

## The Problem

Current Procedures are Not Designed for Limiting Amounts of DNA

Significant losses (>75%) in collection & purification steps

Assaying only ~5% of the PCR reaction products

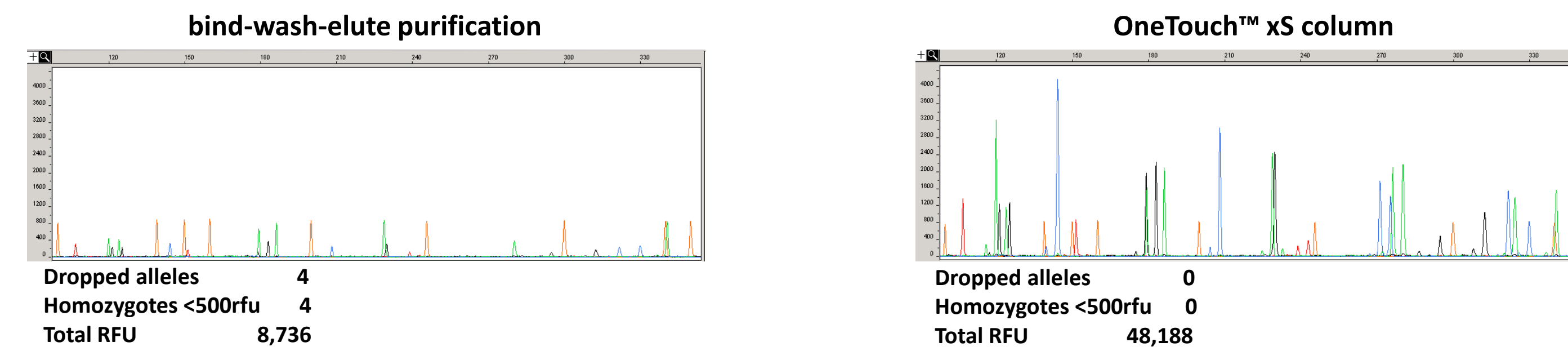
## The Solution

- collecting the biological material:  
mini-swabs and detergent-based buffer\*  
*\*secret sauce#1: better swabs and detergent*
- recovery of collected material:  
centrifugation at high speed
- release of DNA:  
proK & detergent at elevated °C
- purification of DNA:  
removal of inhibitors with 80-90% recovery\*  
*\*secret sauce#2: NOT bind-wash-elute!*
- PCR amplification:  
modest changes, 29 v. 28 cycles, 2x TAQ\*  
*\*better amp with no PCR drop-ins*
- assay 100% of the PCR reaction:  
post-PCR processing and purification\*  
*\*secret sauce#3: use all of the PCR reaction, Amplicon Rx™*

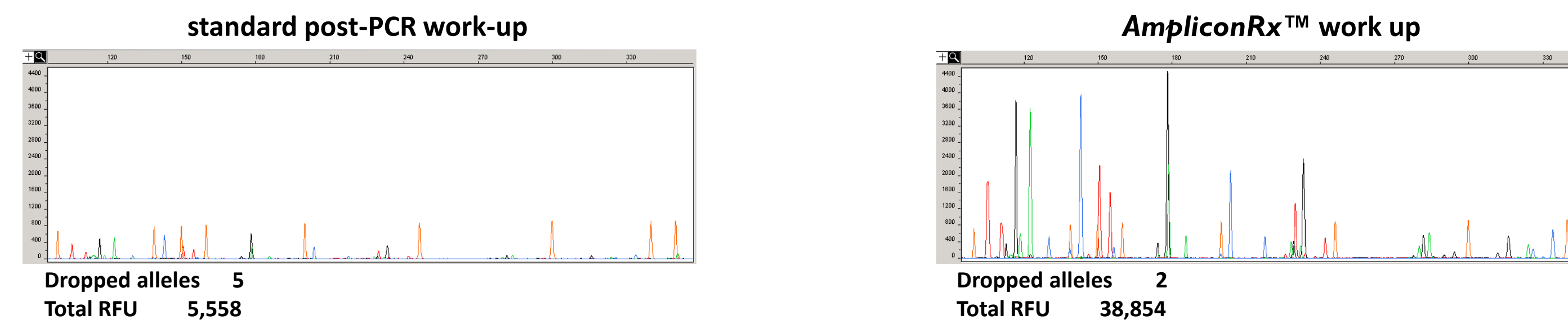
**Σ: the most sensitive technique, ever!**

