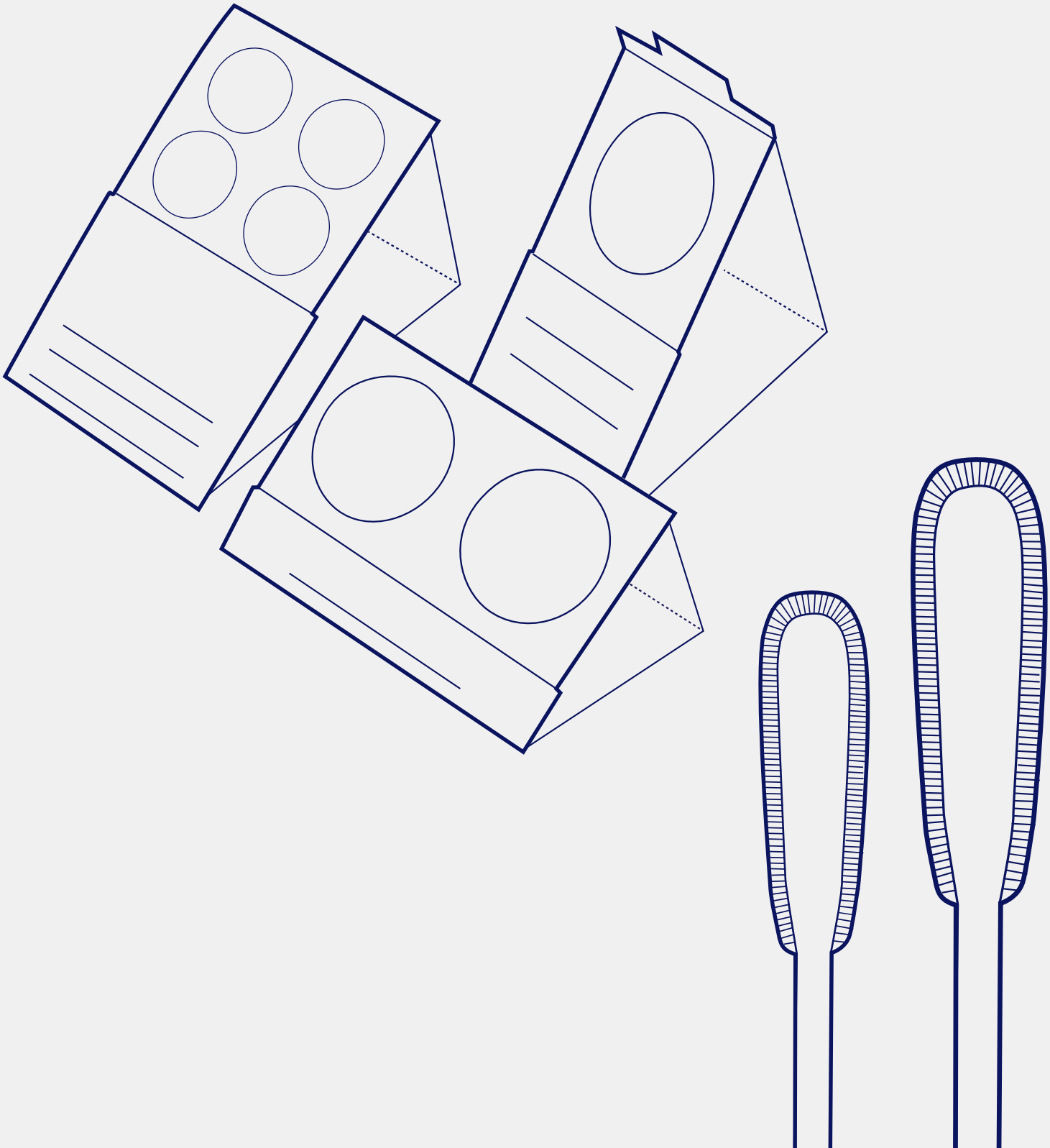
appliedbiosystems

Reference DNA collection solutions for human identification

ISO 18385 Forensic DNA Grade

Efficient sample collection, storage, and downstream analysis

ThermoFisher SCIENTIFIC



The first step is critical

The critical challenge of reference DNA sample collection

Before a reference DNA sample can be processed for human identification purposes, it must first be collected from an individual. For optimal genotyping results, it is critically important that the collection is done with devices designed to:

- **Enable** efficient, high-quality PCR amplification for genotyping
- **Facilitate** automation, preservation, and storage
- **Maintain** chain of custody and sample integrity

Increase laboratory productivity with proven collection solutions from a trusted partner

To meet these challenges, Thermo Fisher Scientific is proud to provide an innovative solution for forensic DNA–grade collection through a partnership with Copan Flock Technologies, a leading manufacturer of sample collection and DNA preservation tools. Validated on our Human Identification (HID) analysis workflows, the NUCLEIC-CARD™ Collection System and 4N6FLOQSwabs™ DNA Collection System enable forensic and paternity laboratories to maximize efficiency and achieve the highest-quality results.

