On-Demand Catalogue

BioHubNet
Transformative Talent Development

60+ short courses

- 100% self-paced e-learning modules + assessments
- Single sign-on access to training content from multiple training partners and progress tracking through the BioHubNet Portal
- 100 Training Credits each

"One-Stop Shop": Access courses from multiple training partners

CASTL (NIBRT): CASTL on-demand courses were developed by NIBRT, which is an award-winning bioprocessing research and training delivery organization based in Ireland. The interactive, self-paced courses from CASTL (NIBRT) focus on key biopharma manufacturing topics such as upstream bioprocessing, downstream bioprocessing, cleanroom best practices, etc.

Talent Accelerator: Life Sciences Talent Accelerator program was a collaboration between BioTalent Canada, Toronto Metropolitan University, Life Sciences Ontario, Mississauga Board of Trade, Sheridan College and City of Mississauga. These expert-led lectures provide learners with insights into product development processes, business practices, regulations and careers within Canada's Life Sciences industry.

BioTalent Canada: BioTalent Canada is a national non-profit organization that serves as a catalyst for growth in Canada's bioeconomy. The interactive, self-paced courses from BioTalent Canada focus on key compliance and technical knowledge required when entering the industrial workforce.

CANTRAIN: CANTRAIN is a national clinical trials training platform. CANTRAIN's courses are part of its Common Core Foundation Program. These self-paced courses offer a comprehensive, flexible, and accessible training pathway covering the full foundations of clinical trials, supporting both growth and gap-filling at any stage.

All on-demand courses on BioHubNet are developed by subject-matter experts, aligned with current industry standards, and internally vetted by BioHubNet for relevance and high level of engagement

Course	Learning Outcomes	
Topic: Industry Fundamentals (GxPs)		
Quality Management [Talent Accelerator]	• Discuss the need for robust quality management systems • Recall Drug Establishment Licensing requirements • Understand GxPs (GCP, GLP, GDP, GPP).	 60 min
Scientific Report Writing Fundamentals [BioTalent Canada]	Recognize scientific reports that contribute to: • Good Laboratory Practice (GLP) • Good Manufacturing Practice (GMP) • Good Clinical Practice (GCP) • Quality Assurance and Quality Control (QA/QC)	 60 min
Good Laboratory Practice (GLP) Fundamentals [BioTalent Canada]	Apply GLP in your laboratory activities, including how to: • Complete a laboratory book • Use equipment • Use materials • Follow standard operating procedures (SOPs)	 60 min
Good Manufacturing Practice (GMP) Fundamentals [BioTalent Canada]	Apply GMP throughout production, including how to: • Follow standard operating procedures (SOPs) • Meet quality control (QC) requirements • Run a successful investigation • Promote workplace health and safety	 120 min
Quality Assurance / Quality Control (QA/QC) Fundamentals [BioTalent Canada]	Apply QA/QC in your workplace, including: • The differences between QA and QC • How to follow standard operating procedures (SOPs) • What a quality management system looks like • How to follow health and safety best practices	 120 min
Good Clinical Practice (GCP) Fundamentals [BioTalent Canada]	Apply GCP across all your research activities, including how to: • Align with the basics of GCP • Apply the basics of clinical research • Prepare and maintain required documents • Follow standard operating procedures (SOPs)	 120 min
Topic: Sector/Technology Overview		
Biologics: From Bench to Clinic [Talent Accelerator]	• Understand the definition of biologics, its importance, and subcategories • Identify steps involved in the manufacturing process • Understand process development methodology • Gain an overview of the analytical techniques in mAB production • Understand the concept of quality by design • Identify career growth opportunities	 60 min
Overview of the Canadian Life Sciences Industry (Life Sciences 101) [Talent Accelerator]	• Identify steps in the development cycle of life sciences products and typical timelines for each stage • Gain an understanding of regulatory processes and review • Gain an understanding of the business side the life science industry	 60 min
New Vaccine and CMC Development [Talent Accelerator]	• Outline the process of developing new vaccines • Understand Chemistry Manufacturing and Control (CMC) development strategy at different phases for new vaccines (Phase I, Phase II, Phase III, etc)	 60 min

