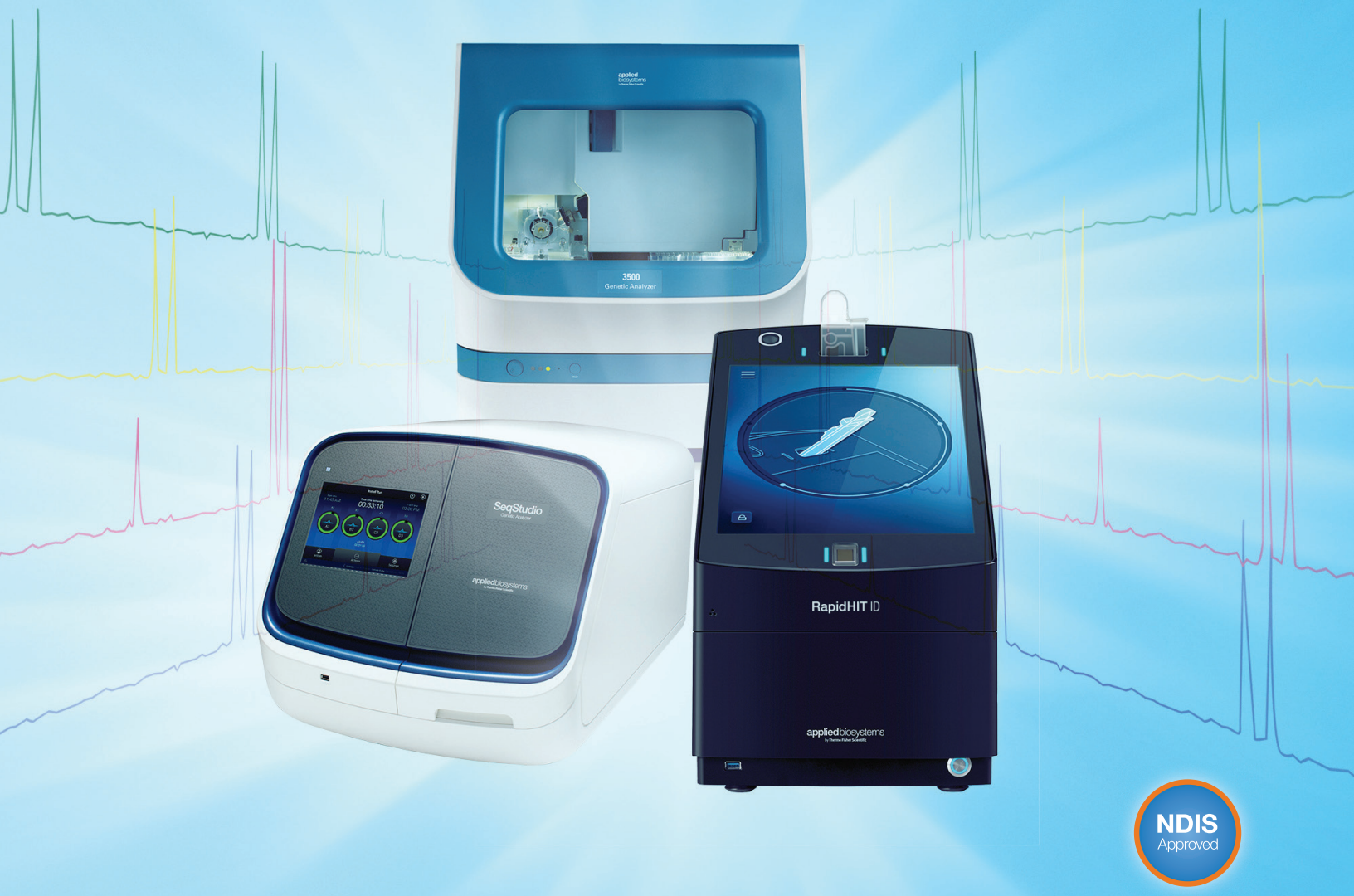
ThermoFisher SCIENTIFIC



NDIS Approved

Human identification

Maximize results with the right human identification tool for the job

applied biosystems

Whether you're processing routine samples, highly degraded samples, or urgent request cases, Thermo Fisher Scientific provides best-in-class DNA analysis solutions for the forensic community. Choose from the proven performance of our family of genetic analyzers or the simplicity of rapid DNA analysis to get more answers from your samples as efficiently as possible.

Count on our dedicated sales, service, and technical support specialists to provide answers that add simplicity, scalability, and speed to your workflow—enabling you to analyze your most difficult cases with complete confidence.

Which capillary electrophoresis system is right for you?

