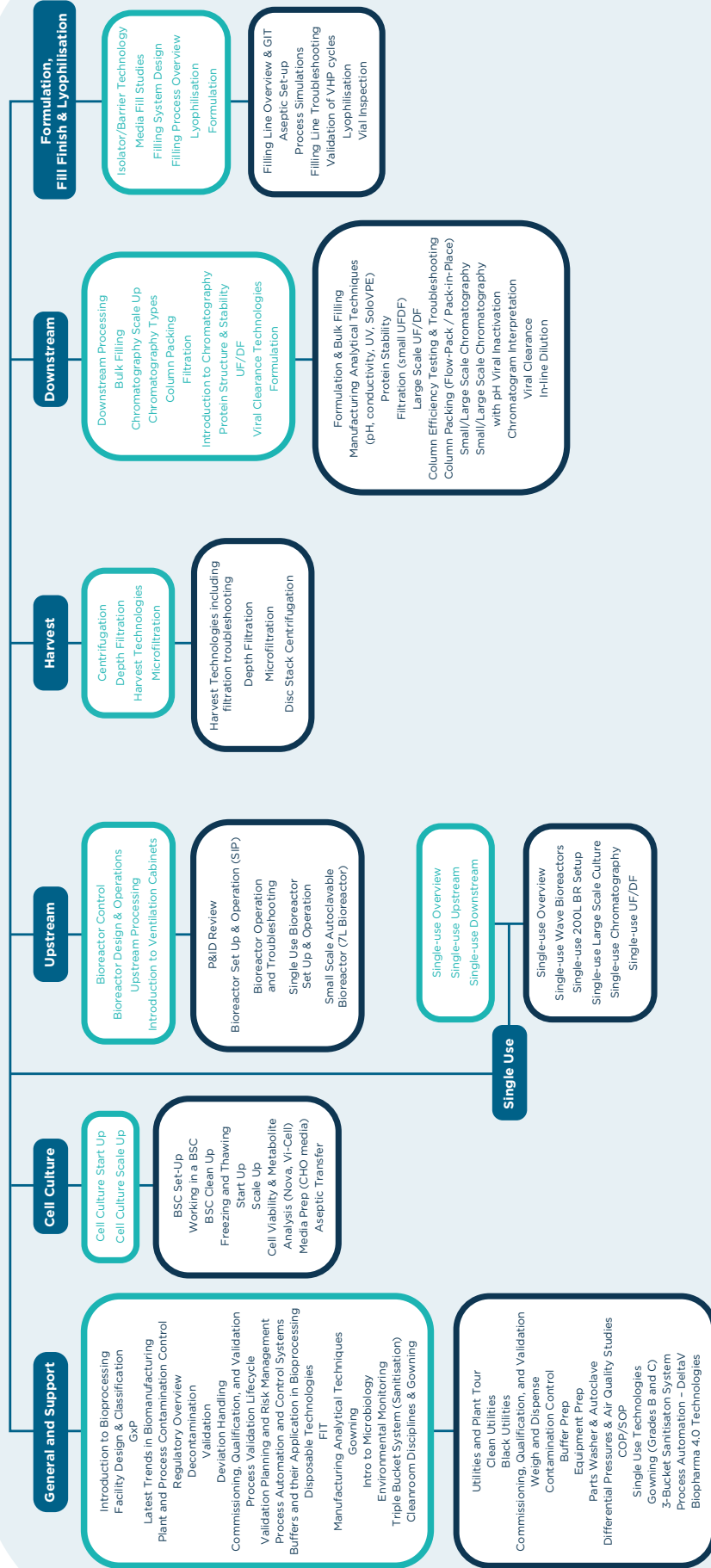
- ▶ NIBRT can deliver courses to clients via online learning, training at the NIBRT facility or by on-site visits if required.

The NIBRT training team will meet with clients to review and assess their training needs. Training courses will be developed based on the NIBRT curriculum. The curriculum diagrams in the following pages illustrate NIBRT's curriculum in biopharmaceutical manufacturing operations, quality control for biopharmaceuticals and new curriculum in cell and gene therapy and vaccine manufacture.