NUCLEIC-CARD DNA Collection System

An easy-to-use device for collection, preservation, and long-term storage of nucleic acids, the NUCLEIC-CARD matrix is chemically treated to enable cell lysis and protein denaturation (Figures 1–3). Nucleic acids are immobilized and preserved for long-term storage at room temperature. Figure 4 shows the integrated workflow from sample to result.

Figure 1. NUCLEIC-CARD Collection Device.

NUCLEIC-CARD™ cleaning area for improved efficiency

Figure 2. NUCLEIC-CARD matrix, 4 spots.

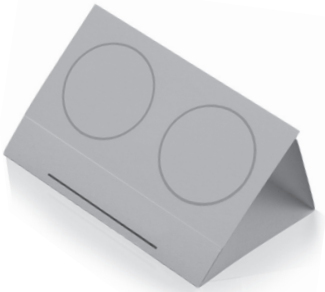
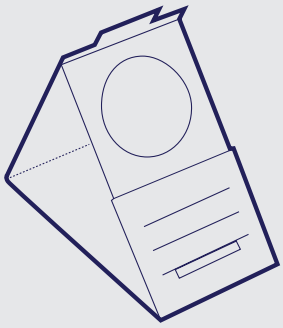
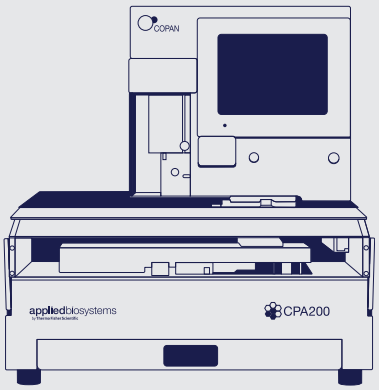


Figure 3. NUCLEIC-CARD matrix, 2 spots.

NUCLEIC-CARD collection system: workflow for reference sample

Collect	Collect punch
 NUCLEIC-CARD device	 BSD and CPA 200 Instruments

Streamlined with Applied Biosystems™ Converge™ Software, an integrated DNA data management and analysis software for forensic laboratories.

Figure 4. Our complete, integrated workflow for single-source samples using the NUCLEIC-CARD collection system.

Key features

- **Enables direct PCR amplification** from a card punch, eliminating time-consuming extraction and quantification steps
- **Facilitates high-quality short tandem repeat (STR) profiles** with Applied Biosystems™ direct PCR amplification kits (Figure 5)
- **ISO 18385–compliant:** free of amplifiable human DNA, certified as DNase and RNase free, and ethylene oxide–treated
- **Available in a variety of configurations:**
  - 1, 2, or 4 sample collection areas per card: plain white for blood and colored for buccal samples
  - Framed card options to maximize sample integrity with commercially available punching systems; integrated swab and/or card collection device to improve buccal cell collection
  - Indicator card that changes color from pink to white upon sample addition for easy visualization and punching
- **Improved chain of custody** with peel-off barcode feature