Table 1. Applied Biosystems™ capillary electrophoresis (CE) system comparison

	RapidHIT™ ID System	SeqStudio™ Genetic Analyzer	3500 Series Genetic Analyzer
	Easy-to-use, sample-to-answer system	**Easy-to-use, flexible system**	**Meets the needs of validated and process-controlled environments**
Number of capillaries/ cartridges	1	4	8 (3500 system), 24 (3500xL system)
Ease of use	**Simple**—no pipetting required	**Easy**—with one-click universal cartridge	**Moderate**—some maintenance required
Number of dyes	6-dye enabled	8-dye capable	8-dye capable
RFID	Yes	Yes	Yes
Polymer type	Proprietary polymer	POP-1™ polymer integrated into universal cartridge	POP-6™, POP-7™, POP-4™ polymers
Sample capacity	1	1 standard 96-well plate or 12 standard 8-strip tubes	2 sample plates (96- or 384-well)
Applications	HID applications	HID applications, fragment analysis, and sequencing	HID applications, fragment analysis, and sequencing
Run time for HID applications	90 minutes (sample to answer)	~39-minute CE run	30-minute CE run
Maximum HID application throughput (samples/day)	16	147	384 (3500 system), 1,152 (3500xL system)
HID kits accepted	Sample cartridge includes STR master mix for Applied Biosystems™ GlobalFiler™ Express and AmpFLSTR™ NGM SElect™ kits	All STR kits from all vendors	All STR kits from all vendors
Sample type: casework	Applied Biosystems™ RapidINTEL™ cartridge kits	Purified DNA	Purified DNA
Sample type: database	Applied Biosystems™ RapidHIT™ ID ACE GlobalFiler™ Express sample cartridges	Swab, treated, or untreated paper	Swab, treated, or untreated paper
User level of experience	Technician: forensic lab experience not required	Trained forensic scientist	Trained forensic scientist

Rapid DNA analysis

The RapidHIT ID System, approved by the FBI for uploading to the National DNA Index System (NDIS),* offers new ways for public safety agencies and crime laboratories to obtain more answers faster. The compact, easy-to-use RapidHIT ID System is the ideal platform for generating laboratory-quality forensic DNA profiles from single-source samples. With minimal training and one minute of hands-on time, the fully automated, mobile-ready RapidHIT ID System can generate STR DNA profiles in the laboratory, the law enforcement agency, or the field. Compatible with established databases, DNA profiles are generated using FBI NDIS–approved GlobalFiler Express chemistry from the Applied Biosystems™ RapidHIT™ ID ACE GlobalFiler™ Express or the RapidINTEL™ sample cartridges.

Transform DNA results into rapid intelligence with the Applied Biosystems™ RapidLINK™ Software and the SmallPond™ DNA Profile Matching System for powerful sample matching, familial search, kinship, and staff-elimination database applications. The SmallPond database software offers flexible search parameters analogous to the CODIS software with custom and *ad hoc* searches, performing searches of up to 1 million profiles in seconds.

The Applied Biosystems™ RapidHIT™ ID DNA Booking System is the first and only fully approved rapid DNA system eligible for arrestee DNA enrollment into the Combined DNA Index System (CODIS). The fully automated, sample-to-answer genetic analysis system enables users to process, enroll, and search arrestee DNA samples in CODIS in approximately 90 minutes.

Insert cheek swab or evidence into cartridge

Use the analysis tools at the point of action, whether in the lab or in the field.

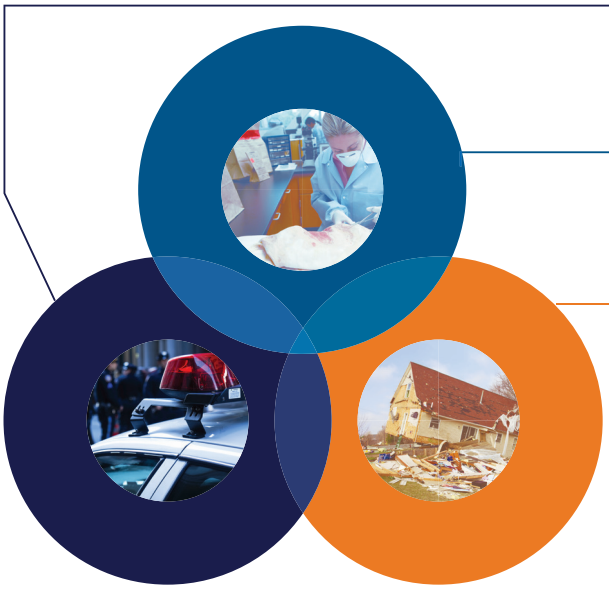
Insert cartridge into instrument

Fully automated system develops a DNA profile without human intervention.

