Application and instrument training

Training at Thermo Fisher Scientific Training centers, at your lab, or online

Our application and instrument training programs are led by scientists who aim to enhance your research through experimental design best practices, workflow training, and instrument troubleshooting. Hands-on classes are available at our Thermo Fisher training centers or in your lab.

Our courses are delivered by scientists experienced in the of training and troubleshooting for sequencing, real-time PCR, cell culture and molecular biology techniques. The collective knowledge our team has, combined with our world-class facilities, make Thermo Fisher the ideal choice for all of your training needs.

- **Training for experimental design, data analysis, troubleshooting, and instrument operation**
- **Hands-on laboratory courses and computer-based training; lecture and discussion sessions**
- **Direct access to professional application scientists with years of training experience**

Learn about our comprehensive hands-on and self-paced learning opportunities at **learn.thermofisher.com/europe**

ThermoFisher SCIENTIFIC

Contents

Real-time PCR (qPCR) and digital PCR (dPCR)

Course title	Length	Location	Reference
Real-Time PCR Training	**1 day**	**Customer site**	**TRAINSDS2**
	1 day	**Thermo Fisher training center**	**TRAINSDS1**

Real-Time PCR training can be conducted at a Thermo Fisher Scientific training facility or in your lab. Instrument based training course provides the knowledge needed to set-up, run and analyse runs on a qPCR instrument as well as maintenance and calibration for high-quality results. It has been developed for customers with little or no experience with RT-PCR.

Application based training courses can cover specific customer requirements from Gene expression, Genotyping experiments and other RT-PCR application areas. A Thermo Fisher application scientist will work with the customer to discuss the appropriate content and length of training needed to meet the customers training requirements.

QuantStudio OpenArray Workflow	**2 days**	**Customer site**	**4475956**

Learn the workflow for one of the following applications: gene expression, genotyping, or miRNA. The class is built on lectures about the application, in-depth instruction on the Applied Biosystems OpenArray system, wet lab, and data analysis using secondary analysis software. The course also includes an application starter kit for the wet lab portion of the training.

QuantStudio 3D Digital PCR	**1 day**	**Customer site**	**4484183**

This interactive course is a comprehensive, application- based training that covers sample preparation, and quality control steps for successful digital PCR experiments, digital PCR applications, hands-on instrument workflow, data analysis, and basic troubleshooting.

MicroArrays

Course title	Length	Location	Reference
Cytoscan HD/750K/Optima FAS Onsite Training (manual or automated)*	**4 days**	**Customer site**	**000.802**

This course is designed to provide trainees with hands-on experience and training for the CytoScan™ HD/750K/Optima assay, array and data analysis. The assay training part is designed for maximum one trainee, an additional technician may observe. The training includes an overview of the assay procedure, hands-on-training (manual or automated) on the assay and GCS 3000 instrument or Dx2 instrument and (first level) Chromosome Analysis Suite (ChAS) software for sample quality control and data analysis. General FAS-led presentations may include an unlimited number of participants.

Cytoscan XON FAS Onsite training*	**4 days**	**Customer site**	**TRN00810**
	2 days	**Customer site**	**TRN00800 (existing Cytoscan users only)**

This course is designed to provide trainees with hands-on experience and training for the CytoScan™ XON assay, array and data analysis. The assay training part is designed for maximum one trainee, an additional technician may observe. The training includes an overview of the assay procedure, days hands-on-training (manual or automated) on the assay and GCS 3000 instrument and (first level) Chromosome Analysis Suite (ChAS) software for sample quality control and data analysis. General FAS-led presentations may include an unlimited number of participants.

Oncoscan CNV FAS Onsite Training*	**2.5 days**	**Customer site**	**000.878**

This course is designed to provide trainees with hands-on experience and training for the Oncoscan™ CNV and Oncoscan™ CNV Plus assay, array and data analysis. The assay training part is designed for maximum one trainee, an additional technician may observe. The training includes an overview of the assay procedure, days hands-on-training on the assay and GCS 3000 instrument and (first level) Chromosome Analysis Suite (ChAS) software for sample quality control and data analysis. General FAS-led presentations may include an unlimited number of participants.

Gene Expression FAS Onsite Training*	**up to 3 days**	**Customer site**	**000.826**

This course is designed to provide trainees with hands-on experience and training on the Gene Expression assay, arrays and data analysis. The assay training part is designed for maximum of one trainee an additional technician may observe. The training includes an overview of the assay procedure and hands on training on Gene Expression assay, including the GCS 3000 and Transcriptome Analysis Software (TAC) sample quality control and differential gene expression data analysis. [1] General FAS-led presentations may include an unlimited number of participants.