# Biopharmaceutical Manufacturing Curriculum

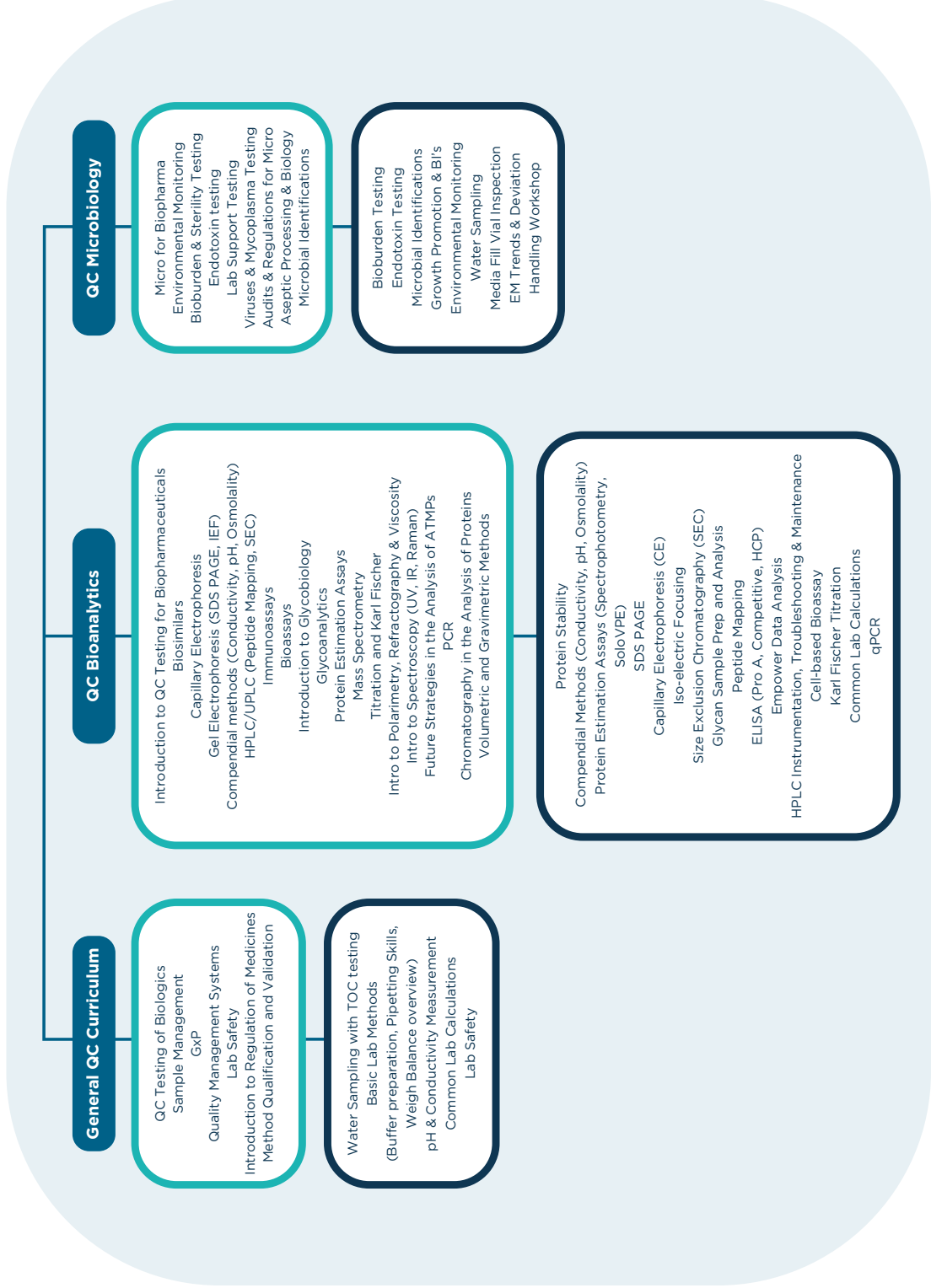
— Lectures  
— Practicals





# Quality Control Training Curriculum

Lectures  
Practicals



Lectures  
Practicals

# Cell and Gene Therapy and Vaccine Manufacturing Curriculum



## 06

Short  
Courses

**NIBRT's highly popular portfolio of short, intensive courses provides:**

- ▶ Access to state-of-the-art NIBRT facility and equipment for practical sessions
- ▶ Focus on the equipment and solutions to the real challenges you face in your own workplace
- ▶ Opportunities to share experiences with people from a variety of organisations
- ▶ Undisturbed time for training away from workplace interruptions
- ▶ Options for online and onsite courses available
- ▶ Options for live streaming of practical sessions available on request for groups of trainees who cannot travel to NIBRT

The current range of short courses for 2023\* is shown below:

Biopharma Manufacturing Operations	2023 Course Date
Upstream Processing Operations	<p><b>Course 1:</b> February 20-21 (Online Theory) February 27-28 (NIBRT Practicals)</p> <p><b>Course 2:</b> June 06-07 (Online Theory) June 13-14 (NIBRT Practicals)</p> <p><b>Course 3:</b> September 05-06 (Online Theory) September 12-13 (NIBRT Practicals)</p> <p><b>Course 4:</b> November 27-28 (Online Theory) December 04-05 (NIBRT Practicals)</p>
Downstream Processing Operations	<p><b>Course 1:</b> March 01-02 (NIBRT)</p> <p><b>Course 2:</b> June 15-16 (NIBRT)</p> <p><b>Course 3:</b> September 14-15 (NIBRT)</p> <p><b>Course 4:</b> December 06-07 (NIBRT)</p>

\*As dates are subject to change, please check [www.nibrt.ie](http://www.nibrt.ie) for the latest details.

Biopharma Manufacturing Operations	2023 Course Date
Fill Finish Operations	<p><b>Course 1:</b> March 13-14 (Online Theory) March 21-22 (NIBRT Practicals)</p> <p><b>Course 2:</b> September 11-12 (Online Theory) September 18-19 (NIBRT Practicals)</p> <p><b>Course 3:</b> December 06-07 (Online Theory) December 12-13 (NIBRT Practicals)</p>
Lyophilisation for Biopharmaceutical Fill-Finish Operations	<p><b>Course 1:</b> May 08-09 (NIBRT)</p> <p><b>Course 2:</b> September 07-08 (NIBRT)</p>
QC Micro Skills for Biopharma	<p><b>Course 1:</b> March 22-24 (Online Theory) March 28-29 (NIBRT Practicals)</p> <p><b>Course 2:</b> September 20-22 (Online Theory) September 26-27 (NIBRT Practicals)</p>
Navigating QC Testing for Biologics and Biosimilars	<p><b>Course 1:</b> April 17-19 (Online Theory) April 25-26 (NIBRT Practicals)</p> <p><b>Course 2:</b> September 04-06 (Online Theory) September 11-12 (NIBRT Practicals)</p>
Single Use Technologies in the Biopharmaceutical Industry	<p><b>Course 1:</b> May 29-30 (NIBRT)</p> <p><b>Course 2:</b> October 02 -03 (NIBRT)</p>
Introduction to Commissioning Qualification and Validation in Biopharmaceutical Production	<p><b>Course 1:</b> February 09 -10 (NIBRT)</p> <p><b>Course 2:</b> June 08-09 (NIBRT)</p> <p><b>Course 3:</b> October 05-06 (NIBRT)</p>



Advanced Therapies	2023 Course Date
Introduction to ATMPs/CGT	<p><b>Course 1:</b> March 02-03 (NIBRT)</p> <p><b>Course 2:</b> October 05-06 (NIBRT)</p>
Introduction to Cell Therapy	<p><b>Course 1:</b> May 08 (Online Theory) May 11-12 (NIBRT Practicals)</p>
Introduction to Gene Therapy	<p><b>Course 1:</b> January 30 (Online Theory) February 02-03 (NIBRT Practicals)</p>
Fundamentals of Vaccine Manufacture	<p><b>Course 1:</b> April 24-25 (Online Theory) May 03-05 (NIBRT Practicals)</p>

Biopharma 4.0	2023 Course Date
Introduction to Data Analytics for Biopharma Manufacturing	March 23-24 (NIBRT)
Advanced Data Analytics for Biopharma Manufacturing	April 24-26 (NIBRT)



## 07

Short Courses  
with NIBRT  
Partners

Company	Course Title	Dates
<b>Engineers Ireland</b>	An Introduction to Bioprocessing for Engineers (Delivered Online)	<b>Online Courses:</b> January 26 February 23 March 23 April 20 May 25 June 22 September 21 October 26 November 23
<b>Engineers Ireland</b>	Introduction to Biopharmaceutical Operations (Delivered Online)	April 17-21 Oct 09 - 13
<b>Inspired Pharma</b>	Pharmaceutical GMP Auditor/ Lead Auditor (Delivered onsite in NIBRT)	June 19 - 23
<b>STERIS</b>	Cleaning Validation Masterclass (Delivered onsite in NIBRT)	Q2 – Dates TBC
<b>ERA Sciences</b>	Course 1: Data Reliability and Integrity Course 2: Data Reliability and Risk Management Course 3: Data Reliability and Application Lifecycle Management (ALM) Course 4: Data Reliability and Stakeholder Management (All courses delivered onsite in NIBRT)  For a company specific course please contact: info@erasciences.com	Course 1 - February 8 Course 2 - February 9 Course 3 - February 13 Course 4 - February 14
<b>PRS</b>	Managing Asset Reliability: BioPharma Process Equipment with Pro-Reliability Solutions (Delivered onsite in NIBRT)	February 22 - 23

## 08

# NIBRT Online Academy (NOA)

[noa.nibrt.ie](http://noa.nibrt.ie)

**The NIBRT Online Academy (NOA) provides industry leading, eLearning courses on key aspects of biopharma manufacturing.**

NOA provides a quality, efficient and cost-effective training solution from a recognised global leader in biopharma training. NOA courses are accessed online ([noa.nibrt.ie](http://noa.nibrt.ie)) and users can complete the 45 – 60 minute modules at their own pace. Courses can be purchased individually through the NOA website or bought in bulk through NIBRT. New courses are added on an ongoing basis to ensure NOA provides the most current content to clients.

