



### D34 A Case Study of DNA Typing From Human Feces

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After attending this presentation, attendees will have a better understanding on the subject of STR as genetic analysis.

This presentation will impact the forensic science community by highlighting STR as genetic analysis.

It is possible to have an individual identification through DNA analysis from body secretions such as hair, saliva, sperm, and an epithelial cell which are found in a crime scene. Short Tandem Repeat (STR) markers which are effective genetic markers that use a common forensic DNA typing. STR is studied in many fields such as a genetic map, a disease diagnosis, evolutionary biology, and forensic medicine, and it uses DNA profiling with amplified STR points by PCR using many kinds of STR kits.

Feces are composed of complex compounds such as a digested microorganism, food scrap, mucus, and a cell from the intestine's wall. It is also used in the field of disease diagnosis. mtDNA is extracted successfully and analyzed from bear feces in a study by Hoss, et. al., in 1992. DNA analysis from human feces is also studied by the field of medical diagnosis.

Feces, which is one of the body's excretions, provides useful information on the physical condition of the colon through a microorganism in the colon and a desquamated epithelial cell. It also provides the source of mtDNA for sequencing and nDNA for genotyping. From the same individual, sequences of samples of feces and blood are equal, but it is observed 4.88 average sequences per 400bp, between the ranges of 1-10 nucleotide.

In March 2009, victim A (a 50-year-old female) and victim B (A's daughter, a 23-year-old female) were murdered by stabbing in CheonAn-si, ChungNam, South Korea. Victim A was found in her master bedroom and the victim B was found in a garden next to her home. During the investigation, feces believed to be the suspect's and a glove with blood were found, and upon the analysis of evidence, DNA was found and the suspect C was arrested.

In this case, extracted DNA from human's feces, the glove with blood, and the part of wrist in glove were used to STR point's analysis after STR DNA profiling. There were three conclusions leading to the arrest of the suspect: (1) the man's DNA was found from feces, and it was the same as DNA from the suspect's oral swab received from the CheonAn SeoBuk police station; (2) the blood on the glove was identified the victims' blood, when analyzing to wipe the wrist part of glove's inside, complex DNA linking victims and the suspect were found; and, (3) when analyzing Y-STR which is the male DNA marker, it matched the DNA of suspect. Therefore, the suspect was found to be male and the DNA of the suspect was analyzed in more detail from the wrist part of glove.

In many crime scenes, criminals leave feces because of psychological pressure, and as a result it is evidence equally important as blood and saliva.

This case shows the DNA collected from the feces was the same as the suspect's DNA, shown through DNA typing. The compound of feces is very complex and the occurrence of microorganism ever changing; however, it can be analyzed perfectly with DNA. Therefore, it can be one of the most important evidence retrieved in crime scenes and it needs various studies.

**DNA, Human Feces, STR**