Course	Learning Outcomes	
Small Molecule Development [Talent Accelerator]	• Identify what are small molecule medications • Define terms such as Active Pharmaceutical Ingredients (API), Finished Dosage Forms (FDF), etc • Understand key elements of drug discovery and drug development, as well as drug product quality control and regulation	60 min
Introduction to Cell Therapy [CASTL]	• Define the concept of cell therapy • Discuss the difference between allogeneic and autologous therapies • Explain the manufacturing difficulties that currently exist • Discuss the various classes of therapy e.g. cellular immunotherapy and stem cell therapy • Describe how modification of cells is performed for therapeutic purposes • Understand how the industry may change to facilitate a growing market	60 min
Introduction to Gene Therapy [CASTL]	• Define the concept of gene therapy. To discuss the process by which genetic modification can alleviate disease • Explain the major classes of viral vectors that can be used to deliver gene therapies • List the typical manufacturing processes associated with viral vector manufacture • Discuss the concept of gene editing utilising nucleases • Understand the difficulties associated with some current manufacturing processes and how these may be optimised in future	60 min
Overview of the Biopharma Industry and Products [CASTL]	• Identify different types of biotherapeutics • Recognize different drug development phases and the role of global and national regulatory agencies	60 min
AI in Life Sciences [Talent Accelerator]	• Identify current industrial applications of AI • Identify industry opportunities and challenges • Understand responsible use of AI - safety, security, privacy, ethics and bias	60 min
Introduction to Cybersecurity in Life Sciences [Talent Accelerator]	• Understand foundational concepts and areas of focus in relation to cybersecurity • Identify best practices in cybersecurity • Identify career opportunities and career paths in cybersecurity • Understand popular and important resources related to the cybersecurity industry	60 min
Topic: Biomanufacturing (General)		
SUT: The Application of Single-Use Technologies in Biopharmaceutical Manufacturing [CASTL]	• Define and describe what single-use technology and single-use systems are • List advantages and risks associated with using single-use technologies • Identify how single-use technologies are implemented throughout the upstream, harvest, and downstream bioprocess • Explain the future potential of single-use technologies in upstream and downstream processing • List challenges companies face when implementing single-use technologies	60 min
Introduction to Vaccine Manufacturing [CASTL]	• Discuss the current demand for vaccines, the challenges in producing them, and the evolution of vaccine types throughout history. • Understand common approaches to the manufacture of different vaccine types using a variety of starting materials • Understand new trends and technologies that will impact the future discovery, development, and manufacture of vaccines • Gain an insight into the research of vaccines for an increasing number of health concerns.	60 min

Course	Learning Outcomes	
Trends in Biopharmaceutical Manufacture [CASTL]	• Obtain an overview of some of the drivers of change in biopharmaceutical processing • Receive a description of the technologies and concepts that are facilitating this change • Gain an understanding of how facilities and processes may look in the coming years	60 min
Cleanrooms and Cleanroom Behaviour [CASTL]	• Define the term 'cleanroom' • Describe the difference between controlled areas and critical areas • Describe the types of contamination that can be found in a cleanroom • Describe why people are the biggest source of contamination in a cleanroom • Explain the risk of contamination from personnel working in a cleanroom • List best practices when working in a cleanroom	60 min
Biomanufacturing Process Capability Requirements [CASTL]	• Understand the role of quality by design as per ICH guidelines in bioprocess development • Describe the different stages in biologics production • Describe strategies used to prevent product and process-related impurities	60 min
Topic: Biomanufacturing (Upstream Processing/Downstream Processing)		
Understanding Upstream Bioprocessing [CASTL]	• Understand underlying principles of good process design in upstream biomanufacturing • Understand the concept of kinetic modeling • Identify variables for bioreactor optimization • Discuss available methods and strategies to improve growth and limit cell death	60 min
Bioreactor Operations [CASTL]	• Explain the fundamental design features of a mammalian cell culture bioreactor • Describe the critical parameters that may require control in a typical cell culture process • Describe the process considerations associated with cell culture scale-up using bioreactors • Discuss the effect of bioreactor control on other disparate parameters • Distinguish between batch, fed-batch and continuous modes of bioreactor operation	90 min
Overview of Host Cells for Bioprocessing [CASTL]	• Describe the features and limitations of microbial, mammalian, insect and plant host cells • Discuss factors to consider when selecting host cells for protein expression • Understand current trends in the use of host cells	60 min
Understanding Filtration in Bioprocessing [CASTL]	• Understand the mechanisms of action, classification of filters, process set-up, process parameters, maintenance, and applications for the different filtration modes • Identify the correct type of filter for your intended application	60 min
Filtration Process Development [CASTL]	• Understand key considerations for design and scale-up of an effective filtration process	60 min