## General Overview

- ▶ Introduction to Quality Control Testing
- ▶ Trends in Biopharmaceutical Manufacture
- ▶ Cell Biology and Recombinant DNA Technology
- ▶ Overview of Biopharmaceutical Manufacturing
- ▶ Biotechnology and Biopharmaceuticals

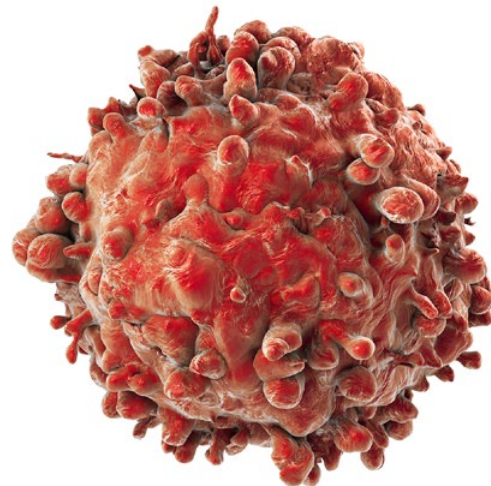
## Downstream Processing

- ▶ Downstream Processing: Centrifugation
- ▶ Downstream Processing: Ultrafiltration and Diafiltration
- ▶ Downstream Processing: Protein Purification – Chromatography

## Upstream Processing

- ▶ Cell Culture in Biopharmaceutical Manufacturing
- ▶ Upstream Processing: Bioreactors in Bioprocessing
- ▶ Fermentation in Biopharmaceutical Manufacturing
- ▶ Bioreactor Operations<sup>F</sup>

F - Free



### Formulation, Fill Finish and Aseptic Processing

- ▶ Cleanrooms and Cleanroom Behaviour
- ▶ Aseptic Processing: Gowning
- ▶ Aseptic Processing: Decontamination and Sterilization Technologies
- ▶ Aseptic Processing: Cleanrooms and Control Technologies
- ▶ Aseptic Processing: Contamination Control
- ▶ Aseptic Processing: Concepts and Controls
- ▶ Clean In Place
- ▶ Freeze Drying
- ▶ Formulation in the Biopharmaceutical Industry

### Quality Risk Management (QRM)

- ▶ Module 1:  
The Fundamentals of Effective Risk Management for Biopharmaceutical Manufacture
- ▶ Module 2:  
Fundamentals of Risk Management
- ▶ Module 3:  
Regulatory Requirements for Quality Risk Management in the Biopharmaceutical Industry
- ▶ Module 4:  
Implementing Effective Risk Control Strategies
- ▶ Module 5:  
Application of Quality Risk Management Every Day
- ▶ Module 6:  
Your Role in Preventing and Reducing Product and Patient Risk
- ▶ Assessment and Certification for Fundamentals of Effective Risk Management



### Facility Design and Utilities

- ▶ Process Validation 1: Process Design
- ▶ Process Validation 2: Process Qualification and Control
- ▶ Reliable Data Driving Business Resilience<sup>W,F</sup>

W - Webinar, F - Free

### Cytiva Catalogue

- ▶ Overview of the Biopharma Industry and Products
- ▶ Overview of Host Cells for Bioprocessing
- ▶ Understanding Upstream Bioprocessing
- ▶ Introduction to Preparative Protein Chromatography
- ▶ Advanced IEX Chromatography for Bioprocessing
- ▶ Advanced MM Chromatography for Bioprocessing
- ▶ Understanding Filtration in Bioprocessing
- ▶ Filtration Process Development
- ▶ Biomanufacturing Process Capability Requirements

### Cell and Gene Therapy

- ▶ Introduction to Cell Therapy
- ▶ Introduction to Gene Therapy



### Viral Vector Production for Gene Therapy

- ▶ Viral Vector Production for Gene Therapy: Introduction
- ▶ Viral Vector Production for Gene Therapy: Introduction and Upstream
- ▶ Viral Vector Production for Gene Therapy: Introduction and Downstream Purification & Filling
- ▶ Viral Vector Production for Gene Therapy: Introduction and Quality Control
- ▶ Viral Vector Production for Gene Therapy: Full Learning Plan

### Vaccine Manufacturing

- ▶ Introduction to Viruses<sup>F</sup>
- ▶ Introduction to Vaccine Manufacturing
- ▶ Vaccine and Immunity<sup>F</sup>
- ▶ Biomanufacturing of Next Generation Vaccines: Challenges and Opportunities<sup>W,F</sup>
- ▶ Plant-Based Biopharmaceuticals: Plant and Yeast Derived Malaria Vaccines<sup>WF</sup>
- ▶ Vaccine Development for COVID-19<sup>W,F</sup>
- ▶ Developing Vaccines for Shigella<sup>W,F</sup>

W - Webinar, F - Free

### Free Content and Webinars

- ▶ Journey to becoming a World Economic Forum (WEF) Global Sustainable Lighthouse<sup>W,F</sup>
- ▶ The Quantum Leap to GxP 4.0: E-Validation & Tech Transfer<sup>W,F</sup>
- ▶ The Quantum Leap to GxP 4.0: Labs of The Future<sup>W,F</sup>
- ▶ The Quantum Leap to GxP 4.0<sup>W,F</sup>
- ▶ Introduction to Gene Therapy Manufacturing<sup>W,F</sup>
- ▶ Introduction to Cell Therapy Manufacturing<sup>W,F</sup>
- ▶ Glycan Characterisation<sup>W,F</sup>
- ▶ The Essential I4.0 Technologies to Assist with Manufacturing in the New C19 Reality<sup>W,F</sup>
- ▶ Inoculum and Cell Culture Virtual Reality Beta Version<sup>F</sup>
- ▶ Good Handwashing Technique<sup>F</sup>

W - Webinar, F - Free

### Coming Soon

- ▶ Single Use Courses
- ▶ Lyophilisation Courses

# Testimonials

“ The courses are relevant and very instructive, confirming knowledge gained over many years in the Cell Culture industry, and re-focusing my ideas. ”

**Jo Hanley, Global Customer Services training leader, Cytiva**

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“ I undertook “Bioreactor Operations” course in April 2020. I was extremely impressed with the course due to its informative content, visuals and extensive explanations. “Bioreactor Operations” is a suitable course for somebody still in college or current industry professionals working in biotechnology. NIBRT have an extremely impressive teaching methodology, providing a great level of detail on each of their courses. The course provides an easy-to-navigate platform and gives extensive details in relation to general Bioreactor Operations. This is one of many courses I have undertaken with NIBRT, and they continue to impress with their well-structured, creative, and informative courses; I look forward to learning more from NIBRT. ”

**Paul Branigan, Consultant Validation Engineer, Alexion Pharmaceuticals**

“ I have been in IT for over 30 years and dedicated to Lab IT for the past 12, and so when we decided to look for world-class training my first thought was NIBRT. NIBRT is unique in its facilities and approach and that’s why we are here. ”

**Neil Whitworth, Director of Lab Support Services, Zifo R&D Solutions**

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“ My name is Tatjana Lozic, and I am working for a radiopharmaceutical company based in Dublin. Due to the whole situation with COVID, we used NIBRT NOA Academy for webinars. Aseptic process training via NOA Academy was really useful to us. Aseptic processing overview and contamination provide us with new information through interactive and interesting videos. Tests after each section are an interesting part as you need to be focused during videos. The certificate that you will get at the end is always a good addition to your resume. I would recommend to everyone who wants to get better knowledge about aseptic processing. It will help you in your future work. ”

**Tatjana Lozic, Quality & Projects Associate, M2 7 Limited**



## 09

MSc  
Programmes

**NIBRT is pleased to partner with Irish universities to provide a range of MSc programmes.**

These MSc programmes include options to study online, full-time or part-time:

#### MSc in Biopharmaceutical Science

<b>Description:</b>	This post-graduate programme in biopharmaceutical science aims to provide students with a comprehensive grounding in critical aspects of biopharmaceutical processing and their support services.
<b>Duration:</b>	A part-time programme delivered by online learning which can be completed in a 2 – 3 year timeframe.
<b>Accrediting body:</b>	ATU (Level 9 90 credits)