High-quality STR profiles

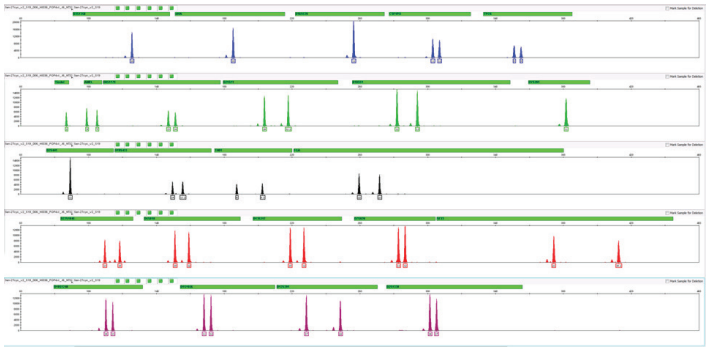
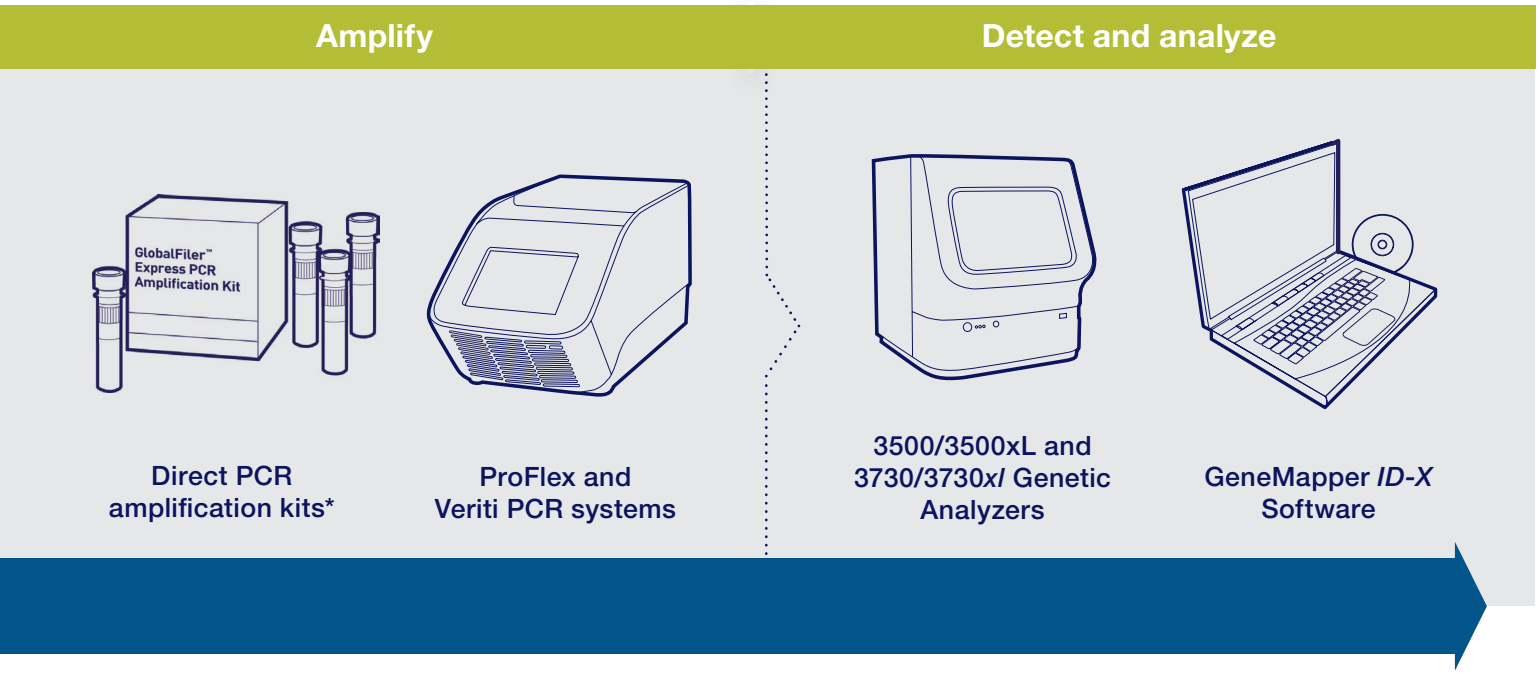


Figure 5. An example of a profile generated from a buccal sample deposited on a NUCLEIC-CARD Collection Device using the Applied Biosystems™ GlobalFiler™ Express PCR Amplification Kit.



* GlobalFiler™ Express, VeriFiler™ Express, YFiler™ Plus, and Identifiler™ Direct PCR Amplification Kits.

4N6FLOQSwabs devices

Optimized for collection of reference samples

4N6FLOQSwabs devices utilize proprietary flock technology to maximize DNA collection and elution efficiency. The perpendicular nylon fibers act like a soft brush that facilitates improved collection of cellular material. Unlike traditional fiber-wound swabs, 4N6FLOQSwabs devices have no internal absorbent core to disperse and entrap the specimen—the sample stays close to the surface for faster and more efficient elution (Figures 6 and 7).

