

Elevate Your Expertise

with our 2018 Biopharmaceutical and Pharmaceutical courses



M Lab™
Collaboration
Centers

Training. It's mission critical to ensuring process efficiency and current GMP compliance. Choosing a trusted, quality training program is essential. Our instructors have trained more than 10,000 people and are real world scientists and engineers who work on applications daily, overcoming the same challenges that face the industry today.

We support the continuous implementation of new technology and practices, as well as changes in regulatory guidelines. Our programs are hosted at our state-of-the-art M Lab™ Collaboration Centers or at your facility and encompass the entire process from upstream and downstream to formulation and final fill.

	Dachstein, France	Molsheim, France	Darmstadt, Germany	Mannheim, Germany	Waterford, Ireland	Burlington, USA	Bangalore, India	Mumbai, India	Shanghai, China	HsinChu, Taiwan	Tokyo, Japan	Singapore	Songdo, Korea
Upstream Processing													
TRUPSTREAM Continuous and Intensified Processing in Upstream Cell Culture						Sep 25-27							
ITRIUSP1 Upstream I										Mar 13 Sep 5			
ITRIUSP2 Upstream II										Sep 6			
Normal Flow Filtration													
ITRINFF1 Introduction to Normal Flow Filtration										Apr 16 Sep 11			
TRADVNF Operate Normal Flow Filtration													Oct 18-19
TRONFF1 Operate Normal Flow Filtration Process Equipment (Higher Certificate)										May 15-16 Aug 15-16		Apr 25-26 Nov 13-14	
TRNFF02 Optimize Normal Flow Filtration Processes									Jun 21-22 Nov 22-23	Jul 3-4			
Tangential Flow Filtration													
ITRITFF1 Introduction to Tangential Flow Filtration										Apr 16 Sep 11			
TROTFF1 Operate Tangential Flow Filtration Process Equipment (Higher Certificate)										May 24-25		Oct 30-31	
TRTFF02 Operator Certification for Tangential Flow Filtration Module Maintenance									Apr 17-18 Aug 23-24		May 24-25		
TRTFF03 Optimization and Scale-up of Tangential Flow Filtration (TFF) Applications	Jan 17-18 Apr 17-18	Nov 6-7							Apr 19-20 Sep 20-21	Aug 6-7	Aug 23-24	Oct 25-26	May 16-17
TRTFF04-SP Optimization, Implementation and Scale Up of Single Pass Tangential Flow Filtration						Jun 12							
TRTFF04-HC Optimization, Implementation and Scale Up of High Concentration Tangential Flow Filtration						Jun 13							
TRTFF04-UF Optimization and Implementation of Open Ultrafiltration and Microfiltration Processes						Jun 14							
TFFSCHOOL How to Operate Tangential Flow Filtration (TFF) Process Equipment							Jan 30-31 Jul 17-18						
Automatic Filter Integrity Testing													
TRAUOPCER Operator Certification for Automatic Filter Integrity Testing	Mar 13-14				May 30-31	Mar 28-29 Oct 24-25			Mar 22-23 Jul 19-20	Jul 26-27 Oct 17-18			
MT001D Operator Certification for Automatic Filter Integrity Testing											TBD		
Virus Filtration													
TRVIRFILT Virus Filtration Process Development and Validation: Best Practices	Apr 10-11												
Aseptic Processing													
TRAPVALID Understanding Regulation of Aseptic Processing and Filtration Applications		Dec 5											
AFVSCHOOL Aseptic Filter Validation Study							Feb 13-14 Aug 2-3						
Sterility Testing													
TSSEMINO1 Perform Sterility Testing (Higher Certificate)										Nov 2		May 30-31 Dec 5-6	
EMSEMINO1 Environmental monitoring School										Jul 6			
Formulation													
PCS-OCT Power up your formulation VI. Formulation & Regulatory Workshop - Wet granulation and direct compression								Mar 2-3	Aug 24-25 Oct 25-26				
PCS-OCT Power up your formulation - Enhancement of bioavailability - Oral sustained release formulations								May 18-19 Aug 30-31 Nov 22-23					
PCS-ICT Power up your formulation (customized out of several modules)			Jun 20-22 Sep 26-28										
Chromatography													
ITRICHROM Basic Chromatography										Apr 17 Sep 12			
TRCHROPCE Operator Certification for Pilot and Process Chromatography Column Packing									Aug 24-25 Oct 25-26				
MANNHEIM01 Purification of Biomolecules: Method development and scale-up of ion exchange chromatography				Sep 10-12									
MANNHEIM02 Purification of mAbs and related proteins: Chromatographic methods, strategies and optimization				Sep 3-5									
TROCPE1 Operate Chromatography Process Equipment (Higher Certificate)												May 21-22	
TROPCHR02 Optimize Chromatography Purification Processes (Advanced Certificate)												May 10-11 Nov 21-22	
Single-use Technologies													
ITRINFF2 Introduction to Single-Use Technologies										Jun 20 Sep 26		Sep 26-27	
TROPMB01 Operate Single-use Technologies (Advanced Certificate)										Nov 13-14		Apr 3-4 Nov 29-30	
Multiple Processes													
TRAUINTES Operate Automatic Filter Integrity Testing													Mar 21-22
TRAUINTES Perform Automatic Filter Integrity Testing (Advanced Certificate)												May 3-4 Oct 3-4	
PHASCHOOL Introduction to Pharmaceutical Process Filtration							May 17-18 Oct 25-26						
DSPSCHOOL Biotech School							Mar 21-23 Sep 26-28						
ITRIENT1 Biomanufacturing Entry Course										Mar 13 Sep 5			