#### MSc in Biopharmaceutical Processing (by research)

<b>Description:</b>	This MSc in Biopharmaceutical Processing involves study of the discovery, development and processing of biopharmaceutical drug products. Students complete a range of online modules that have been designed in conjunction with the biopharmaceutical industry, while also completing a significant research project in an applied biopharma area.
<b>Duration:</b>	A part-time programme delivered by online learning which can be completed in a 2 – 3 year timeframe.
<b>Accrediting body:</b>	ATU (Level 9 90 credits)



#### M.Eng.Sc. in Biopharmaceutical Engineering

<b>Description:</b>	This advanced postgraduate degree programme offers a combination of lectures, tutorials, practical sessions and project work delivered by university and industry experts.
<b>Duration:</b>	The full time programme is completed in one year, and part-time programme can be completed in a 2 – 3 year timeframe.
<b>Accrediting body:</b>	University College Dublin (Level 9 90 credits)



**MSc in Bioprocess Engineering**

<b>Description:</b>	The MSc is an interactive and dynamic programme that will develop students' knowledge and appreciation of the conceptual and factual basis for bioprocess design and operation.
<b>Duration:</b>	The programme is offered on a one year full-time basis, and up to four year part-time basis.
<b>Accrediting body:</b>	Dublin City University (Level 9 90 credits)

**MSc in Biopharmaceutical Technology**

<b>Description:</b>	Conceived in response to increasing job opportunities within Ireland's biopharmaceutical sector, the MSc in Biopharmaceutical Technology builds on biotechnology expertise and industry links that have been developed over the past 20 years and includes classes and laboratory sessions at AIT, site visits to local biopharmaceutical plants and guest lectures delivered by people at the cutting edge of the biopharmaceutical industry, in addition to students receiving practical training at the National Institute for Bioprocessing Research & Training (NIBRT) in Dublin.
<b>Duration:</b>	One year full time.
<b>Accrediting body:</b>	Technological University of the Shannon (TUS) (Level 9 90 credits)

**M.Eng.Sc. Pharmaceutical & Biopharmaceutical Engineering**

<b>Description:</b>	The M.Eng.Sc. in Pharmaceutical and Biopharmaceutical Engineering is a part-time modular degree where students have the opportunity to gain a formal qualification in areas of particular topical interest to the bio/pharmaceutical industry. The programme is designed to allow students to upskill their competence for these important industrial sectors, including issues such as product containment, powder/particle technology, design of API and secondary production facilities, current Good Manufacturing Practice (cGMP), design of classified facilities, aseptic processing facility design, utilities and services, data analysis and process validation.
<b>Duration:</b>	This part-time programme can be completed in a 2 - 5 year timeframe.
<b>Accrediting body:</b>	UCC

**MSc Immunotherapeutics**

<b>Description:</b>	The MSc in Immunotherapeutics in the School of Biochemistry & Immunology is a new, innovative and multidisciplinary 90 ECTS 1 year full time masters programme specifically designed for biological, medical, dentistry, engineering and veterinary graduates who wish to enter the pharmaceutical industry.
<b>Duration:</b>	One year full time.
<b>Accrediting body:</b>	Trinity College Dublin (Level 9 90 credits)



Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin

## 10


Academic  
Programmes

**NIBRT's major award programmes are delivered by online learning techniques.**

These programmes are accredited by various academic institutes, with hands-on practical training in the NIBRT biopharmaceutical training facility.


### B.Sc (Hons) in Biopharmaceutical Science

<b>Description:</b>	This graduate programme in Biopharmaceutical Science aims to provide students with a comprehensive understanding of the critical aspects of Biopharmaceutical Processing and Support Services, with specific focus on the product lifecycle of Biological products and associated processes.
<b>Duration:</b>	2 years part-time
<b>Accrediting body:</b>	ATU (Level 8 60 credits)



### B.Sc in Biopharmaceutical Science

<b>Description:</b>	This programme in Biopharmaceutical Science aims to provide students with the knowledge, know-how, training and practical experience to enable them to gain employment in the Biopharmaceutical or Biomedical industries.
<b>Duration:</b>	2 years part-time
<b>Accrediting body:</b>	ATU (Level 7 60 credits)



Programme Title	Level	ECTS Credits*
Certificate in Bioindustry 4.0	9	30
Certificate in Biopharmaceutical Science	9	30
Certificate in Biopharmaceutical Processing	9	30
Certificate in Bioanalytical Techniques	9	10
Certificate in Commissioning, Qualification and Validation for Biologics	9	30
Certificate in Biopharmaceutical Science	8	30
Certificate in Bioprocessing Technologies	8	30
Certificate in Biopharmaceutical Processing	7	30
Certificate in Bioprocess Engineering	7	30
Certificate in Biopharmaceutical Processing	6	30
Certificate in Aseptic Biopharma Operations	6	30

\*European Credit Transfer System (ECTS).



# 11

# Springboard+



Springboard+ is co-funded by the Government of Ireland and the European Union.



Rialtas na hÉireann  
Government of Ireland

HEA | HIGHER EDUCATION AUTHORITY  
AN EUIDARÁS UM AFD-OIDEACHÁS

## What is Springboard+?

Springboard+ is an upskilling initiative in higher education which offers courses at certificate, degree and masters level leading to qualifications in areas where there are employment opportunities in the economy.

Springboard+ is co-funded by the Government of Ireland, via the National Training Fund, and the European Union.

Human Capital Initiative Pillar 1 is funded by the National Training Fund.

## How much does the programme cost?

- ▶ Courses are free for unemployed jobseekers.
- ▶ For employed participants on courses NFQ L7 – L9, 90% of the course fee will be funded, with participants required to contribute just 10% of the programme fee.

## NIBRT and Springboard+

NIBRT's Springboard+ programmes are designed in conjunction with the biopharmaceutical industry and aim to provide participants with the knowledge and skills required to become part of the biopharmaceutical and biotechnology workforce.

- ▶ NIBRT Springboard+ graduates have a strong track record of obtaining employment in the biopharmaceutical sector.
- ▶ All lectures are delivered online to provide a flexible learning environment, while practical placements in NIBRT's award-winning pilot plant facility provide candidates with the practical skills and experience required by industry.
- ▶ Modules in career support and development are provided.
- ▶ Instructors have extensive experience in training in the biopharmaceutical industry.

## What courses are available?

Springboard+ 2022/2023 courses	Duration	Level
Certificate in Bio-Industry 4.0	9 months	9
Postgraduate Diploma in Validation Technology	18 months	9
Certificate in CQV	9 months	9
Certificate in Biopharmaceutical Science	9 months	8
Certificate in Biopharmaceutical Processing	9 months	7
Certificate in Bioprocess Engineering	9 months	7
Certificate in Aseptic Biopharmaceutical Operations	9 months	6
Certificate in Biopharmaceutical Processing - <b>Starting in January 2023</b>	9 months	6

\*European Credit Transfer System (ECTS).

## Application Process

All applications can be made on [www.springboardcourses.ie](http://www.springboardcourses.ie).

Please contact [springboard@nibrt.ie](mailto:springboard@nibrt.ie) with any queries you may have.

