HID Education Programs

For Research, Forensic, or Paternity Use Only. Not for use in diagnostic procedures.

Forensic DNA Workflow Training

Our courses are specifically designed to improve the knowledge, capabilities, and confidence of forensic scientists. Training is developed by experienced forensic scientists and is geared to various skill and knowledge levels.

Interactive, self-paced virtual modules allow trainees to learn at their own pace. Hands-on laboratory sessions allow participants to process samples using the Applied Biosystems™ chemistry, while reviewing instrument hardware, software, calibrations, and maintenance. Choose from our virtual, in-person, or hybrid training options.

Thermo Fisher has over 20 years of industry experience in Human Identification (HID). Our team's collective knowledge and world-class facilities make Thermo Fisher the ideal choice for your HID workflow training needs

Learn more at www.thermofisher.com\HPS or email us at HPS@thermofisher.com

- **In-person, virtual, and hybrid training options**
- **Hands-on laboratory training for instrument operation, data analysis, troubleshooting**
- **Learn from professional application scientists with years of forensic experience**

Core Workflow Training Packages

Introduce new analysts to the HID lab with a training bundle: HID Laboratory Basics, Theory and Concepts, plus either Casework or Database Workflow training.

Course title	Length	Format	Description
HID Laboratory Basics	~16 hours	Virtual	The Human Identification Laboratory Basics modules review HID Workflows and equipment, as well as key concepts in laboratory safety, pipetting, contamination, quality systems, and validation.
	3 days	In-person	The in-person version includes PPE practice and hands-on pipetting and dilution exercises.
HID Theory and Concepts	~16 hours	Virtual	The Human Identification Theory and Concepts modules review key concepts in molecular biology as well as the theory and concepts behind assays used in the HID STR workflow from extraction through basic STR data analysis concepts.
	2 days	In-person	
HID Direct Amplification Workflow	~16 hours	Virtual	The Human Identification Direct Amplification Workflow modules provide in-depth training on one HID STR direct amplification workflow. The course reviews efficient processing of high-quality reference samples using Applied Biosystem instruments, chemistry, and software. GeneMapper™ ID-X Basics training is included, with a focus on efficient analysis of direct amplification samples.
	3 days	In-person	
	~16 hours virtual + 1 day lab	Hybrid	The laboratory session (in-person or hybrid only) includes capillary electrophoresis Instrument Operator Training and hands-on sample processing exercises.
HID Casework Workflow	~24 hours	Virtual	The Human Identification Casework Workflow modules provide in-depth training on one HID casework STR workflow. The course reviews collection, extraction, quantification, amplification, detection, and genotyping of forensic evidence-type samples using Applied Biosystem instruments, chemistry, and software. GeneMapper™ ID-X Basics training is included.
	1 week	In-person	
	~16 hours virtual + 2 days lab	Hybrid	The laboratory session (in-person or hybrid only) includes hands-on sample processing from extraction through capillary electrophoresis (CE). Operator training is provided for extraction, quantitative real-time PCR, and CE instruments.
Sexual Assault Evidence (SAE) Workflow	~8 hours	Virtual	The Sexual Assault Evidence Workflow modules provide in-depth training on the casework Y-STR workflow. The course reviews theory, concepts, and assays related to the Y chromosome, Y screening, evaluating M:F ratios in quantification results, and Y-STR analysis.
	3 days	In-person	The laboratory session (in-person or hybrid only) includes hands-on sample processing. Participants will perform qPCR using the Quantifiler™ Trio DNA Quantification Kit and evaluate the results, amplify samples using the Yfiler™ Plus PCR Amplification Kit, and review basic Y-STR profile analysis methods.
	~ 8 hours virtual + 2 days lab	Hybrid	

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Focus on Technology

Supplement your in-house training program with in-depth instrument and software training.