## Proof of the Pudding is in . . .

### Purification Comparison



### post-PCR Comparison

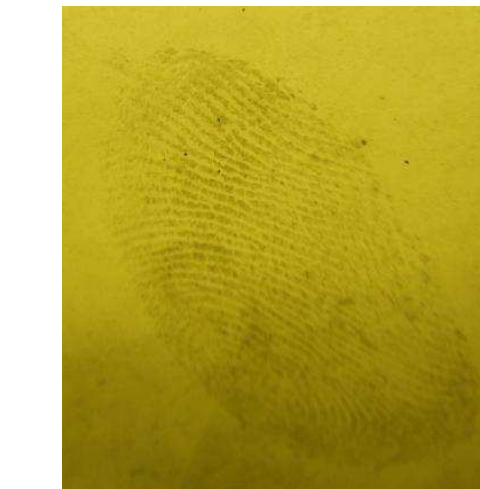


### Tested Samples

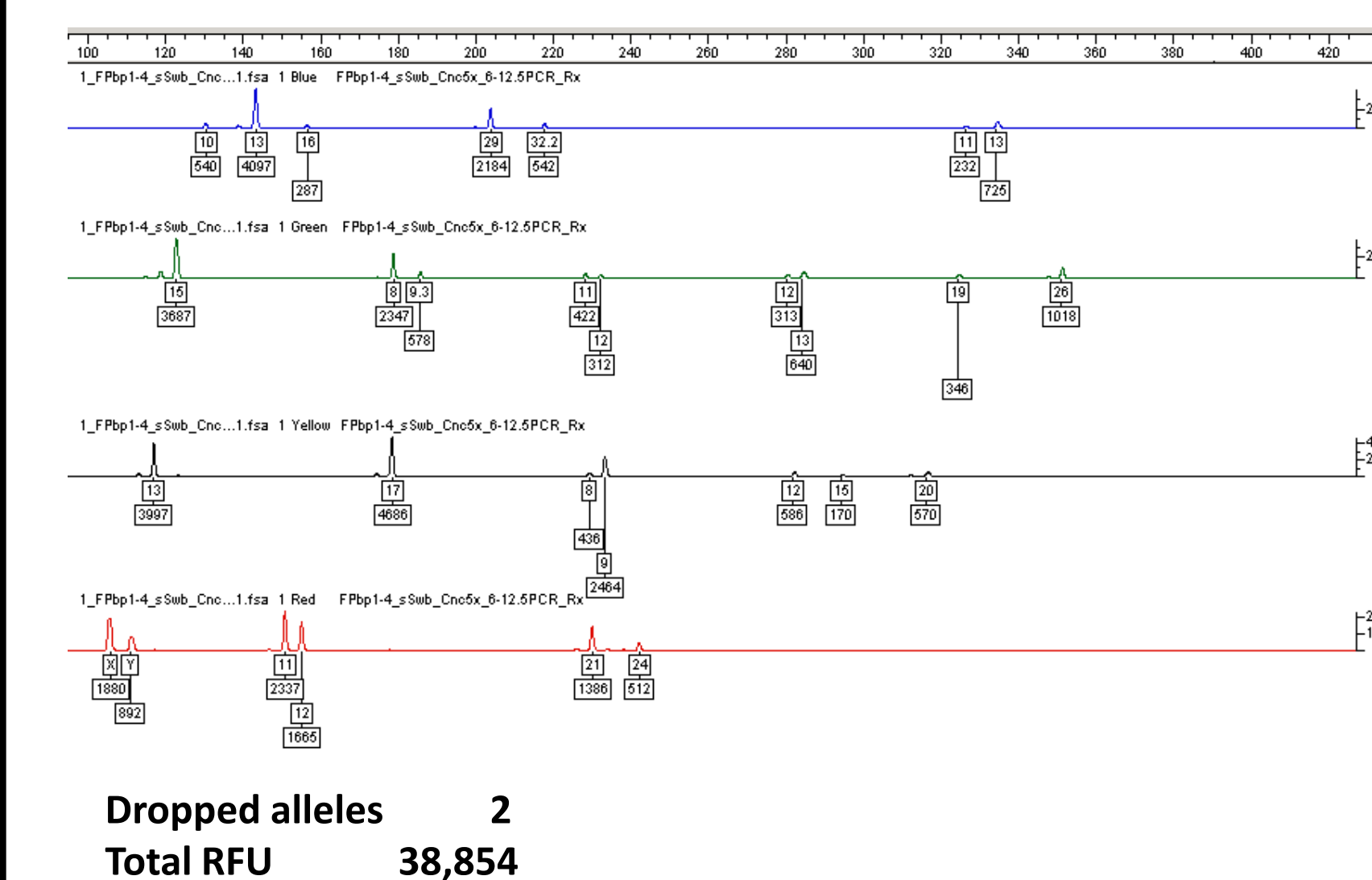
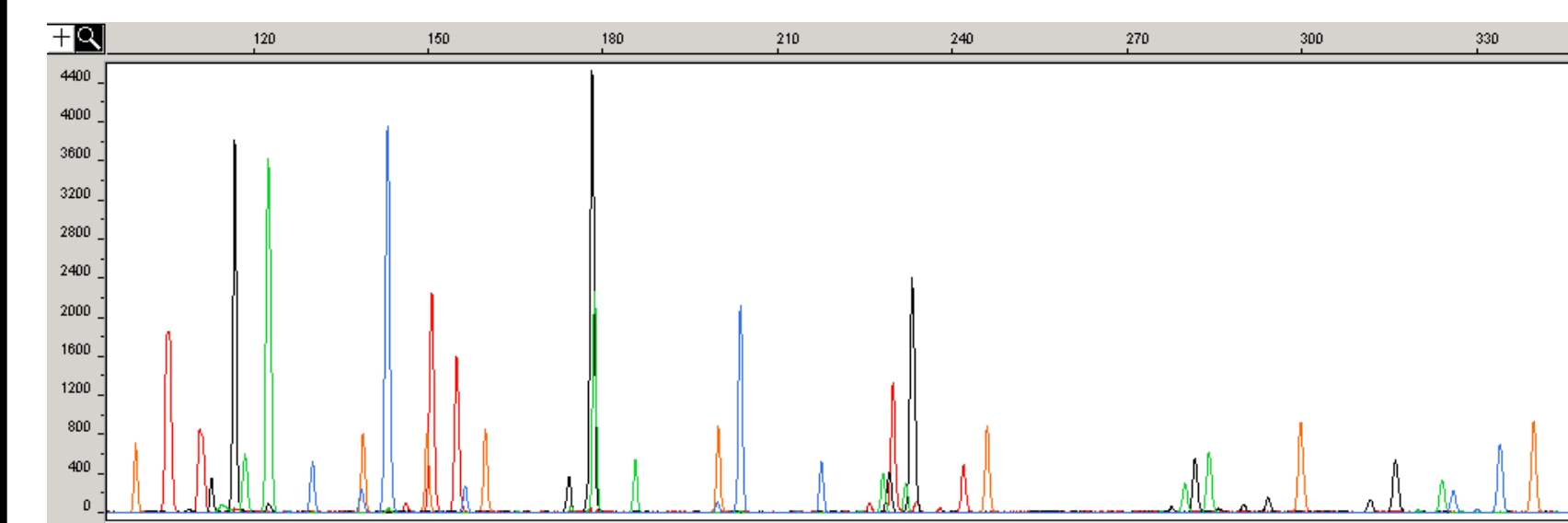
- Deposited DNA on a slide, 75 pg
- Single fingerprint (identified ridge impression)
- Bullets, loaded into magazine, unfired
- ‘Touched’ Coke can (any soda can actually)
- Handled objects, e.g., yearbook, computer mice
- Clothing, e.g., neck collar