MicroArrays (continued)

Course title	Length	Location	Reference
Axiom Genotyping FAS Onsite Training*	**5 days**	**Customer site**	**000.804**
Cytoscan™ High Throughput-Chromosome Microarray Analysis (Cytoscan™ HT-CMA) Training* [000.801] CarrierScan™ FAS Onsite Training* [000.834]			
Each training is designed for a maximum of one trainee, an additional technician may observe. The training includes an overview of the assay procedure, hands-on-training (manual or automated) on the assay and GeneTitan™ instrument and (first level) analysis software for sample quality control and data analysis[2]. General FAS-led presentations may include an unlimited number of participants.			
Microarray FAS On-Site Training*	**1 day**	**Customer site**	**000.398**
One-Day training provided in your laboratory as prearranged by a field application scientist.			
Online Microarray FAS Training/ Consulting	**1hr**	**Customer site**	**TRN00397**
This interactive online training includes content as prearranged by a field application scientist.			

* all trainings also available at Thermo Fisher Training Center on request

[1] Advanced interactive TAC Training (alternative splicing, interaction analysis) online or one-site as prearranged by a field application scientist.

[2] Depending on the product different software application will be used accordingly.

Bioinformatics & Next-Generation Sequencing

Course title	Length	Location	Reference
Ion Data Analysis Essentials	**2 days**	**Thermo Fisher training center**	**4481815**

Jump-start your Ion Torrent™ data analysis skills. Taking this course will provide an introduction to the Torrent Suite Software family, including Variant Calling, Ion AmpliSeq™ Designer, and Ion Reporter™ Software.

Bioinformatics Consulting Plan	**10hrs**	**Customer Site**	**ZGPCSCBFX10**
	20hrs	**Customer Site**	**ZGPCSCIONBFX**

Whether you need assistance with project planning and design, workflow optimization, and data analysis, or want to review your data with one of our bioinformatics scientists, we provide tailored solutions to best suit your needs through 10 or 20 hour support packages. These hours can be used remotelyor in your lab. Examples of services include plug-in development for sequence analysis, data management consulting, as well as web-based software training for Torrent Suite Software and Ion Reporter.

Hands-On Ion Torrent Variant Caller	**2 days**	**Thermo Fisher training center**	**A32645**

This is a 2-day, advanced course that covers Torrent Variant Caller (TVC) in depth. You will learn how to work with the TVC, how to interpret the output of the algorithm, configure parameters and troubleshoot difficult cases.

The course is heavily hands-on with more than 30 exercises. We will spend most of the time running the TVC on sample datasets, assessing the results, adjusting the parameters and discussing example cases of variant detection situations that may occur in analysis of real Ion Torrent™ data.

Hands-On Ion Reporter	**2 days**	**Thermo Fisher training center**	**A32645**

This is a 2-day, introductory course that covers Ion Reporter Software in depth. You will learn how to use and administrate the software in the first part, including creating or modifying analysis workflows, adding custom annotations or changing parameters. In the second part, you will learn how to use Ion Reporter to help you analyze and understand your data. The course is heavily hands-on with more than 30 exercises.

Ion Torrent Suite™ API and Plugin Development	**1 day - On demand only)**	**Thermo Fisher training center**	

In this course, you will learn how to interact with Torrent Suite Software programmically, and how to create plugins to extend the functionality of the software. Hands on exercises will follow every topic discussed during the training. Firstly, you will learn how to use the Torrent Suite API. We will write code snippets to retrieve or modify data or start actions on Torrent Suite. Secondly, you will learn how to create plugins that you will install and test on a Torrent Suite instance.

Ion Torrent Suite™ Plugin Development By Example	**2 days**	**Thermo Fisher training center**	**A32645**

In this course, you will learn how to create plugin. Hands on exercises will guide you through the development of a plugin which will realign reads to a reference sequence with custom parameters. The plugin will be fully integrated to Torrent Suite Software with html forms, reporting pages and tables and will also report alignment statistics.

Bioinformatics & MicroArray

Course title	Length	Location	Reference
Axiom Analysis suite: Best Practices workflow	**2 hours**	**Online**	**A38000**

The Axiom Genotyping Solution is the platform of choice for large-scale genotyping studies, including SNPs, InDels and CNVs.