Upstream Processing	
TRUPSTREAM Continuous and Intensified Processing in Upstream Cell Culture	This course combines theoretical lectures, laboratory practices and simulation exercises covering the most critical concepts in upstream animal cell culture technology, specifically focusing on continuous and intensified processes. Topics include cell line engineering and development, animal cell culture media and its optimization, and understanding critical bioreactor parameters and scalability.
ITRIUSP1 Upstream I	This course provides a basic understanding of the upstream process in the biopharmaceutical industry. The course will review the types of cells used in the research and biopharma industries, origin of mammalian cells for cell culture, growth kinetics of mammalian cells, cell culture medium/feeds used for mammalian cell culture and applications in the biopharma industry.
ITRIUSP2 Upstream II	This course provides a basic understanding of mammalian cell line development, mode of culture in the biopharma industry and an introduction to bioreactors and industry applications.
Normal Flow Filtration	
ITRINFF1 Introduction to Normal Flow Filtration	During this course, you will be introduced to the principles and steps of normal flow filtration (NFF) and its applications. The materials explain how normal flow filters are constructed and how they work. Basic NFF concepts and terminology are discussed. The course also includes the fundamentals of integrity testing filters.
TRADVNF Operate Normal Flow Filtration	Using a combination of theory, hands-on instruction, and workshops, participants will learn the key principles and techniques involved in the development and optimization of normal flow filtration processes. This 1.5-day course trains candidates on the knowledge and skills to prepare normal flow filtration operation, normal flow filter integrity test, steam-in-place operation as well as reinstate normal flow filtration equipment after operation.
TRNFF1 Operate Normal Flow Filtration Process Equipment (Higher Certificate)	Using a combination of theory and hands-on instruction, participants will learn the key procedures and best practices involved in the operation of normal flow filtration process, including filter installation, flushing, steam-in-place and integrity test procedures.
TRNFF02 Optimize Normal Flow Filtration Processes	Using a combination of theory, hands-on instruction, and workshops, participants will learn the key principles and techniques involved in the development and optimization of normal flow filtration processes. This two-day course covers all aspects of sizing and scale up of normal flow filters which include the "Vmax™ Technique" for sizing sterile filters, prefilter, virus filters, and the "Pmax™ - Tmax™ Techniques" for sizing depth filters. Participants will be assessed to gauge their understanding of the different topics taught during the training.
Tangential Flow Filtration	
ITRITFF1 Introduction to Tangential Flow Filtration	During this half-day course, you will be introduced to the principles and steps of tangential flow filtration (TFF) and its applications. The materials outline the different steps required in the operation of a TFF system: preparation, process, cleaning and storage, and explain why each is important. The course covers basic TFF concepts and terminology, how tangential flow filters are constructed and how they work, and overviews how tangential flow filters are integrity-tested.
TROTFF1 Operate Tangential Flow Filtration Process Equipment (Higher Certificate)	Using a combination of theory and hands-on instruction, participants will learn the "best practices" procedures to setup and operate tangential flow filtration (TFF) equipment leading to an improved process consistency, reliability and robustness.
TRTFF02 Operator Certification for Tangential Flow Filtration Module Maintenance	Using a combination of theory and hands-on instruction, you will learn the key tangential flow filtration (TFF) procedures to increase process efficiency, quality and consistency as well as to ensure reproducible TFF separation. This two-day course covers the central elements of TFF maintenance including installation, sanitization and integrity testing. Post-TFF procedures such as cleaning, cleaning assessments and storage are also highlighted.
TRTFF03 Optimization and Scale-up of Tangential Flow Filtration (TFF) Applications	This two-day course examines the in-depth theory of tangential flow filtration (TFF) as well as the latest techniques to develop an efficient and effective TFF process. During a practical laboratory session, you will determine optimal operating conditions using a model feed stream in a laboratory system to perform concentration and cleaning steps. Then, through a real-life case study, you will scale up and size a TFF process with specific product purity objectives.
TRTFF04-SP Optimization, Implementation and Scale Up of Single Pass Tangential Flow Filtration	The course provides a review of current global regulatory guidelines and practices for tangential flow filtration processes and modules. Detailed discussion of how to qualify and validate these applications and the modules used in TFF operations will enable you to prepare for inspections or audits of tangential flow filtration.
TRTFF04-HC Optimization, Implementation and Scale Up of High Concentration Tangential Flow Filtration	There is an increasing need for high concentration biopharmaceuticals. TFF is typically used to concentrate the drug substance, and this module addresses the many challenges associated with conducting very high-concentration endpoint TFF operations. This module evaluates why high-concentration TFF processes are difficult to implement and how these challenges can be surmounted during process development.
TRTFF04-UF Optimization and Implementation of Open Ultrafiltration and Microfiltration Processes	Microporous and "open UF" TFF operations are commonly used for primary or secondary clarification of products, such as lysates and cell cultures. These highly permeable membranes can lead to very high initial conversions but poor fluxes over the length of the process. This module investigates why this phenomenon occurs and provides novel system design strategies to prevent it.
TFFSCHOOL How to Operate Tangential Flow Filtration (TFF) Process Equipment	Learn how to set up tangential flow filters, perform integrity testing and basic operations on them, and how to restore tangential flow filtration (TFF) process equipment after use.
Automatic Filter Integrity Testing	
TRAUOPCR Operator Certification for Automatic Filter Integrity Testing	Using a combination of theory and hands-on instruction, you will learn the key procedures of filter integrity testing, how to read printouts from automatic filter-integrity testers and troubleshoot filter-integrity test processes. This two-day course covers all current filter integrity tests, including bubble point, diffusive flow and water-flow integrity testing that apply to all liquid and gas membrane filtration applications.
MT001D Operator Certification for Automatic Filter Integrity Testing	Two-day course. Operator training for the theory of integrity testers, operation and troubleshoot
TRAINTES Operate Automatic Filter Integrity Testing	Using a combination of theory and hands-on instruction, you will learn the key procedures of filter integrity testing, how to read printouts from automatic filter-integrity testers and troubleshoot filter-integrity test processes. This two-day course covers all current filter integrity tests, including bubble point, diffusive flow and water-flow integrity testing that apply to all liquid and gas membrane filtration applications.
