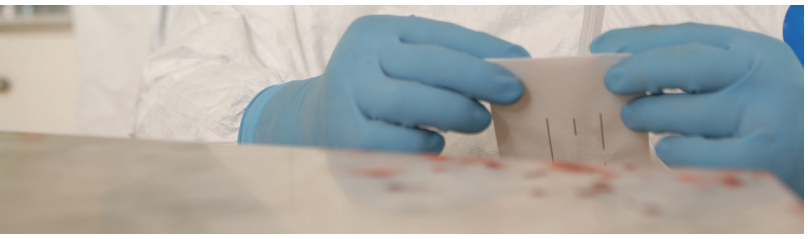

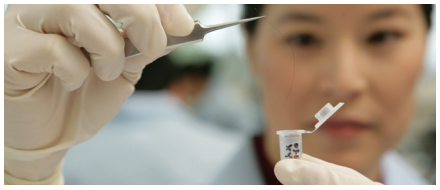

Precision ID Identity Panel

Get more information from your sample

Degraded DNA

The Applied Biosystems™ Precision ID Identity Panel provides unique genotypes to identify degraded samples for human identification (HID) applications. These genotypes are indispensable for identifying challenging samples as may be the case in low–copy number or low-quality samples, mass disasters, and certain archived samples [1,2,4,5,8]. Precision ID technology enables fast target selection of hundreds of single-nucleotide polymorphisms (SNPs) using multiplex PCR. Thousands of primer pairs can be used in a single tube for target amplification followed by next-generation sequencing (NGS) on the Applied Biosystems™ Precision ID NGS System for HID.

Superior discrimination power

High discrimination power is achieved by using 34 upper Y-clade SNPs [3] and 90 autosomal SNPs that have high heterozygosity and a low fixation index (F_{ST}) [6,7]. Precision ID technology makes it possible to multiplex 124 PCR reactions in one tube with as little as 100 pg of input DNA. With small amplicon sizes (Table 1), the panel is also optimized to identify genotypes for degraded samples more reliably than is possible with typical short tandem repeat (STR) kits.

Table 1. Precision ID Identity Panel specifications.

Precision ID Identity Panel	
Target	124 SNPs
Amplicon length range	• Average of 141 bp for the 34 upper Y-clade SNPs • Average of 132 bp for the 90 autosomal SNPs from Ken Kidd and the SNPforID consortium
Primer pool size	124 primer pairs in 1 primer pool
Time-to-results	<2 days (sample-to-results)
Sample multiplexing (observed performance)*	Ion 510 Chip: 54 samples Ion 520 Chip: 81 samples Ion 530 Chip: 384 samples

* Based on 100x coverage at 97% of total markers using a manual library preparation. Individual lab results may vary depending on workflow used and customer requirements.

Simplicity

- Full profiles generated with as little as 100 pg of input DNA [2]
- Suitable for degraded or pristine samples
- Simple multiplex PCR-based library amplification

Scalability

- Multiple Ion Torrent™ semiconductor chip formats, designed for low, moderate, or high throughput
- Multiplex up to 384 samples per run and decrease your sequencing costs

Speed

- Sample-to-result time is typically less than 2 days

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biosystems

Figure 1 illustrates that the Precision ID Identity Panel has more power of discrimination for degraded samples than conventional STR methods.

Converge Software for SNP analysis

Applied Biosystems™ Converge™ Software, an all-in-one modular enterprise platform from Thermo Fisher Scientific, integrates forensic DNA data management and analysis into a single software package designed to increase the efficiency of forensic DNA testing laboratories. With recent advances in NGS, crime laboratories are now able to analyze targeted and forensically relevant SNP markers to generate investigative leads, STR markers to help determine the number of contributors in a mixture analysis, and the mitochondrial genome to identify remains when there is poor quality or no autosomal DNA available for analysis. The Converge NGS analysis module contains parameters for analyzing the Precision ID Identity Panel, generating random match probabilities (RMPs) from the 1000 Genomes Project dataset using 85 unlinked identity SNPs, as well as Y haplogroup determination from the 34 upper Y-clade SNPs.

References

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7. Phillips C, Fang R, Ballard D et al. (2007) Evaluation of the GenPlex SNP typing system and a 49plex forensic marker panel. *Forensic Sci Int Genet* 1:180–185.
8. van der Heijden S et al. (2017) Comparison of manual and automated AmpliSeq™ workflows in the typing of a Somali population with the Precision ID Identity Panel. *Forensic Sci Int Genet* 31:118–125.

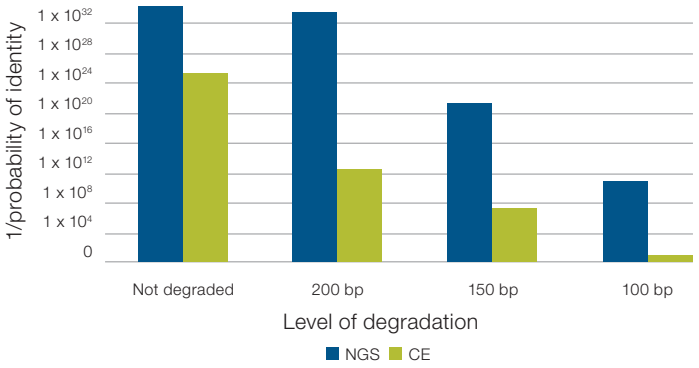

Figure 1. The NGS-based Precision ID Identity Panel enables significant match probabilities at greater levels of degradation compared to CE-based analysis using the Applied Biosystems™ GlobalFiler™ PCR Amplification Kit. A total of 85 unlinked SNPs out of 90 autosomal SNPs were used and the random match probability was calculated based on data from the 1000 Genomes Project.

Ordering information

Product	Quantity	Cat. No.
Precision ID Identity Panel*	96 rxns (manual) 32 rxns (automated with Ion Chef System)	A25643
Precision ID Identity and Library Kit	96 rxns	A26808
Precision ID Library Kit	96 rxns	A26435
Precision ID DL8 Kit	32 rxns	A33212
Precision ID Library Kit	384 rxns	A30941
IonCode Barcode Adapters 1-384 Kit	3,840 rxns	A29751
Ion S5 Precision ID Chef & Sequencing Kit (1 run per initialization)	8 rxns	A35850
Ion S5 Precision ID Chef & Sequencing Kit (2 runs per initialization)	8 rxns	A33208
Ion 530 Chip Kit	8 chips	A27764
Ion 520 Chip Kit	8 chips	A27762
Ion 510 Chip Kit	8 chips	A34292
Converge Software and Server	1 each	A35131
Case Management and NGS Data Analysis License, 1 user	3-year license	A35987
Case Management and NGS Data Analysis License, 5 users	3-year license	A36237
HID Ion Chef System	1 each	A30070
HID Ion GeneStudio S5 System	1 each	A41431
HID Ion GeneStudio S5 Plus System	1 each	A41432
HID Ion GeneStudio S5 Prime System	1 each	A41433

* The Precision ID Identity Panel has been internally tested but has not been validated under the Scientific Working Group on DNA Analysis Methods (SWGDAM) guidelines.

Find out more at **thermofisher.com/hid-ngs**

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