This two hour training will familiarize you with the software interface and enable you to apply our recommended Best Practice Workflow (BPW) to your Axiom data.

Course title	Length	Location	Reference
Axiom Analysis suite: Copy number recommended workflow	**1 hour**	**Online**	**A38000**

The Axiom Genotyping Solution is the platform of choice for large-scale genotyping studies, including SNPs, InDels and CNVs.

This one hour training will familiarize you with the software interface and enable you to detect new copy number variations and calculate copy number states for fixed regions in all samples of a batch.

Bioinformatics – Agnostic Courses

Course title	Length	Location	Reference
Bioinformatics for Molecular Biologists	**4 days**	**Thermo Fisher training center**	**A30833**

This course has been designed to help researchers take their first steps in bioinformatics, giving individuals experience at working on the command line and manipulating large datasets. It will give you more powerful options for data analysis and will increase your productivity. This interactive and hands-on course will introduce you to Linux™, databases and Python™ or Perl™ programming using data sets from the Ion system.

Bioinformatics for Data Scientists	**4 days**	**Thermo Fisher training center**	**A30833**

This course assumes that you want to dive deeper into the knowledge of the tools used to harness big data (beyond spreadsheets). A course designed to allow you to develop robust practices when working with large datasets. It will offer you powerful options for data analysis and is designed to help increase your productivity. This interactive and hands-on course will introduce you to R and advanced scripting to manage data with Linux™.

R for Scientists	**2.5 days**	**Thermo Fisher training center**	**A38001**

Over the years R has established itself as the go to data analysis language for academics across many scientific discipline. Combined with access to cutting edge analysis tools, R boasts best in class graphics capabilities for generating professional plots and images. Technical benefits aside, R comes with a steep learning curve that quickly plateaus once you have a command of the basics. This course aims to march you through the first steps and place you firmly on that plateau in a position to confidently move forward with your own data and continue learning independently.

Genome-wide association studies (GWAS) analysis using R	**2 days**	**Thermo Fisher training center**	**A32645**

Association studies are a common approach used to find SNPs or genome regions that contribute to a specific disease/trait by testing for a correlation between the genomic markers and the traits of interest (disease status, milk yield, sowing to harvest time…). If association is present, a particular SNP allele or haplotype will be seen more often than expected by chance in an individual carrying the trait.

Despite of its popularity association studies are challenging, as the statistical analyses must be performed carefully to avoid false positives. This course aims to be a roadmap for conducting genetic analyses in all species from scratch using R, by providing theoretical background and hands-on experience. In order to make genome association analysis more accessible to researchers without formal bioinformatics training.

Next-Generation Sequencing

Course title	Length	Location	Reference
Ion FAS Training	**1 day**	**Customer site**	**TRN00230**

This one-day class includes training as prearranged by a Thermo Fisher application scientist. Training may include, but is not limited to, a course involving classroom lectures, laboratory sessions or both. A field application scientist will work with you to design customized content and determine the length of training sessions necessary to meet your specific needs. For your convenience, our world-class trainers are available to visit your lab to provide basic or advanced training, as well as retraining in sample preparation, sequencing workflow, or project design.

Ion Library Preparation Training	**1 day**	**Thermo Fisher training center**	**TRN00243**

This one-day training involves classroom and laboratory sessions for library construction and can be customised for Fragment, Ampliseq or RNAseq Libraries for sequencing on the Ion Torrent Sequencers. You will gain hands-on experience in constructing libraries library using control DNA/RNA and learn about different methods library quality assessment, amplification, quantification, and troubleshooting. Information and strategies for different sequencing applications, and how these relate to library construction and preparation of samples, will also be discussed. Note for RNAseq library construction it is recommened to purchase 2 days training.

Ion Torrent™ System Operation Trainings			
Ion PGM	**2.5 days**	**Thermo Fisher training center**	**4476721**
Ion S5 or S5xl	**2 days**	**Thermo Fisher training center**	**4476721**
Ion System Operation Training	**2 days**	**Customer site**	**4476720**

A comprehensive overview of the chemistry used in the Ion Torrent systems will be provided, which is critical for understanding, operating and troubleshooting the system. Hands-on training includes creating Ion Sphere™ particles for sequencing using the Ion OneTouch™ or Ion Chef™ Systems as well as initiating and monitoring sequencing runs using either a PGM, S5 or S5xl sequencer.

Lecture and discussion sessions include an overview of instrument operation and hardware, as well as sample preparation workflow including library preparation, Ion Sphere particle preparation, deposition, quality control runs, troubleshooting, and basic data analysis.