Course	Learning Outcomes		
Introduction to Preparative Protein Chromatography [CASTL]	• Familiarize yourself with different types of columns and stationary phases • understand types of chromatographic techniques like affinity and size exclusion chromatography.		60 min
Advanced IEX Chromatography for Bioprocessing [CASTL]	• Understand separation principle and the role of pH, reasons for success, and challenges of IEX chromatography • Discuss the versatility of IEX, with industrial application examples in downstream purification • Discuss productivity and future of IEX in bioprocessing • Identify the critical and key process parameters for optimization of IEX chromatography using high-throughput process development (HTPD) techniques		60 min
Advanced MM Chromatography for Bioprocessing [CASTL]	• Understand interaction principles, success factors, and challenges of MM chromatography • Discuss industrial application examples of MM chromatography in downstream purification • Discuss productivity and economic considerations of using MM chromatography in bioprocessing • Identify the critical and key process parameters for optimization of MM chromatography using high-throughput process development (HTPD) techniques		60 min
Topic: Quality Control/Quality Assurance			
Good Manufacturing Practices (GMP) for Quality Control [Talent Accelerator]	• Understand Good Manufacturing Practices (GMPs) in Quality Control • Understand how GMPs relate to Quality Control • Describe relevant regulatory findings and observations in Quality Control		45 min
Quality Assurance [Talent Accelerator]	• Understand how QC/QA is conducted • Understand environmental monitoring (EM)/sterility assurance • Understand equipment/process qualification (Installation qualification (IQ), operational qualification (OQ), performance qualification (PQ)) • Understand Standard Operating Procedure (SOP) writing and management, and biosafety standards through Public Health Agency Canada		120 min
Introduction to Quality Control Testing [CASTL]	• Describe the importance of quality control testing • Define the framework of basic testing requirements of a biopharmaceutical drug • Describe routine analytical test methods		45 min
QRM Module 1: The Fundamentals of Effective Risk Management for Biopharmaceutical Manufacture [CASTL]	• Understand the following “Knowing, Doing, Being” learning objectives • Knowing: Understand what is meant by biopharmaceutical product risk, be able to explain the importance of examining risk through the lens of the patient • Doing: Be able to identify and classify different types of product risk. Be able to identify the key stakeholders and explain why the patient comes first • Being: Embrace the importance of a proactive risk culture		45 min