Course title	Length	Format	Description
Real-Time qPCR Instrument	1 day	In-person	This one-day, in-person Real-Time qPCR Instrument Training is a mixture of classroom and hands-on lab lessons which review the instrument hardware, software, calibrations, and maintenance. In addition to running and analyzing samples, this course includes a review of qPCR theory and troubleshooting, plus an HID Real-Time PCR Software tips and tricks session. Training is available for the QuantStudio™ 5 Real-Time PCR System or the 7500 Real-Time PCR System
Capillary Electrophoresis (CE) Instrument	2 days	In-person	This two-day, in-person Capillary Electrophoresis Instrument Training is a mixture of classroom and hands-on lab lessons which review the instrument hardware, software, calibrations, and maintenance. In addition to running and analyzing samples, this course includes a CE troubleshooting review and GeneMapper™ *ID-X* Software tips and tricks session. Training is available for 3500 Series, SeqStudio, or SeqStudio Flex CE instrument platforms.
GeneMapper ID-X Basics	~8 hours	Virtual	The GeneMapper™ *ID-X* Software Basics course introduces the software workflow, algorithms, and quality value system. Example data is used to demonstrate tools that help streamline and improve the forensic data analysis process.
	1 day	In-person	

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Basics and Theory

Available individually or as part of a package

Course	Description
Intro to HID Workflow	Review the HID Casework and Database workflows to understand the purpose of each step in the process.
Intro to Laboratory Safety	An overview of laboratory safety in the HID laboratory. Includes the following components: biological, physical, and chemical hazards.
Understanding Contamination	An overview of contamination, including strategies and tools to reduce and respond to contamination events.
Intro to Pipetting	Review best practices for pipetting.
Quality Systems and Validation	This module discusses quality management systems for HID laboratories and how validation fits into the quality system framework.
Intro to HID Equipment	Review the essential equipment used in forensic DNA analysis and where it fits into the HID workflow.

Course	Description
Intro to Molecular Biology	This module briefly reviews basic molecular biology concepts that are critical to understanding the HID workflow, including cell structure, DNA, and the Polymerase Chain Reaction.
Intro to Sample Collection	Review common methods for evidence tracking and biological sample collection.
Intro to Extraction	Review various methods for releasing and purifying DNA from cells, including mechanisms and limitations of each method.
Differential Extraction Review	An overview of differential extraction, a crucial step in the sexual assault workflow.
Intro to Short Tandem Repeats	Review the basics of repetitive DNA segments used in forensic DNA analysis.
Intro to Quantification	Compare the mechanism and limitations behind various quantification methods in order to understand why quantitative PCR (qPCR) is ideal for forensic samples. Review the theory behind qPCR and the TaqMan assay.
Understanding the Y Chromosome	Review the Y chromosome and how it can be used in forensic DNA analysis.
Intro to Detection: CE and the electropherogram	Review electrokinetic injection, fragment separation, and detection, then examine electropherograms from various sample injections to help understand the data.
Intro to Autosomal STR Profiles	Review the process of analyzing a DNA profile for autosomal STR data.
Intro to Y-STR Profiles	Review basic concepts of DNA analysis for Y-STR data, including how profile characteristics may affect the analysis.
Intro to Binary Thresholds	Review the purpose of binary analytical and stochastic thresholds, as well as several methods for setting thresholds, for use in manual data analysis.

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Applications

Available individually or as part of a package

Course	Description
Automated Puncher Review	Review the features and operation of the CPA200 instrument.
Extraction Chemistry Review	In-depth training on the Applied Biosystems™ PrepFiler™ Forensic DNA Extraction kits.
Extraction Instrument Review	Review the features of one Applied Biosystems™ extraction instrument.
Quantification Chemistry Review	In-depth training on either Applied Biosystems™ Quantifiler™ Trio or HP DNA Quantification Kit.
Quantification Instrument Review	Review the features of the 7500 or QuantStudio™ 5 Real-Time PCR Instrument.
Quantification Software Review	Review the features of HID Real-Time Software. Learn how to analyze quantification data and evaluate results.
Casework STR Chemistry Review	In-depth training on the features of one Applied Biosystems™ PCR amplification kit.
Direct Amplification Review	Review the characteristics of direct amplification with STR amplification kits.
Direct Amplification Chemistry Review	In-depth training on the features of one Applied Biosystems™ direct amplification kit, specifically designed for high-efficiency direct amplification.
CE Instrument and Software Review	Review the features of one Applied Biosystems™ genetic analyzer and the current data collection software.