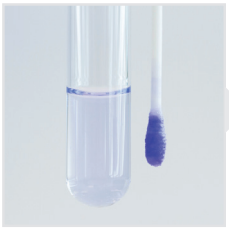
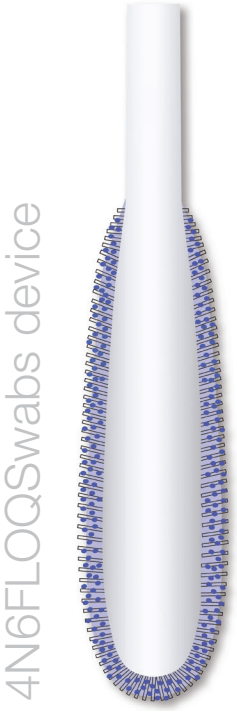


Figure 6. Traditional fiber swabs: the sample stays entrapped in the fiber wad.



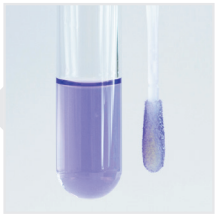
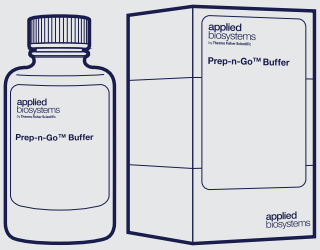


Figure 7. 4N6FLOQSwabs devices have no absorbent core: the sample is instantly and more efficiently released.

Figure 9. Prescored breaking point.

4N6FLOQSwabs collection device—workflow for reference sample

Collect	Lyse
	
4N6FLOQSwabs collection devices	**Prep-n-Go Buffer (for buccal swabs)**

Streamlined with Applied Biosystems™ Converge™ Software, an integrated DNA data management and analysis software for forensic laboratories.

Figure 8. Our complete, integrated workflow for reference samples using the 4N6FLOQSwabs collection device.

Key features

- **Validated for direct PCR amplification:** reference samples collected with 4N6FLOQSwabs reference collection devices can be easily processed using Applied Biosystems™ Prep-n-Go™ Buffer, eliminating the need for extraction and quantification (Figure 8)
- **Easy processing** with prescored breaking point for breaking of the swab into tube (Figure 9)
- **ISO 18385–compliant** and certified free of DNase, RNase, and amplifiable human DNA
- **Specially designed** for buccal sample collection and available in different tubing configurations
- **Customized solutions** for manufacturing of kits for the sample collection workflow to meet the challenging and unique needs of buccal sample collection