Course	Learning Outcomes	
QRM Module 2: Fundamentals of Risk Management [CASTL]	• Understand the following "Knowing, Doing, Being" learning objectives • Knowing: Gain clarity on the core Risk Management concepts. Know the distinction between the management of risk and the assessment of risk. Understand the impact of human bias on decision-making • Doing: Be able to complete a risk ranking and a risk scoring exercise and perform rudimentary data analysis for estimating probabilities. Identify appropriate strategies to reduce the influence of bias on Risk Management outcomes • Being: Be OK with saying, "I don't know the answer to that question". Be curious. Be transparent and brave when contributing to a Risk Management activity.	  120 min
QRM Module 3: Regulatory Requirements for Quality Risk Management in the Biopharmaceutical Industry [CASTL]	• Understand the following "Knowing, Doing, Being" learning objectives • Knowing: Know the current Risk Management regulations for biopharmaceutical manufacture. Be aware of what the regulators are looking for in your Risk Management programs and practices. Understand the connection between the GMPs and Risk Management • Doing: Identify the core frameworks from the relevant regulations (e.g. ICH Q9, ISO 14971, WHO TRS 981). Distinguish between formal and informal risk management tools • Being: Practice the behaviors necessary to meet and exceed the minimum compliance requirements. Confidently contribute to risk management activities	  120 min
QRM Module 4: Implementing Effective Risk Control Strategies [CASTL]	• Understand the following "Knowing, Doing, Being" learning objectives • Knowing: Be clear on what the "State of Control" means. Describe what a Product Control Strategy is. Gain further clarity about integration across the Risk Control Lifecycle • Doing: Actively engage in structured risk planning. Critically evaluate the effectiveness of current risk controls. Be able to access publicly available sources of risk control failures • Being: Be Confident. Be Curious. Communicate	  120 min
QRM Module 5: Application of Quality Risk Management Every Day [CASTL]	• Understand the following "Knowing, Doing, Being" learning objectives • Knowing: Have an opportunity to review worked examples of everyday QRM examples. Participate in a Validation Risk Management Scenario • Doing: Be able to select appropriate actions or tools for a range of given risk events • Being: Describe the importance of involving individuals with a diverse range of skills and perspectives. Demonstrate the importance of maintaining vigilance and personal accountability	  120 min
Module 6: Your Role in Preventing and Reducing Product and Patient Risk [CASTL]	• Understand the following "Knowing, Doing, Being" learning objectives • Knowing: Understand that Risk Management is everyone's job. • Doing: Practice risk awareness and risk curiosity everyday. • Being: Demonstrate by your actions that you appreciate the fact that your individual actions may either uncover or contribute to a risk event.	  120 min
Assessment and Certification for Fundamentals of Effective Risk Management [CASTL]	Assessment only (to be completed after fully engaging with Modules 1-6)	

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Topic: Clinical Trials		
Drug Discovery and Development Process [CANTRAIN]	• Identify the major milestones in the history of drug discovery and development. • Identify the different types of therapeutic compounds. • Identify stages of the drug discovery and development process. • Identify challenges of drug discovery and development.	 45 min
Ethics and Informed Consent [CANTRAIN]	• Identify the purpose and principles of informed consent • Identify the essential elements of the consent process • Identify special circumstances in informed consent.	 45 min
Participant Recruitment [CANTRAIN]	• Identify the process for recruiting the target population of the study • Identify participant recruitment strategies and considerations • Identify approaches to enhance participant engagement and retention	 45 min
Participant Safety and Adverse Events [CANTRAIN]	• Identify how participant safety is maintained through adverse event monitoring • Identify the methods for detecting, assessing and classifying adverse events • Identify the guidance surrounding adverse event reporting in clinical trials	 45 min
Study Oversight and Monitoring [CANTRAIN]	• Identify the importance of study oversight and monitoring in clinical trials • Identify the roles and responsibilities in study oversight and monitoring • Identify the different types of monitoring visits and their purpose	 45 min
Data Management in Clinical Research [CANTRAIN]	• Identify general concepts regarding data management in the context of clinical research • Identify steps in the clinical data management process • Identify data privacy and storage requirements in clinical research	 45 min
The Clinical Trial Protocol [CANTRAIN]	• Identify the importance of the clinical trial protocol • Identify the sections and characteristics of a well-designed clinical trial protocol • Identify important considerations related to clinical trial protocols.	 45 min
Role and Responsibilities in Clinical Research [CANTRAIN]	• Identify key players in the governance and conduct of clinical trials • Identify the roles and responsibilities of the site clinical investigation team • Identify the concepts of task delegation and scope of practice	 45 min
Patient Engagement in Research [CANTRAIN]	• Identify the foundational concepts underlying patient engagement in research • Identify guiding principles and implications for engaging patients in research • Identify the importance of fostering patient engagement in research despite barriers	 45 min
Good Documentation Practices [CANTRAIN]	• Identify Good Documentation Practices and their rationale • Identify the ALCOA+ principles • Identify best practices for recording data in clinical trial setting	 45 min

