

Case Summary

Case Synopsis:

Homicide/possible sexual assault. Female child victim found partially submerged in water (body recovered within 10 hours of the last confirmed contact with victim; thus, victim not in water for an extensive period of time). Victim shows signs of sexual penetration including extensive trauma to vaginal area. Examination by both coroner and subsequent serological testing revealed no sign of semen and/or spermatozoa, limiting potential for probative DNA testing.

Evidence Received:

Sorenson Forensics received one pair of panties removed from victim. Panties heavily stained with red/brown staining, theorized to be blood from the victim. Initial testing of panties yielded no probative serology/DNA results. No evidence of spermatozoa nor seminal fluid was obtained from the panties.

Processing:

With no potential sperm cells to test, the panties were processed for touch/contact DNA using M-VAC collection system. A large area of the crotch of the panties as well as the side near the hip area was sampled using the M-VAC. Investigators theorized the perpetrator removed or contacted these areas during or previous to the act(s) that caused the significant vaginal trauma. The M-VAC was utilized to ensure collection of the potentially minimal DNA left from the perpetrator (limited contact, submerged in water) as well as allow for collection of a large area of the fabric of the evidence.

Both areas were processed using the M-VAC system and the resulting liquid was collected in 50ml Falcon conical tubes. These tubes were centrifuged and the resulting cell pellets transferred to a microcentrifuge tube for SoPure™ non-differential organic extraction. Quantification was accomplished using the Promega Plexor HY quant system and any potential resulting DNA was amplified with the Applied Biosystems Yfiler YSTR amplification kit.

Result:

Quantification data revealed no male DNA in the waist/hip area collection, however, a minimal amount of male DNA was obtained from the crotch area of the panties. Approximately 140pg of male DNA were obtained from the extraction of this area (50ul extract volume, ~.0027ng/ul). Autosomal quant results indicated approximately 850ng of female DNA also within the extract (50ul extract volume, ~17ng/ul) equating to an approximate ratio of 6000:1 female to male.

Despite an extreme ratio and limited male DNA, a partial Yfiler profile (9 of 17 loci) from a single male contributor was obtained after consumption and subsequent amplification of the male component. Subsequent testing excluded investigators and crime scene personnel as the source of this profile.

It is Sorenson Forensics' opinion the male DNA profile obtained from the evidence is likely from contact from the perpetrator during the assault. Processing with the M-VAC allowed the minimal amounts of male DNA to be collected despite overwhelming female/victim DNA, exposure to the effects of water and limited amount of cellular material (contact and/or "touch" DNA).