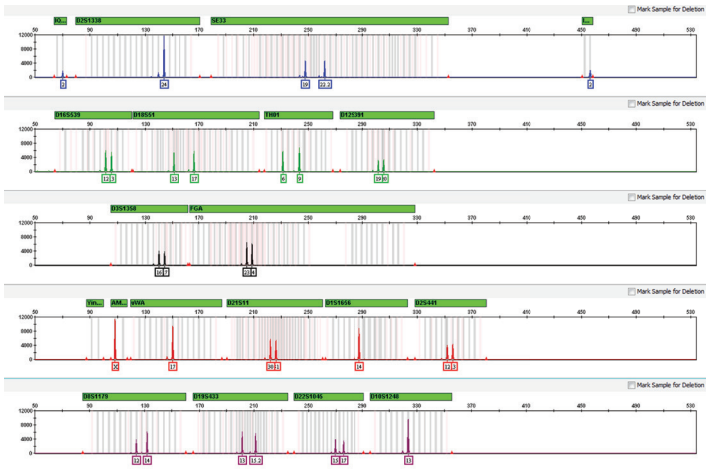
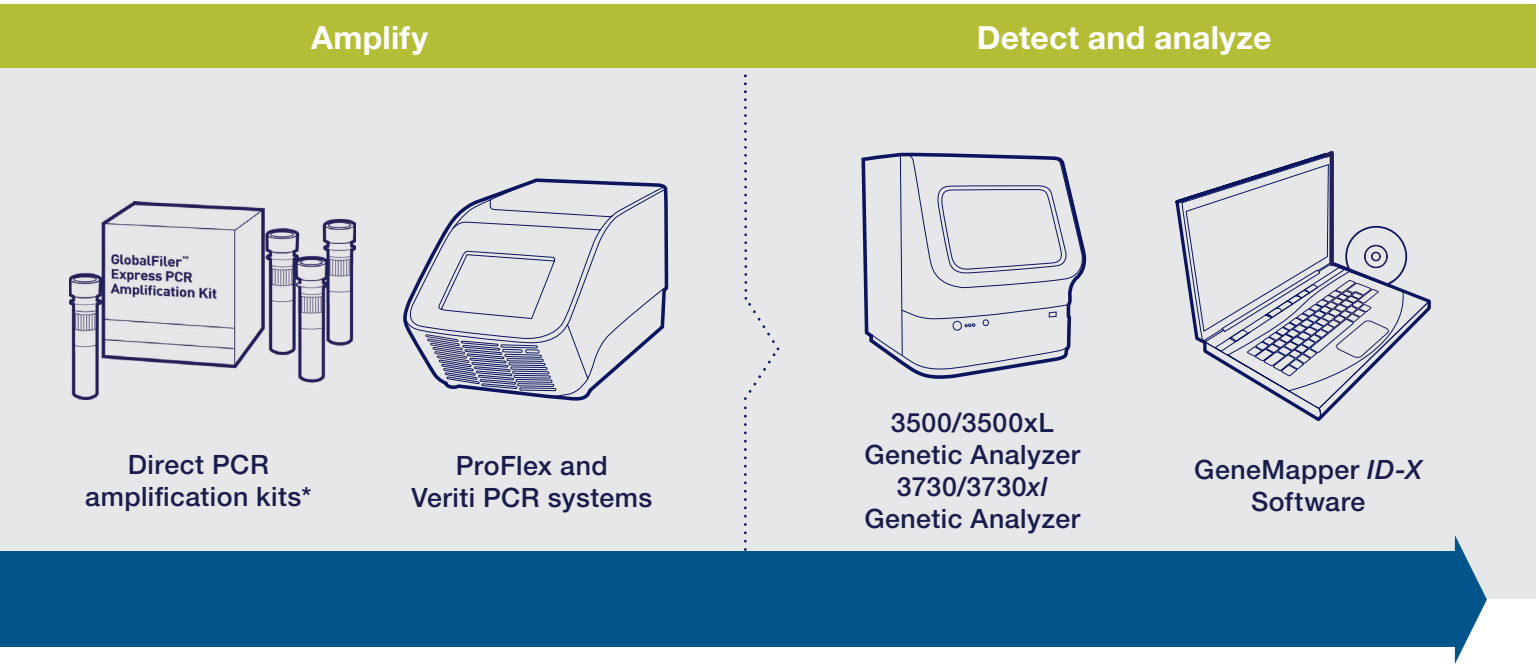


Figure 10. An example of a profile generated through a traditional (non-direct) amplification workflow. A buccal sample was collected with the 4N6FLOQSwabs device, extracted and quantitated using the Applied Biosystems™ PrepFiler™ *Express*™ and Quantifiler™ Trio kits, and amplified with the Applied Biosystems™ NGM Detect™ kit.



* GlobalFiler Express, YFiler Plus, and Identifiler Direct PCR Amplification Kits.

applied
biosystems

Ordering information

Product		Quantity	Cat. No.
NUCLEIC-CARD collection system			
NUCLEIC-CARD matrix, 1 spot		Case of 50	4474001
		Case of 100	4473973
NUCLEIC-CARD color matrix, 1 spot		Case of 50	4473974
NUCLEIC-CARD Collection Device		Case of 50	A32607
NUCLEIC-CARD 1 Spot Framed Color with Cleaning Area		Case of 50	A27139
NUCLEIC-CARD matrix, 2 spots		Case of 100	4473975
NUCLEIC-CARD color matrix, 2 spots		Case of 50	4473976
NUCLEIC-CARD matrix, 4 spots		Case of 100	4473977
NUCLEIC-CARD color matrix, 4 spots		Case of 50	4473978
4N6FLOQSwabs collection devices			
4N6FLOQSwabs device, regular-size tip, peel pouch		Case of 100	4473979
4N6FLOQSwabs device, regular-size tip		Case of 100	4479433
4N6FLOQSwabs device, regular-size tip in active-drying tube		Case of 50	4479439
4N6FLOQSwabs device, regular-size tip plus 2 mL EPPENDORF cuvette		Case of 100	4479431
4N6FLOQSwabs device, regular-size tip plus 2 mL EPPENDORF cuvette with evaporation duct in peel pouch		Case of 100	4479440
4N6FLOQSwabs device, dual swab, regular-size tip		Case of 100	4479432
4N6FLOQSwabs device, buccal-shape tip in active-drying tube		Case of 50	4479436

ISO 18385 Forensic DNA Grade

Learn more about DNA collection solutions for human identification at **thermofisher.com/samplecollection**

ThermoFisher SCIENTIFIC

COL31473 0217