Virus Filtration	
TRVIRFILT Virus Filtration Process Development and Validation: Best Practices	Through a mix of theory, a hands-on part and an interactive case study, participants will learn the key best practices and methods for virus filter sizing, optimization and validation preparation, enabling them to set up a cost-effective virus filtration process step.
Aseptic Processing	
TRAPVALID Understanding Regulation of Aseptic Processing and Filtration Applications	The course provides an in-depth review of current global regulatory practice for filtration applications in aseptic processing. Detailed discussion of the qualification and validation of these applications will enable you to answer any questions which might arise during inspections or audits.
AFVSCHOOL Aseptic Filter Validation Study	This course provides in-depth knowledge on the validation of sterilizing-grade filter performance, filtration processes, filter integrity testing procedures and filter sterilization cycles, as well as on documentation for the validation of sterile filtration processes. This training course provides students with an excellent knowledge of the current regulatory guidelines, how to interpret them, and how to translate them into good aseptic processing practice and documentation.
Sterility Testing	
TSSEMIN01 Perform Sterility Testing (Higher Certificate)	This course provides an in-depth review of the regulatory requirements of sterility testing, its validation and practical implementation.
EMSEMIN01 Environmental monitoring School	This course provides an in-depth review of the regulatory requirements of environmental monitoring of cleanrooms, its validation and practical implementation. The course is based on the most recent editions of GMP and USP guidelines and provides information about cleanroom classification and monitoring according to the ISO standards. The lecture content is supported with practical applications. Most critical handling steps in the microbial monitoring procedure and its consequences for test results are discussed and solutions are explained and demonstrated.
Formulation	
PCS-OCT Power up your formulation VI. Formulation & Regulatory Workshop - Wet granulation and direct compression	This high-level course explores how to make optimal use of the Parreck® range of functional excipient products in wet granulation and direct compression process.
PCS-OCT Power up your formulation - Enhancement of bioavailability - Oral sustained release formulations	This high-level course explores how to make optimal use of the Parreck® range of functional excipient products for enhancing bioavailability with inorganic drug carriers or oral sustained release formulations.
PCS-ICT Power up your formulation (customized out of several modules)	This high-level course explores how to make optimal use of the Parreck® range of functional excipient products. It includes a free choice of modules addressing different processes and formulation challenges.
Chromatography	
ITRICHROM Basic Chromatography	This training course provides a basic knowledge of chromatography, separation mechanism and chromatography operation. Resin screening and selection, column packing and quality control, separation strategy will also be the main discussion.
TRCHROPCR Operator Certification for Pilot and Process Chromatography Column Packing	Using a combination of theory, workshops and hands-on practical sessions, this course provides a review of key chromatography process steps and focuses on the methodology to successfully combine equipment with chromatographic media to give reproducible column and separation performance.
MANNHEIM01 Purification of Biomolecules: Method development and scale-up of ion exchange chromatography	This hands-on course introduces tools for the development and scale up of protein separations, focusing on ion exchange chromatography. The combination of theoretical lectures, industrial case studies and experiments in the lab enables participants to understand and use systematic models and methodologies to develop ion exchange unit operations and transfer these processes from lab to pilot plant or production scale.
MANNHEIM02 Purification of mAbs and related proteins: Chromatographic methods, strategies and optimization	This hands-on course provides a fundamental understanding of chromatographic methods and strategies to purify monoclonal antibodies and related molecules. The combination of theoretical lectures, industrial case studies and experiments in the lab enables participants to gain a profound knowledge of biochromatography processes.
TROCPE1 Operate Chromatography Process Equipment (Higher Certificate)	Using a combination of theory and hands-on instruction, participants will learn how to pack and unpack columns at pilot/process scale.
TROPCHR02 Optimize Chromatography Purification Processes (Advanced Certificate)	The first part of this two day course examines in depth the theory of chromatography as well as the latest techniques to develop a purification process. During a practical laboratory session, participants will use a laboratory system to determine optimum operating conditions for a purification and separation process of a model feed stream. Through a real-life case study, participants will design a chromatography process with specific product purity objectives.
Single-use Technologies	
ITRINFF2 Introduction to Single-Use Technologies	This course provides a detailed introduction of single-use technologies and their applications in the manufacturing of biopharmaceutical products. This course will address the following questions: What are single-use technologies? What are the advantages and disadvantages of a single-use system? Where should I start to consider single use? How are single-use systems made? How can I implement it for my project?
TROPBO01 Operate Single-use Technologies (Advanced Certificate)	Using a combination of theory and hands-on instruction, participants will learn the key procedures and "best practices" methods involved in the operation of disposable single use components, including filters, connectors, bags, mixers and tubings. Installation, flushing, sanitization and integrity test procedure are also taught and discussed.
Multiple Processes	
TRAINTES Perform Automatic Filter Integrity Testing (Advanced Certificate)	Using a combination of theory and hands-on instruction, participants will learn the key procedures of filter integrity testing, how to interpret print-outs from automatic filter integrity testers and troubleshoot filter integrity test processes.
PHASCHOOL Introduction to Pharmaceutical Process Filtration	This course will cover understanding the technologies, verifying the integrity of devices, producing reproducible batches, and being able to troubleshoot problems are expected of any scientist working at GMP level.
DSPSCHOOL Biotech School	The course is split into six sections: normal flow filtration, tangential flow filtration, chromatography, single use, virus filtration and sterile filtration. It is designed for personnel in R&D, process development, quality assurance, manufacturing technology, tech transfer and production in the biotechnology industry.
ITRIENT1 Biomanufacturing Entry Course	This entry course provides an overview of the biopharma manufacturing process. Different unit operations and equipment used in the biopharma industry will be reviewed. The course gives a basic understanding of the applications and challenges of clarification, bioreactor, process chemicals, chromatography process, aseptic filters and tangential flow filtration.