# 12

## Biopharma 4.0

**How can Industry 4.0 technologies be implemented in biopharma manufacturing to drive sustainable operational efficiencies? What digital technologies will deliver quantifiable improvements? How can manufacturing and lab teams be upskilled in core digital transformation skills?**

To help address these and other key client questions, NIBRT is pleased to offer a range of programmes focused on digital transformation of biopharma manufacturing.

### Biopharma 4.0 Strategic Workshop with Boston Consulting Group (BCG)

These customised workshops are designed for senior leaders to help develop and optimise their digital manufacturing strategies. The workshops are jointly delivered by NIBRT and BCG and based in the Innovation Centre of Operations (ICO) at NIBRT. The ICO provides a testbed for a wide range of 4.0 technologies and their application to use cases in biopharma manufacturing. Workshops are customised to meet a client's particular requirements but would typically include current trends in digital transformation, case studies, assessment of 4.0 technologies (such as mixed reality and data analytics) which have been deployed in the ICO.

### Introduction to Data Analytics for Biopharma Manufacturing

A two-day course focused on the application of basic statistics and visualisation in biopharma manufacturing. Suitable for trainees with no or limited mathematical/statistical background, including manufacturing specialists, lab staff, process scientists and IT professionals.

Day	Morning	Afternoon	Date
1	Introduction to statistics, the concept of probabilities and measures of central tendency, normal distribution, outlier identification	<b>Practical:</b> Data summarisation from a bioprocess	March 23-24
2	Effective visualisation for discrete and continuous data	<b>Practical:</b> Continuation – generating various visuals for reporting	



## Advanced Data Analytics for Biopharma Manufacturing

A three-day course designed to build on the introductory course. Suitable for trainees with a good basic statistical knowledge, including process and quality control scientists.

Day	Morning	Afternoon	Date
1	<p>Reproducibility in data science: Infrastructure, documentation, and version control (Git)</p> <p>Linear and non-linear regression: Combining chemistry and bioprocess knowledge with statistical modelling, pitfalls of relying solely on single metrics</p>	<p><b>Practical:</b> Data analysis for stability testing and cell culture/purification</p>	April 24-26
2	<p>Design of Experiments: Benefits of DoE over one-factor-at-a-time (OFAT) experiments, types of DoE designs, continued integration of process knowledge for DoE</p>	<p><b>Practical:</b> Designing an experiment for cell culture/purification</p>	
3	<p>Statistical Process Control (SPC): Control charts and process capability</p>	<p><b>Practical:</b> Trending of manufacturing and quality control data</p>	

## Customised programmes on Biopharma 4.0

NIBRT also provides customised courses for clients which can include the following topics:

### Masterclass on project management (CRISP-DM) and AGILE framework

Trainees will be familiarised to these frameworks that differ from the traditional waterfall approach, whereby they capture the iterative nature of data analytics with multiple cycles of exploratory data analysis, model building and deployment.

### Principles of machine learning

Introduces non-experts to machine learning and will be suitable for scientists and managers across various departments including manufacturing, IT, and supply chain.

### Multivariate statistics for biopharma with in-process data

This module builds on the Advanced Data Analytics for Biopharma Manufacturing course by incorporating advanced statistical techniques, such as principal components analysis (PCA) and partial least squares (PLS) for dimensionality reduction. Familiarity with basic statistics is required.

### Electronic batch record (EBR) and eForms

Familiarises trainees on user requirement specification and proof-of-concept deployment, followed by hands-on design through process mapping, instrument set up and QA review.

### Advanced process control for biomanufacturing

With a focus on advanced mathematical-based real-time process control, this module is suitable for trainees with an understanding of MES systems and intermediate mathematical/statistical skills.

### Application of extended reality in biopharma operation

Provides trainees with an overview of virtual, augmented, and mixed reality for biopharma with a discussion on GxP elements for deployment for training and operation. Suitable for operators, lab scientists and IT managers.

## Instructors



### **Mohamed Noor, PhD**

Currently the Digitalisation Manager at NIBRT, Mohamed has qualifications in both biochemistry (PhD) and data science (HDip). His career spans industry-funded research through partnership with COOK Medical as well as process development at Janssen Sciences and Regeneron. At NIBRT, he helps clients in their digital transformation journey through customised training while providing exposure to various technologies for manufacturing, quality control and supply chain.



### **Colin Clarke, PhD**

Dr. Clarke is a Principal Investigator at NIBRT. He graduated with a PhD in Bioinformatics from Cranfield University, UK, and specialises in the application of multivariate statistics and machine learning algorithms to high dimensional data. Dr Clarke's bioinformatics group is currently focused on further understanding of the CHO cell biological system using next generation sequencing and advanced computational techniques.



# 13

## Advanced Therapies

**NIBRT is developing a suite of new courses for advanced therapies including cell therapies, gene therapies, mRNA based medicines and novel vaccines.**

NIBRT is also pleased to offer the following NOA e-learning modules on advanced therapies:

### NIBRT Online Academy

#### Course Description

- ▶ e-Learning courses available from NIBRT Online Academy [noa.nibr.ie](http://noa.nibr.ie)
- ▶ Introduction to Cell Therapy
- ▶ Introduction to Gene Therapy
- ▶ Viral Vector Manufacturing

### NIBRT Short Courses

Advanced Therapies	2023 Course Date
Introduction to ATMPs/CGT	<p><b>Course 1:</b> March 02-03 (NIBRT)</p> <p><b>Course 2:</b> October 05-06 (NIBRT)</p>
Introduction to Cell Therapy	<p><b>Course 1:</b> May 08 (Online Theory) May 11-12 (NIBRT Practicals)</p>
Introduction to Gene Therapy	<p><b>Course 1:</b> January 30 (Online Theory) February 02-03 (NIBRT Practicals)</p>
Fundamentals of Vaccine Manufacture	<p><b>Course 1:</b> April 24-25 (Online Theory) May 03-05 (NIBRT Practicals)</p>





## Coming in Q2 2023

NIBRT has commenced the construction of an expansion to the existing NIBRT facility.

This expansion will provide additional capability for the delivery of training programs supporting our new curriculum in Advanced Therapy Medicinal Products (ATMP) and vaccines with accompanying new laboratory space for our Research teams.

Our developing ATMP training curriculum will encompass a blended approach of theory and practical sessions related to the manufacturing of cell & gene therapies and vaccines.

A key focus of our offering to our clients in this exciting area will be on the delivery of competency-based hands-on practical sessions utilising best-in-class equipment and facilities.



# 14

## NIBRT Global Partners Programme

**The NIBRT Global Partner Programme supports an international alliance of leading training and education organisations to help address the global shortage of a skilled biopharma workforce.**

### **Jefferson Institute for Bioprocessing, Philadelphia, USA**



In the spring of 2019, Jefferson officially opened the doors to the first - and only - specialized education and training institute for biopharmaceutical processing in North America that combines commercial single-use processing equipment with the internationally recognized NIBRT curriculum.

The focus of JIB is hands-on training of industry professionals through short-term trainings, certificates and hands-on education of new bioprocessing engineers and scientists at both undergraduate and graduate levels. The education and training programs in bioprocessing are anchored at the new state-of-the-art JIB facility, located minutes from Philadelphia, PA.

The institute is focused on biomanufacturing and dedicated to education and industry-based research that translates advances in the life sciences into emerging therapeutics that benefit humanity.

