

FERRETS OR US: HOW SIMILAR ARE WE?

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The objective of the following project was to investigate the cross reactivity of blood and saliva samples from various domestic ferrets on immunoassay cards available for the detection of human blood and saliva samples. Further study using human specific primers contained in the AmpFISTR® Identifiler™ and AmpFISTR® Yfiler™ kits from Applied Biosystems were initiated to explore homology in the STR sequences between humans and ferrets.

It has been reported that immunochromatographic devices currently available in the forensic community for the detection of human blood can also react with blood from domestic ferrets. The three immunoassay devices chosen for this study were the following: Hexagon OBTI obtained from BLUESTAR®, RSID™-Blood, RSID™-Saliva obtained from Independent Forensics and ABACard® Hematrace® obtained from Abacus Diagnostics. All three assays are based on the fundamental concepts of immunology and chromatography. The three devices are noted for being highly sensitive and specific for the detection of human blood. However, the manufacturers of the ABACard® Hematrace® and Hexagon OBTI note that positive results may also be obtained with ferret blood. Most forensic laboratories therefore do not regard positive reaction obtained with these cards as being confirmatory tests for the detection of human blood. The RSID™-Blood card is not known to react with ferret blood. The testing methods were followed as instructed by the manufacturers of each device. The male and female ferret blood and saliva samples were obtained from various commercial sources. All samples were stored at room temperature during the course of the study.

The research indicated that the devices, which utilize human hemoglobin for the detection of human blood, cross-reacted with ferret blood samples (e.g. ABACard® Hematrace® and Hexagon OBTI). Hexagon OBTI cards demonstrated stronger reaction than ABACard® Hematrace® devices. The assay, which is designed to detect human glycophorin A, appeared to be specific for human blood and showed no reactivity with ferret samples (e.g. RSID™-Blood)

The RSID™-Saliva card is used for the detection of human saliva. The saliva tests were conducted using saliva samples from ferrets and several other mammals and results will be discussed. Further research using STR and sequencing technology was conducted to explore homology between humans and ferrets. While some reaction occurred between samples from ferrets and human specific primers, human profile could be easily distinguished from the profile obtained from ferret samples. Even though it is rare to encounter ferret blood in most crime scenes, it is possible to differentiate human bloodstains from ferrets and other animals using a combination of techniques.