For more than 50 years we have worked alongside the world's leading biotechnology companies and pharmaceutical laboratories. Our unparalleled application expertise and process is the foundation of our training programs, from upstream and downstream processing to final processing and release. Our skilled and qualified instructors are experts in both technical knowledge and field experience. The balance between theory and practice extends to our instructors, working engineers, who collaborate on real world applications every day.

Accommodation and travel costs are not included in the course prices. We will be happy to provide you with a list of hotels close to your training venue.

Certification of Courses: Merck has been accredited as an Accredited Provider by the International Association for Continuing Education and Training (IACET), 7918 Jones Branch Drive, Suite 300, McLean, VA 22102; (703) 506-3275. In obtaining this accreditation, Merck has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Accredited Provider membership status, Merck is authorized to offer IACET continuing education units (CEUs) for programs that qualify under the ANSI/IACET Standard.

Merck has been approved by Singapore Workforce Development Agency (WDA) as an Approved Training Organization (ATO) for the Biopharmaceutical courses conducted in Singapore.

Cancellation Policy: There are no cancellation fees if you cancel with more than 4 weeks before the course date. We suggest sending a replacement to attend in your place. If you cancel between 2 and 4 weeks from the course start, you are responsible for 50% of the fees. If you cancel in less than two weeks from the course start, you are responsible for 100% of the fees.

Subject to change. Visit merckmillipore.com/training for the most up to date information.

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