Course	Description
Y-Screen Assay Review	Review Y-screening concepts and explore the use of the Applied Biosystems™ Quantifiler™ Trio DNA Quantification Kit as a confirmatory screening tool for detecting male DNA.
Assessing the M:F Ratio	Learn how to use the Applied Biosystems™ Quantifiler™ Trio DNA Quantification Kit to help with decision-making in the sexual assault workflow.
Y-STR Amplification Chemistry Review	In-depth training on the features of the Applied Biosystems™ Yfiler Plus PCR Amplification kit.
Intro to GeneMapper ID-X	An introduction to Applied Biosystems™ GeneMapper™ *ID-X* Software including general workflow and analysis configuration; algorithms; the quality value system; and current version updates.
GeneMapper ID-X Virtual Demo	Example data is analyzed to demonstrate the data analysis workflow, illustrating how the software tools help streamline the forensic data analysis process. Request a demo software copy to follow along.
Intro to Expert Systems	An introduction to the use of Applied Biosystems™ GeneMapper™ *ID-X* Software as an expert system for use with known, single-source reference samples.

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Additional Details

- Training for Applied Biosystems chemistry, instruments, and software only.

- Virtual training programs typically include several hours of self-paced learning content, plus a live call with an applications scientist for questions and discussion. Virtual modules can also be purchased without the live component. All virtual material is accessible on-line for one year.

- In-person training programs typically include both classroom lectures and hands-on laboratory and/or software data analysis exercises.

- Hybrid training programs typically combine self-paced virtual content with hands-on laboratory exercises.

- In-person classroom sessions and virtual training can accommodate up to 15 attendees. Laboratory sessions can accommodate up to 6 attendees. These attendance limits help ensure a quality learning experience for all participants.

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SeqStudio Flex CE Training

This two-day, in-person Applied Biosystems™ **SeqStudio™ Flex Genetic Analyzer Training** is a mixture of classroom and hands-on lab lessons which review the instrument hardware, software, calibrations, and maintenance. In addition to running and analyzing samples, this course reviews GeneMapper *ID-X* Software tips and tricks and basic CE troubleshooting. **TRN00098**

Upgrade option:

Upgrade the installation training from 1-day operator training to a full 2-day instrument training. TRN00097

Sample Agenda	
Day	Topic
1	Introductions & Logistics
	CE Instrument Overview and Calibrations
	Data Collection Overview
	Lab: Instrument Set Up
	Lab: Calibrate Instrument - Spatial and Spectral
	Instrument Maintenance
	Lab: Configure Software and Run Samples
2	Developmental Validation Review
	GeneMapper *ID-X* Review
	Demo: Data Analysis
	Troubleshooting Review
	Question and Answer Session

GeneMapper *ID-X* Basics of v1.7
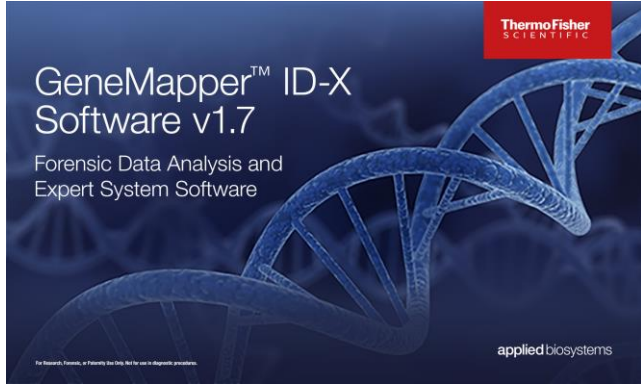
This one-day, virtual **GeneMapper™ *ID-X* Software Basics** course introduces the software workflow, algorithms, and quality value system. Example data is used to demonstrate tools that help streamline and improve the forensic data analysis process, including features of the newest version of the software. This course includes live FAS demonstrations and discussion. **TRN00095**

Available Add-on:

Introduction to STR Analysis ~4-hour virtual course. TRN00094

- Capillary electrophoresis and the anatomy of electropherograms
- Basic STR data analysis
- Review binary thresholds
- Live FAS discussion

Sample Agenda	
Day	**Topic**
1	Introductions & Logistics
	GMIDX Software Overview
	GMIDX Demo: Setting up the Software
	GMIDX Algorithms
	GMIDX Demo: Data Analysis Workflow
	GMIDX Tips and Tricks, v1.7

Thank you