Sanger Sequencing

Course title	Length	Location	Reference
Instrument and Operation Training	1 day	Customer site	TRAINDNE2
	1 day	Thermo Fisher training center	TRAINDNE1

This course is designed for any individual who is responsible for the operation of the Applied Biosystems 3130/3130xl, 3500/3500xl or SeqStudio Genetic Analyzers and wishes to familiarize themselves with the instrument, software and interpretation of data. The trained user will then be in a position to obtain the most from their instrument ensuring a consistently high standard of data.

Application Training For Sequencing	1 day	Customer site	TRAINDNE2
	1 day	Thermo Fisher training center	TRAINDNE1

This course offers a comprehensive overview of DNA sequencing applications. Course topics include detail on the sequencing workflow, optimisation, current chemistry options, recommendations on reaction set-up and clean-up as well as interactive, hands-on sessions on data analysis and troubleshooting.

Application Training For Fragment Analysis	1 day	Customer site	TRAINDNE2
	1 day	Thermo Fisher training center	TRAINDNE1

This course offers a comprehensive overview of fragment analysis for DNA sizing and/or genotyping applications. Course topics include detail on the fragment analysis workflow, optimisation, current chemistry options, recommendations on sample preparation and use of standards as well as interactive, hands-on sessions on data analysis and troubleshooting.

Flow cytometry

Course title	Length	Location	Reference
Attune NxT™ System Basic Training	2 days	Customer site	A25623
	2 days	Thermo Fisher training center	A25624

This class is designed for new users of the Attune NxT Acoustic Focusing Cytometer. Basic operation training will cover a review of basic flow cytometry concepts, overview of instrument systems, experiment setup and data acquisition, compensation, post-acquisition analysis tools, single-color and multicolor exercises, advanced software tools, system maintenance, data management, and basic troubleshooting.

Attune Extended Basic and Applications Training	1 day	Customer site	4484604
	1 day	Thermo Fisher training center	4488622

This course is designed to expand on basic training for the Attune or Attune NxT System with a day of extended instruction on use of the Attune NxT, advanced software and data analysis training, or training on a specific application

Multiplex Instrument & Assay Training

Course title	Length	Location	Reference
Luminex® Instrument Basic User Training	1 day	Customer site	TRN00901

This class is designed for new users of the Luminex® Magpix and LX200. Basic operation training will cover a review of basic multiplex assay concepts, overview of instrument systems, experiment setup and data acquisition, post-system maintenance, and basic troubleshooting.

Cell Culture and Molecular Biology

Course title	Length	Location	Reference
Cell Culture Basics: Optimizing Lab Techniques	**3 days**	**Thermo Fisher training center**	**A29795**

This is a basic-level course for life science professionals or students with some lab experience but little or no direct experience working in a tissue culture laboratory. Lectures and laboratory sessions include reviews of basic cell culture terminology, biosafety and optimizing sterile technique, growth monitoring and passaging of both adherent and suspension mammalian cell lines, important techniques for successful cryopreservation, transfection technologies, methods to confirm cell identity and health status, and brief introduction to concepts in more advanced primary and stem cell culture.

Gibco™ Pluripotent Stem Cell Workshop	**3 days**	**Thermo Fisher training center**	**A33134**

This workshop is designed for life scientists with some cell culture experience but who are new to pluripotent stem cell research or need a refresher. It includes lectures and personalized hands-on laboratory coaching on techniques for culturing and characterizing human embryonic stem cells (hESCs) and induced pluripotent stem cells (iPSCs), as well as reprogramming techniques for the creation of iPSCs.

Genome Editing

Course title	Length	Location	Reference
Introduction to CRISPR-Cas9 Genome Editing course	**4 days** **1 day**	**Thermo Fisher Training center** **Workshop at customer site**	**A33133**

The 4 day course will walk you through basic CRISPR DNA editing workflows in mammalian cells, from design of target-specific guide RNAs to analysis of gene editing efficiency and sequence results. It includes lectures and hands-on laboratory sessions covering transfection techniques, PCR based and fluorescent imaging / flow cytometry detection of editing reactions.

The 1 day interactive workshop will focus on basic design strategies for target-specific guide RNAs (gRNA) and homology-directed repair (HDR) templates to be used in gene editing experiments. A short overview will also be presented on delivery and detection methods that can be considered for this application.

Find out more at **learn.thermofisher.com/europe**

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