## Casework Examples

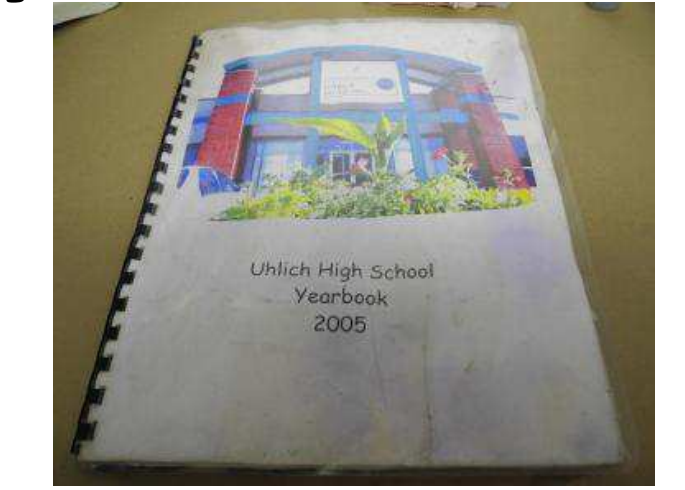
### Autosomal STR profile from a single fingerprint



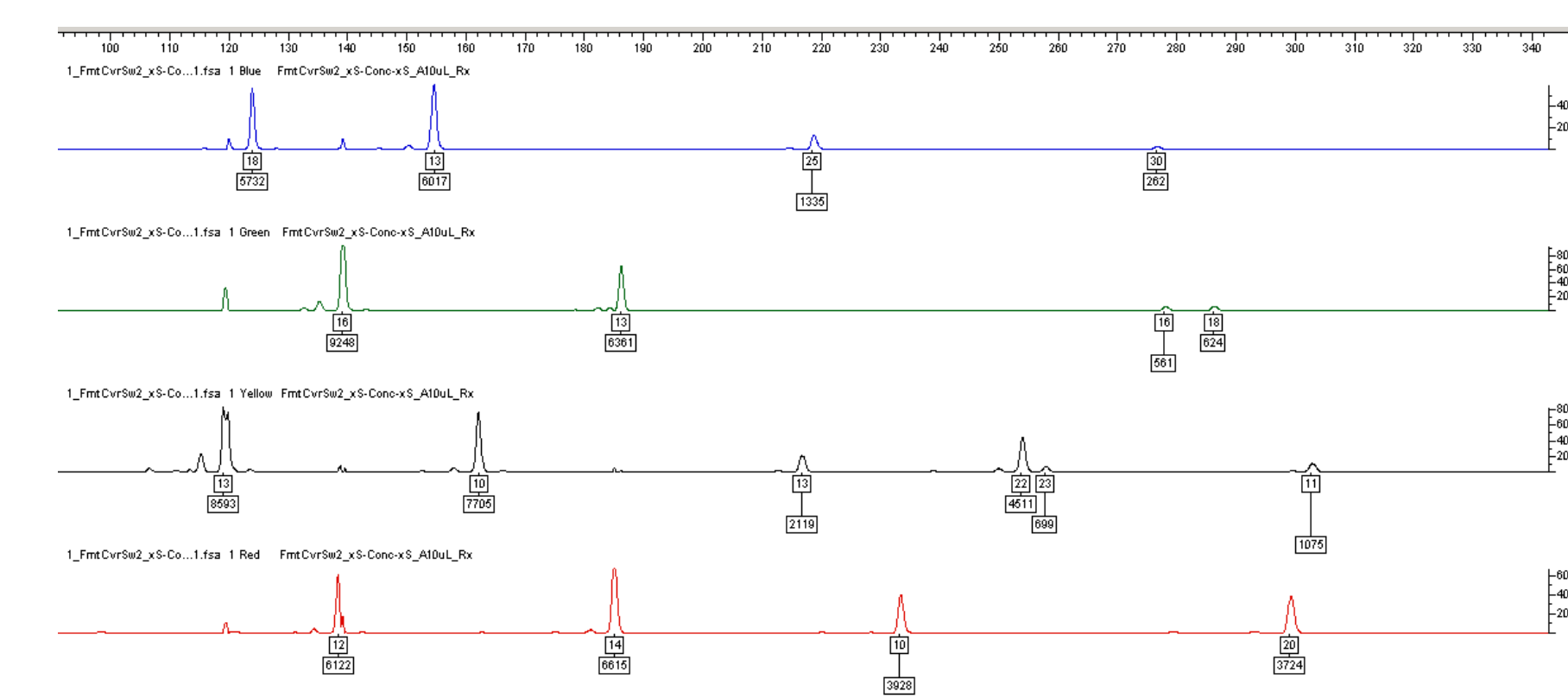
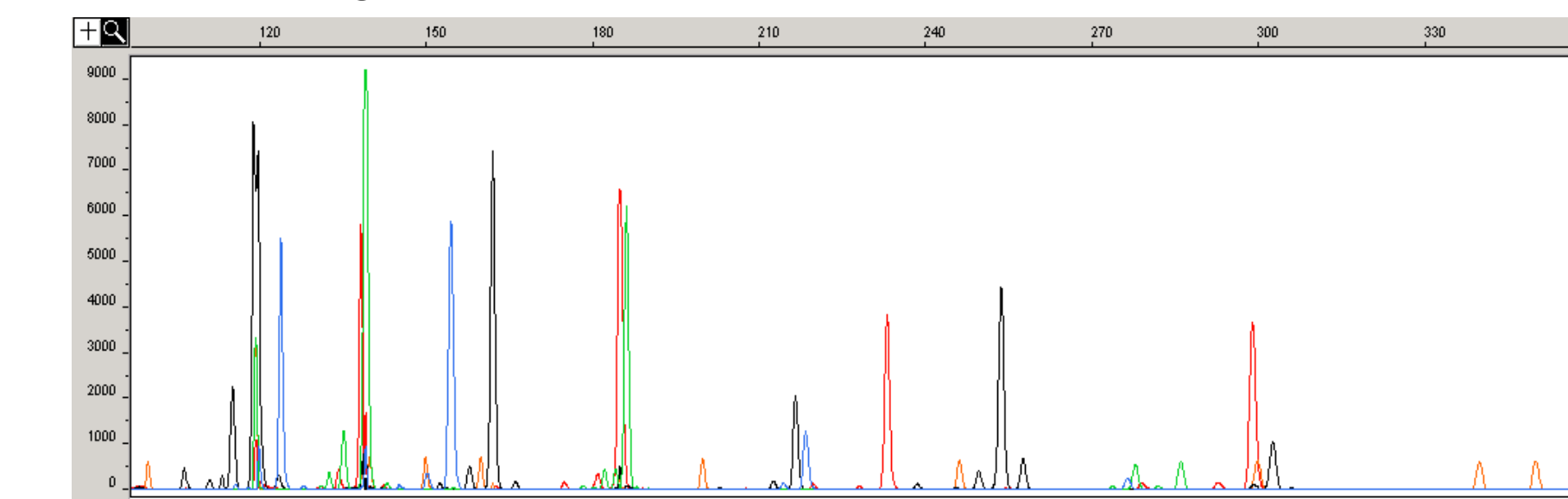
- ✓ Ridge detail identified with DNA-free fingerprint powder
- ✓ Collection with mini-swab and detergent solution
- ✓ proK & detergent digestion
- ✓ xS column purification
- ✓ Concentration in vacuum centrifuge
- ✓ PCR
- ✓ **AmpliconRx™**
- ✓ CE



### Y STR profile from a ‘yearbook’ cover



- ✓ Entire cover sampled with full-size swab & detergent solution (wet/dry technique)
- ✓ proK & detergent digestion
- ✓ xS column purification [1<sup>st</sup>]
- ✓ Concentration in vacuum centrifuge
- ✓ xS column purification [2<sup>nd</sup>]
- ✓ PCR
- ✓ **AmpliconRx™**
- ✓ CE



**OneTouch DNA Method**  
bullets, fingerprints, handled objects. . .  
*see hand-out for additional examples*