The Use of Mini-Tapes to Solve a 16 Year Old Homicide

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Synopsis

- Victim: Charlotte Jones Ivey
- Jeans found several feet away.
Cold case request


- Initial request for further DNA analysis on fingernail samples.
  - Partial male profile of only foreign alleles.
  - More complete deduced partial male profile.
Foreign male profile present – what else can be done?

- Request for vaginal, anal and oral samples be analyzed.
- Requests that touch DNA be performed on the pants.
Item DL1: Victim’s Blue Jeans

- Saturated blood all along waistband and top portion, consistent with stab wounds in upper torso.

- Small blood stains on the areas just below knees.
Item DL1: Victim’s Blue Jeans
Item DL1: Victim’s Blue Jeans

- Collected portion of the blood stain in knee area for DNA analysis.
- Touch DNA collection from around the blood stains.
Mini-Tape

Mini-Tape Creation

- Clear non-coated transparency sheets and $\frac{1}{2}$ inch double sided tape.
- Stick one side of tape to transparency.
- Cut the transparency into strips.
Mini-Tape studies

- Since this is considered a collection technique only, no formal validation was performed.

- Mock pieces of evidence tested.
Mock Evidence

- Cotton T-shirts (2)
- Pens
- Keyboards (2)
- Socks
- Baseball caps (2)
- Bloody shirt
- Reagent Blanks
Mini-Tape studies results

- Extraction method
  - Invalid or inhibited Quantifiler results for majority of Mini-Tape samples extracted organically.
  - QiaAMP extraction worked with no issues.
- Contamination
  - No profiles noted on blank Mini-Tapes.
Mini-Tape studies results

Mini-Tape vs. Wet Swab

- Quantitation results show 6 of 9 samples had higher DNA recovery using Mini-Tape.

- For the 8 samples expected to be single source, 89.5% of the expected alleles were detected using Mini-Tape, and 79% using swabs.

- Bloody shirt

- 5 of 9 samples showed unexpected alleles for both Mini-Tape and wet swab.
Mini-Tapes in the Charlotte Ivey Case

Item DL1: Victim’s Blue Jeans
DNA Results

- Quantified at 0.474ng/μL. Mixture, no major component.

- Foreign DNA at 8 loci using Identifiler, including a Y-peak.

- Foreign profile from jeans had similarities to profile from left fingernails.
CODIS hit

- Immediate moderate convicted offender hit.

- The offender was already serving a sentence for an aggravated sexual assault conviction in a nearby county.

- Profile from Mini-Tape collection on jeans was a perfect mixture of Williams and Ivey.
Trial

- Defense requested repeat testing of all samples.
- In addition, Y-STR testing of all samples was performed.
- Williams was sentenced to life in prison for the murder of Charlotte Ivey.
Summary

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