DNA results in 90 minutes

The RapidLINK Software centralizes data and provides full control of results.

Solve more crimes and find more answers, together



In the police station or booking agency

Law enforcement can generate investigative leads and identify or eliminate suspects while they are still in custody

In the forensic laboratory

Labs can process urgent samples more efficiently and enable personnel with limited experience working with DNA

In the field

Thanks to the mobility, remote connectivity, and ease of use, personnel can process reference, family member, and victim samples to rapidly identify missing and disaster victims

* FBI NDIS–approved for use by booking stations and accredited forensic DNA laboratories with known reference DNA samples and the RapidHIT ID ACE GlobalFiler Express Sample Cartridge.

SeqStudio Genetic Analyzer for Human Identification

The SeqStudio Genetic Analyzer for HID is an easy-to-use 4-capillary benchtop system that delivers gold-standard STR fragment analysis and Sanger sequencing with just a simple click. It is easily used across a broad range of Applied Biosystems™ STR kits and applications to help you get answers you can trust. The system offers the same data quality, service, and support you have come to expect from Applied Biosystems™ genetic analyzers, with a modernized experience at an affordable price.

Key features

- **Universal all-in-one cartridge—**unique functionality integrates POP-1 polymer, anode buffer, a polymer delivery system, and a four-capillary array to minimize instrument setup and maintenance time. This novel system design allows for an on-instrument reagent life of up to 6 months and 250 injections (1,000 samples) with no hard stops.
- **Results you can trust**—optimized data collection software and validated performance (based on SWGDAM guidelines from December 2016) with Applied Biosystems STR kits.
- **Concordant results**—compared with 3500 Series Genetic Analyzers (Table 2).
- **Reduced pull-up (false secondary peak) editing**—autocalibration using sample-specific spectral data and marker-to-marker calibration reduces pull-up editing (Table 3).
- **Seamless data interpretation**—with Applied Biosystems™ GeneMapper™ *ID-X* Software v1.6.
- **Protection and traceability**—with security, audit, and e-signature (SAE) software.
- **Easy inventory management**—with RFID-enabled tracking of consumables usage.
- **Get up and running quickly**—every SeqStudio system includes service installation and one-day FAS training.

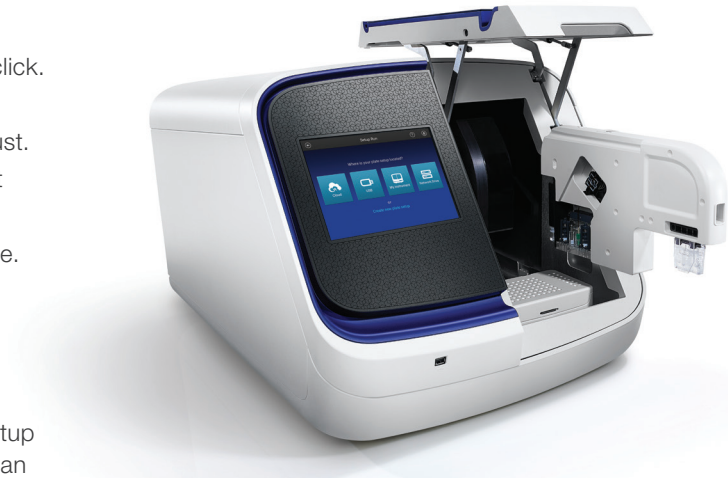


Table 2. Concordance results for the 3500xL Genetic Analyzer compared with the SeqStudio Genetic Analyzer.**

Kit	Concordance (%)
GlobalFiler	100
GlobalFiler IQC	100
VeriFiler Plus	100
NGM Detect	100
NGM SElect	100
Identifiler Plus	100
MiniFiler	100
Yfiler Plus	100
Yfiler	100
GlobalFiler Express	100
VeriFiler Express	100

** Nine casework kits were used for 23 gDNA samples plus the positive control, and two direct amplification kits were used for 20 buccal and blood samples plus the positive control, at the kit-recommended inputs of DNA. Samples were injected on 4 instruments with a minimum of 3 injections each.