Course	Learning Outcomes	
ICH Guidance E6(R2) GCP (International Council for Harmonisation-Good Clinical Practice) [CANTRAIN]	• Identify the principles of GCP in the conduct of research involving humans. • Recognize the roles and responsibilities of the investigator, sponsor, research ethics board, and research team members before, during, and after study. • Recognize key best practises in clinical research and some of the common tools to help achieve compliance.	60 min
Health Canada, Part C, Division 5 of the Food and Drug Regulations [CANTRAIN]	• Identify the regulatory process for authorization of the use of drugs in human clinical trials, including applications and amendments. • Identify the sponsors responsibilities in terms of good clinical practise. • Recognize the requirements for the proper handling of drugs, including labels, records, and storage. • Identify the process for reporting serious unexpected adverse drug reactions during a clinical trial. • Identify the process for ending a clinical trial early, including by the sponsor or health Canada.	45 min
Tri-Council Policy Statement-Ethical Conduct for Research Involving Humans TCPS 2 (2022) [CANTRAIN]	• Recognize the importance and role played by the tri-council policy statement (TCPS 2) as a set of ethical guidelines for research involving human participants. • Identify the three core principles on which TCPS 2 is based and their appropriate application depending on the context. • Recognize the specificities of monitoring and management of ethics review processes in research. • Identify the principles for ethically managing conflict of interest. • Recognize the ethical and operational approach for research involving indigenous peoples.	60 min
Topic: Regulatory Affairs		
Government Relations [Talent Accelerator]	• Understand the relationship between the life sciences sector and the government • Understand the role of the main governmental institutions or organizations • Identify three key functional areas in which life science companies interact with public authorities • Describe the type of interactions with government representatives	60 min
Regulatory Affairs [Talent Accelerator]	• Define what is Regulatory Affairs (RA) and the roles and responsibilities of regulatory agencies • Understand Canada-specific CMC requirements • Understand the concept of GMP (good manufacturing practices), and the importance of quality control and quality assurance • Understand requirements for product labelling, pharmacovigilance and safety reporting	60 min
Topic: Business and Commercialization		
Commercial and Business Operations [Talent Accelerator]	• Understand how business analytics is applied across the value chain • Understand business terms such as competitive intelligence (CI) and market research (MR), basic and advanced strategic forecasting, market assessment and sizing, sales force effectiveness (SFE) and incentive compensation (IC)	60 min

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Pharmaceutical Sales [Talent Accelerator]	• Identify the pharmaceutical product life cycle and stages • Understand the role and responsibilities of a pharmaceutical sales representative • Appreciate the evolving landscape of pharmaceutical sales and future considerations		 60 min
Product Management [Talent Accelerator]	• Understand what product management is • Identify key functions in product management for life sciences sector		 60 min
Project Management [Talent Accelerator]	• Identify differences in drug development process for patented medicines versus generics • Understand the role of project managers		 60 min
Topic: Career Insights and Professional Development			
Careers in Life Science [Talent Accelerator]	• Understand the general organization structure of pharmaceutical companies • Identify roles, career path & key skills in different areas such as commercial, medical, R&D, regulatory, market access and government affairs		 60 min
Company Profile: Apotex [Talent Accelerator]	•Understand how different departments function and what type of roles are available		 60 min
Company Profile: Eurofins CDMO Alphora [Talent Accelerator]	•Understand how different departments function and what type of roles are available		 60 min
Company Profile: Microbix [Talent Accelerator]	•Understand how different departments function and what type of roles are available		 60 min
Medical Writing [Talent Accelerator]	• Differentiate between medical writing and scientific writing • Differentiate between regulatory writing and medical communications • Understand the role of medical writers, and skills and qualifications required • Understand the importance of Good Publication Practices.		 60 min
Essential Roles in Life Sciences Commercialization [Talent Accelerator]	• Understand Sales, Marketing and Market Access functions within the life sciences sector. • Identify potential career paths in life sciences commercialization		 60 min

 Assessments/Knowledge Checks

 Time for completion (estimated)