#### **Training Courses**

JIB understands the critical need to rapidly develop and advance the skills and knowledge of scientists, engineers and technicians who work in process development and biomanufacturing of biopharmaceuticals and biologics. They provide a broad-range of trainings in commercial single-use processing equipment as well as customized trainings to meet the full needs of the industry. Through its 25,000 sq. ft. fully flexible state-of-the-art facility, JIB provides a truly tactile training experience by combining interactive presentations, workshops, hands-on laboratory and pilot-scale experience.

*The Jefferson Institute for Bioprocessing*





### Academic Offerings

Offering both an MS in Biopharmaceutical Process Engineering and a Graduate Certificate in Biopharmaceutical Process Development (BPD Certificate), JIB is ideal for employment-focused graduates with first degrees in Life Sciences and Engineering.

Training and education in biopharmaceutical processing are exceptionally laboratory intensive. At JIB, the students spend less time in traditional classroom settings and more time in JIB's pilot-scale facility, fully equipped with the most advanced technologies and processes used by industry to manufacture biopharmaceuticals.

#### Industry Course Offerings

- ▶ Upstream and Downstream Operations Scale Up/Scale Down
- ▶ Quality and Regulatory Compliance Continuous Bioprocessing
- ▶ Single Use Technologies
- ▶ Quality by Design and Design of Experiments
- ▶ Process Modeling and Process Integration
- ▶ Analytical Methods and Applications
- ▶ Process Tech Transfer, Qualification, and Validation
- ▶ Aseptic Process and Cleaning Operations

### More Information

For Trainings: Parviz Shamlou at [parviz.shamlou@jefferson.edu](mailto:parviz.shamlou@jefferson.edu)

For academic Programs Contact:  
Geoff Toner  
Email: [Geoffrey.Toner@jefferson.edu](mailto:Geoffrey.Toner@jefferson.edu)  
Email: [Jefferson.edu/JIB](mailto:Jefferson.edu/JIB)

## University of Technology, Sydney, Australia



An alliance agreement between University of Technology Sydney (UTS) and NIBRT to deliver selected NIBRT courses utilising the purpose built \$11.5m UTS Biologics Innovation Facility (BIF) launched in July 2019.

The UTS Biologics operation, designed for practical vocational and professional training, is a strategic investment between UTS and the NSW Government aimed at building a future workforce with high quality transferable STEM skills for the biopharma industry. Key stakeholders include the federal Government through the National Collaborative Research Infrastructure Strategy and global biopharma company Cytiva.

BIF replicates the NIBRT's Irish facility including separate teaching and process spaces and a full range of single-use upstream and downstream equipment, giving operators and technicians training opportunities ranging from fundamental sterile production techniques to complex biomanufacturing processes in a GMP environment.

The University of Technology, Sydney is in the southern part of Sydney's CBD near Central Station, which is only a 20-minute train ride from Sydney Airport.

#### NIBRT courses at UTS

- ▶ Introduction to Single Use Technologies
- ▶ Bioprocessing for Engineers
- ▶ Introduction to Upstream Processing Operations
- ▶ Introduction to Downstream Processing Operations
- ▶ Introduction to Fill Finish Operations

### More Information

For more information on the capabilities of the UTS Biologics Innovation Facility [www.uts.edu.au/bif](http://www.uts.edu.au/bif) or contact [biologicsinnovationfacility@uts.edu.au](mailto:biologicsinnovationfacility@uts.edu.au)



*Biologics Innovation Facility at University of Technology, Sydney*

## Bioprocess Research and Training Academy, Guangzhou, China

Launched in March 2020, the Bioprocess Research and Training Academy Guangzhou (BRTAG) is a Chinese Government funded GMP bioprocessing facility equipped with cutting-edge single use technology from Cytiva. BRTAG has joined NIBRT's global partnership programme to deliver localized NIBRT training courses in the Guangdong-Hong Kong- Macao Greater Bay Area, an active economic area in southern China attracting millions of high-tech talents as well as 10,000+ thriving biological companies. BRTAG provides both theoretical and practical biomanufacturing training, devoted to cultivating high-end talents with in-depth perspectives of China's bio-industry and global pharma.

Key partners include Guangzhou Development District (GDD), China's top 3 development district, and Cytiva, one of the Fortune 500. BRTAG is located in the International Bio Island and operated by a subsidiary of Guangzhou Hi-tech Investment Group (GHIC), under the administration of GDD. BRTAG is proud to be the first NIBRT partner in the Great China area and provides a bioprocess training facility with a full range of single-use upstream and downstream equipment, offering trainees hands-on practice opportunities ranging from fundamental aseptic skills to complex biomanufacturing and bioprocessing procedures in a GMP environment.

### More Information

For more information of the BRTAG, please contact [gtc@bio-island.com](mailto:gtc@bio-island.com)



*Downstream processing suite at Guangzhou Bioprocess Academy*

## Canadian Alliance for Skills and Training in Life Sciences (CASTL)

The Canadian Alliance for Skills and Training in Life Sciences offers industry-informed programming, where learners gain knowledge and training valued by today's bioscience industry, and companies get access to career-ready talent.

CASTL addresses the talent needs in bioscience, a sector of national importance as exemplified by the Government of Canada's Health and Bioscience Economic Strategy Table, that identified skills and talent as a fundamental gap for the future prosperity of the sector.

CASTL deliver NIBRT's training designed specifically for the biopharmaceutical sector in Canada within CASTL's three learning streams: New Skilling, Reskilling and Upskilling.

As part of this partnership, CASTL will have access to NIBRT curriculum, collaborate on curriculum design, access new courses, and partner on the development of a new Canadian biopharmaceutical skills and training centre.

CASTL offers multiple applied learning streams for individuals to acquire the academic knowledge, and technical and professional skills to have a successful career in life sciences.



## Korean NIBRT (K-NIBRT)



### K-NIBRT, Incheon, South Korea

In August 2021, NIBRT was pleased to announce the signing of an agreement with Korea Ministry of Health and Welfare (Minister Kwon, Deok-Cheol), Korea Health Industry Development Institute (President Kwon, Soon-man) and Yonsei University (President Seo, Seoung Hwan) for the inclusion of the NIBRT training and education programme in the Korean- NIBRT (K-NIBRT) project.

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



The K-NIBRT facility is scheduled to open in 2024 with the goal of establishing industry leading biopharmaceutical manufacturing training in the Asia-Pacific region. Before the official opening of the K-NIBRT facility, training programmes have commenced at Yonsei University's International Campus from September 2021.



# 15

## Case Study 1



### About Zifo

Zifo, with 1200+ employees, is a global service provider specialising in scientific informatics. Zifo works across Research, development, clinical and manufacturing domains while always remaining true to their scientific roots. Zifo have expertise in over 90 partner technologies, support 7 of the top 10 pharma globally and have expertise across virtually every instrument vendor worldwide.

### What Training did NIBRT Provide to Zifo?

NIBRT developed a customised bioprocessing training programme to provide Zifo IT specialists with a fundamental understanding of the biopharma manufacturing environment and associated equipment.

Trainees will complete a comprehensive training program through NIBRT’s Online Academy (NOA) before being immersed in the bioprocessing environment at NIBRT’s facility in Ireland.

Zifo R&D Solutions will use the training as a key pillar in their personal development strategy for their global technical support specialists.



### How did participants rate training at NIBRT?

How do you rate the facility?



How do you rate the trainers?



How do you rate the overall quality of the course?