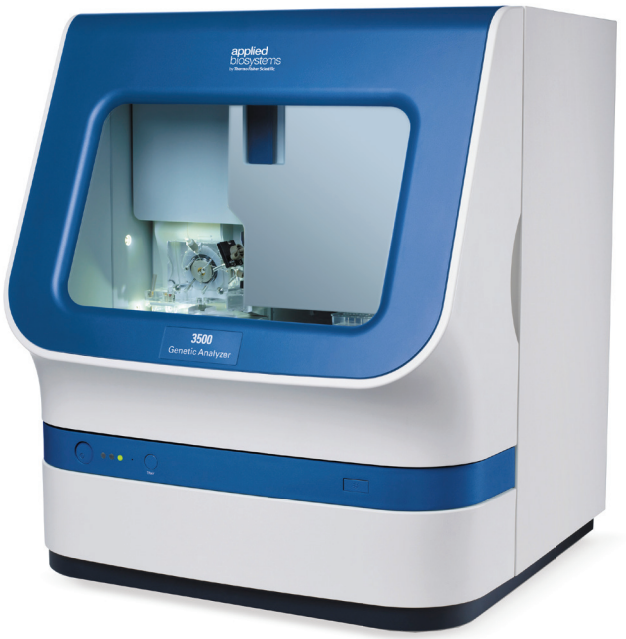
Table 3. Low pull-up percentage across sample data.†

Average pull-up peaks per injection	Mean pull-up percentage	Average percent of pull-up ≤3%
1.3	1.6%	88%

† Results are shown for 947 pull-up peaks observed in 730 injections of positive control and 5 gDNA samples amplified with the Applied Biosystems™ MiniFiler™, Identifiler™ Plus, NGM SElect™, Yfiler™, GlobalFiler™, Yfiler™ Plus, NGM Detect™, or VeriFiler™ Plus kit at the recommended input. n = 92 injections/kit on 4 SeqStudio instruments; n = 86 for the NGM Detect kit due to failed injections being omitted from the analysis.

DNA analysis

The 3500 Series instruments, available in 8- or 24-capillary format, are the first genetic analyzers designed with a specific feature set and workflow for HID applications. The complete system combines the instrument with Applied Biosystems™ reagents, consumables, and software, as well as superior support—providing an integrated HID solution that significantly improves ease of use and application efficiency.



Key features

- The innovative "snap-in-and-go" consumable design uses radio-frequency identification (RFID) technology to track and record key consumables data
- The HID-specific workflow preconfigured for Applied Biosystems STR kits simplifies run setup and software navigation
- Powerful, integrated data collection and QC analysis software provides real-time assessment of data quality and streamlined STR analyses
- Provides superior data quality, with more consistent peak height from capillary to capillary, run to run, and instrument to instrument

We have enhanced 3500 Series instruments and GeneMapper *ID-X* Software to help decrease data analysis time, increase confidence in results, allow for more efficient throughput and performance (Table 4), and comply with IT requirements. Combined with our STR kits, Applied Biosystems™ 3500 Data Collection Software v4.0.1 and GeneMapper *ID-X* Software v1.6 offer an efficient workflow.

- **Improved data interpretation**—reduced pull-up edits, improved first-pass success rate for database laboratories, and more efficient data transfer to probabilistic genotyping
- **Enhanced user experience**—flexible plate loading, streamlined workflow, support in English, Chinese, and Russian languages, and 6-dye installation standard
- **IT support and compatibility**—Windows™ 10 system support, CODIS compatibility, and internationalization

Table 4. HID fragment analysis throughput and performance specifications.

						Performance				
Module name	Throughput			Configuration		General		Sizing precision of 100% of alleles in >90% of samples		Multirun sizing for 100% of alleles in >90% of samples
	Average run time (min)	Average throughput, 3500 system (samples/day)	Average throughput, 3500xL system (samples/day)	Array length (cm)	Polymer type	Resolution range in >90% of samples (bp)	Largest fragment collected in >90% of samples (bp)	50–400 bp	401–600 bp	50–400 bp
HID36_POP4	<26	>424	>1,272	36	POP-4	60-400	>420	<0.15 bp	<0.3 bp	<1 bp

Ordering information

Product	Quantity	Cat. No.
RapidHIT ID System‡	1 system	A41810
RapidLINK Software v1.0	1 license	A41813
Rapid Standard Validation		HPS10602
SeqStudio Genetic Analyzer for HID,§ laptop, with training	1 system	A46228
SeqStudio Genetic Analyzer for HID,§ desktop, with training	1 system	A46229
3500 Genetic Analyzer for Human Identification§	1 system	4406017
3500xL Genetic Analyzer for Human Identification§	1 system	4406016
GeneMapper *ID-X* Software v1.6,§ full installation	1 license	A39975
GeneMapper *ID-X* Software v1.6,§ client installation	1 license	A39976
STR-Casework Premium Validation		HPS10101
STR-Direct Premium Validation		HPS10401

‡ For Forensic, Human Identification, or Paternity/Kinship Use Only. Not for use in diagnostic or therapeutic applications.

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

For more information, go to **thermofisher.com/hid**