### Training Feedback

*“At Zifo we have always believed that when our people are well trained, they not only produce higher quality results the first-time round for our customers, but also the process of self-improvement helps us to feel better about ourselves and our ability to take on daily challenges. It’s a simple equation – by developing our people we have happier people.”*

*“But it’s not all about results – We know that Lab is our customer’s passion and life and so we feel that when we invest in teaching our people the core concepts of their business then we are telling our customers that we care.”*

*“I have been in IT for over 30 years and dedicated to Lab IT for the past 12, and so when we decided to look for world-class training my first thought was NIBRT. NIBRT is unique in its facilities and approach and that’s why we are here.”*

**Neil Whitworth** - Director of Lab Support Services at Zifo.

### What did trainees say about NIBRT?

*“I would recommend it highly. It helps me communicate with the scientists where I work”.*

**Clarissa Pompey**

*“Having the chance to look at the science side of the systems is hugely valuable”.*

**Daniel Cochrane**

*“The most valuable thing I picked up was the scientist mind-set. Understanding this is critical”.*

**Josh Chand**

# Case Study 2



## About Wuxi Biologics

WuXi Biologics is a leading global biologics CRDMO (Contract Research, Development and Manufacturing Organisation) offering end-to-end solutions which enable partners to discover, develop and manufacture biologics from concept to commercial manufacturing for the benefit of patients worldwide.



### What training has NIBRT provided to WuXi Biologics?

NIBRT has delivered a number of customised training courses to WuXi Biologics staff over the last two years, both online and onsite in NIBRT. Courses have included manufacturing from inoculum through to upstream and downstream processing to highly customised courses in Quality Control.

The attendees interviewed for the purpose of this case study work in downstream processing. The course was delivered in online lectures for 3 days followed by 3 days practical study at NIBRT. These practicals were carried out in NIBRT's pilot plant and lab facility with sessions customised to WuXi Biologics processes and unit operations.

### How did participants rate training at NIBRT?

Overall course experience average rating 9/10



Respondents rated our trainers 9/10 or above



Respondents would very likely recommend this course to a friend



### What did trainees say about NIBRT?

*"The training today was great. It was great to see the equipment first hand and get the experience from it because I am normally more theory and desk based".*

**Caoimhe Duffy** - Bioprocess Associate, WuXi Biologics

*"I would definitely recommend the downstream processing course in NIBRT as it gives very in depth practical and theoretical knowledge of the downstream process".*

**James Downey** - Bioprocess Associate, WuXi Biologics

*"As a Finite Scheduler and new to the business of biopharma it is going to benefit me in learning different parts of the process and how the process actually works".*

**Ross Halpin** - Finite Scheduler, WuXi Biologics



# Case Study 3



## About Astellas

Astellas is at the forefront of healthcare change in turning innovative science into value for patients. The Astellas business philosophy is to “Contribute towards improving the health of people around the world through the provision of innovative and reliable pharmaceutical products”.

### What training has NIBRT provided to Astellas?

NIBRT have a strong relationship with Astellas, working together on training courses for over 10 years. NIBRT have delivered training to Astellas online, onsite in NIBRT and onsite at Astellas. NIBRT were delighted to develop a two-day course for the Astellas Graduate programme delivered in June 2022 that this case study is based on.

Over the two days, this course delivered theoretical sessions in the classroom in NIBRT on the core unit operations of the biopharmaceutical manufacturing process from upstream to downstream to fill finish. Each theoretical session was complemented by a hands-on practical training of the equipment in these areas.

### How did participants rate training at NIBRT?

Percentage of trainees that rated our trainers as excellent



Percentage of trainees that were very likely to recommend this course to a friend



Percentage of trainees that were very satisfied with the overall training experience at NIBRT



### What did trainees say about NIBRT?

*“Taking time away from the office is important for training because it gives an insight into different areas in STEM. In Astellas we would not see a lot of the areas we are seeing here”.*

**Christine Collins** - Quality Control Chemist Graduate

*“This work will benefit me in the work that I do. I would definitely recommend the NIBRT course. What stood out me was the fact that all the speakers had great expertise and subject knowledge and were able to answer any questions we had”.*

**Kevin Byrnes** - QA Operations Specialist

*“I would definitely recommend the NIBRT course. It goes deep into the detail on the biopharmaceutical industry especially biopharmaceutical products ranging from the function of the biopharmaceutical product to the structure and how it is produced in industry”.*

**Aaron Cosgrave** - Quality Control Chemist Graduate

# 16 | Testimonials

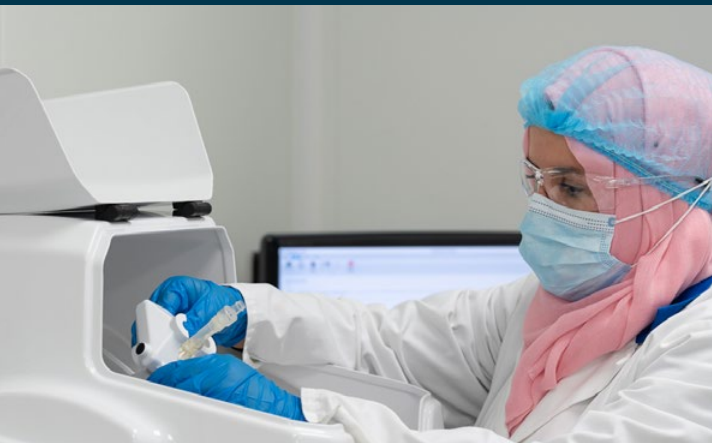
**“** On behalf of all my colleagues at PSG Dover, I want to extend my heartfelt gratitude for your generous hospitality and exquisite training this past week. We all learnt a tremendous amount, owing it entirely to your expertise, dedication, and patience. I will certainly recommend that our company, PSG Dover, continue to send our employees for the worthwhile experience!”

**Christopher Walsh VP**  
Marketing & Engineering, PSG Dover



**“** I have had a fantastic few days with the NIBRT training team looking at single use technologies in the upstream/downstream processes. Having hands-on experience with the equipment of our customer's really strengthens our knowledge. The training was excellent and the passionate and devoted staff really made it fun and engaging.”

**Andy Rogers**  
PureSU Engineer at Bio Pure Technology



**“** This course will benefit me in the work that I do. I would definitely recommend the NIBRT course. What stood out to me was the fact that all the speakers had great expertise and subject knowledge and were able to answer any questions we had.”

**Kevin Byrnes**  
QA Operations Specialist, Astellas

**“** I would just like to thank NIBRT for the assistance and tutoring provided during the L6 biopharmaceutical processing course. This has helped me secure a Senior Bioprocessing Associate role in a biopharmaceutical company in my home town, which is of great benefit to me. The assistance provided throughout the course was greatly appreciated, without the knowledge passed on through the course, this would not have been possible.

**Student**  
L6 Cert in Biopharmaceutical Processing

**“** The training today was great. It was great to see the equipment first hand and get the experience from it because I am normally more theory and desk based.”

**Caoimhe Duffy**  
Bioprocess Associate, WuXi Biologics



**“** What a great week last week at NIBRT National Institute for Bioprocessing Research and Training. NIBRT provided excellent demonstrations and practicals in their state-of-the-art training facility which were excellently delivered by highly qualified trainers.”

**Conor Cahill**

Bioprocessing Scientist at MeiraGTx



**“** “I decided to enrol in the NIBRT/IT Sligo L6 Biopharmaceutical Process course to develop my understanding in this technology area. I chose a NIBRT course due to their reputation. The Industry in Ireland and across the globe is changing rapidly, with a shift from small molecule pharmaceuticals to large molecule biopharmaceuticals and I believe it is important to stay current and relevant. After completing the L6 course, I decided to progress to a L9 taught masters, which I am current doing and finding very rewarding. Upskilling and obtaining a biopharmaceuticals mindset and skills ahead of a potential pharmaceutical shrinkage is definitely a good thing, as most of the non-technical skills are transferable. Courses like this put Ireland in a better position to continue to lead in the biopharmaceutical area well into the future.”

**Dr. Giuseppe Whelan**

Manufacturing Science and Technology, Sustainability Head at GSK

**“** NIBRT consistently deliver quality in their training provision and the Introduction to ATMPs/CGT course is no exception. The course is delivered in a comprehensible way, and all topics are covered with explanations and examples that ensure clarity and understanding. Both the classroom and laboratory learning facilities are exceptional, as is the opportunity to get hands on experience of the ATMP/CGT manufacturing process.”

**Linda Nugent**

Tandem Project Management



**“** Thoroughly enjoyed both learning experiences provided by NIBRT, the classroom trainers clearly are expertise in their field, the pace of remote training was great with lots of opportunities for questions or clarifications.”

**Maria Ginnelly**

Snr Process Specialist at MSD



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# Outreach and Engagement

**Public engagement is key to develop the biopharma workforce of the future.**

NIBRT works closely with a wide variety of stakeholders to increase awareness of biopharma among students, teachers, and members of the public through a number of initiatives.

▶ **Amgen's School of Biotech Excellence**

Amgen Biotech Experience (ABE) is an innovative science education programme that empowers teachers to bring biotechnology into their classrooms. ABE-Ireland offers training in molecular biology experiments for secondary school teachers to bring back to their students.

NIBRT is an integral part of this initiative, inviting teachers to experience hands on the NIBRT pilot plant, meet the NIBRT trainers and learn about the various biopharma technology, processes and equipment.

NIBRT also conducts sessions with the teachers on the various career opportunities and educational courses available to their students.

▶ **NIBRT's Biopharmaceutical Science Transition Year Competition**

Each year NIBRT runs a national competition to provide secondary school transition year students with an opportunity to experience what it is like to study biopharmaceuticals and work in this life changing industry. The five-day placement in NIBRT gives students the opportunity to experience the state-of-the-art bioprocessing facilities and learn from scientists and engineers working in the research and training teams.

▶ **Careers in Biopharma**

In April 2022, NIBRT held its largest Careers in Biopharma event with over 25 companies and 900 registrants. The event featured hundreds of high skilled career opportunities in biopharma manufacturing sites across Ireland.



NIBRT Careers Day 2023



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## Awards

**NIBRT is pleased to have won a wide selection of national and international awards for its training and education programmes including:**



- 2022** HR Leadership & Management Awards: Best Flexible Working Strategy

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- 2022** Pharma Industry Awards: HR Achievement Award

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- 2021** Pharma Industry Awards: Partnership Alliance of the Year Award for the NIBRT Global Partners Programme

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- 2020** Pharma Industry Awards: Innovation of the Year Award for the NIBRT Online Academy

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- 2020** Pharma Industry Awards: Project of the Year Award for the Biopharma 4.0 project with BCG

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- 2020** Pharma Industry Awards: Partnership Alliance of the Year Award for NIBRT and MSD Dunboyne Biologics Training Collaboration

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- 2019** Invest in Ireland Staff Upskilling Award with Takeda Dunboyne Biologics

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- 2019** Pharma Industry Awards: Project of the Year Award with Siemens

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- 2018** Pharma Industry Awards: Pharma Research Centre of the Year

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- 2017** SFI Industry Partnership Award

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- 2017** Postgraduate Course of the Year Award in Health Sciences

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- 2017** Pharma Industry Awards: Partnership Alliance of the Year with GE Healthcare

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- 2016** Pharma Industry Awards: Pharma Education and Training Award

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- 2015** Pharma Industry Awards: Pharma Education and Training Award

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- 2015** Pharma Industry Awards: Partnership Alliance of the Year with Bristol Myers Squibb

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- 2012** ISPE Facility of the Year Award “Novel Collaboration”

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- 2012** Bioprocess International “Manufacturing Collaboration of the Decade” Award





▶ Emily Whitehead the first child in the world to have her immune system activated to fight cancer, visits NIBRT



▶ Leo Varadkar, Tánaiste and Minister for Enterprise, Trade and Employment, officially launches NIBRT ATMP construction extension



▶ Visit to NIBRT by our Korean global partner, K-NIBRT, in July 2022



▶ UCD School of Chemical and Bioprocess Engineering announce course collaboration with NIBRT



▶ Watson Marlow staff at a customised training course at NIBRT



▶ Students on NIBRT transition year programme 2022



▶ NIBRT Careers Fair 2022 in association with The Campus Cherrywood



▶ NIBRT went Back to the Future of Healthcare in the Road to Ireland series by Pharma's Almanac



▶ NIBRT partnered with Zifo R&D Solutions to offer a customised bioprocessing training program for IT specialists in the biotech industry

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# Coming soon in 2023

## Events

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- ▶ NIBRT Research conference 2023, Q2 2023 Date TBC
- ▶ Careers in Biopharma, 1st April 2023

## Equipment

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New filling line and barrier system from SP Industries. This state-of-the-art filling line will operate within an ESCO Isolator and feature components to enable filling for syringes, vials and cartridges and also including manual debagging, including ORAB'S + Glove Ports, semi-automatic denesting, closing machine for vials.

## New courses on the NIBRT Online Academy

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- ▶ Biopharma 4.0
- ▶ Single Use Systems in Biopharma Manufacturing
- ▶ Lyophilisation for Biopharma Manufacturing

## Opening of Advanced Therapies extension at NIBRT, Q2 2023

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The 1,800m<sup>2</sup> extension will provide additional capability for the delivery of training programs supporting our new curriculum in Advanced Therapy Medicinal Products (ATMP) with accompanying new laboratory space for our research teams.

Our developing ATMP training curriculum will encompass a blended approach of theory and practical sessions related to the manufacturing of cell & gene therapies and vaccines.

A key focus of our offering to our clients in this exciting area will be on the delivery of competency-based hands-on practical sessions utilising best-in-class equipment and facilities.





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## Contact Us

### Training Team

Book a course directly via

[www.nibrt.ie/training-and-education](http://www.nibrt.ie/training-and-education)

Email training team at [training@nibrt.ie](mailto:training@nibrt.ie)

Call training team at **+353 1 215 8100**

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### NIBRT Online Academy (NOA)

Enrol on a NOA course directly at

[noa.nibrt.ie](http://noa.nibrt.ie)

Email NOA team at [admin.noa@nibrt.ie](mailto:admin.noa@nibrt.ie)

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### Further Information

For more information, please visit our website at:

[www.nibrt.ie](http://www.nibrt.ie)

Here you will find up-to-date information about course schedules, descriptions, registration, location and contact information.

Please sign up to our NIBRT newsletter to receive updates throughout 2023

[www.nibrt.ie/contact](http://www.nibrt.ie/contact)

### Visit NIBRT

Clients are very welcome to visit us at:

**National Institute for Bioprocessing Research and Training (NIBRT), Foster Avenue, Mount Merrion, Blackrock, Co. Dublin, Ireland, A94 X099.**

Web: [www.nibrt.ie](http://www.nibrt.ie)

Phone: **+353 (0) 1 215 8100**

Email: [training@nibrt.ie](mailto:training@nibrt.ie)





# Notes

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