

MIXED PROFILES ON A CEMETERY: ANALYSIS OF PORCINE DNA HELPS TO SOLVE A CASE OF GRAVE DEFILEMENT

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Two cemeteries have been defiled by unknown offenders. A pig skull and a fabric with red words and symbols were mounted at the main gate of one of the cemeteries and the gravestones were sprinkled with a red liquid. The police assumed that the liquid was animal blood. Shortly after the assault the police could identify a butcher who has sold a pig skull and pig blood to an unknown person. He could handle a blood-stained receipt from this sale to the police. Later the police identified two suspects, one of the them was identified by the butcher's employee as the person who bought the pig skull and the blood. Both suspects denied the crime.

We received liquid blood and swab samples from both cemeteries, an ear taken from the pig skull and a part of the blood-stained receipt for analysis. In first tests, species determination by DNA analysis confirmed that the blood was of porcine origin. STR analysis with markers specific for porcine DNA showed that the blood traces came from several animals and thus, cannot be traced back to a single individual animal. We could identify two different blood mixtures at pieces of evidence from both cemeteries and one of these mixtures was also found at the blood-stained receipt from the butcher.

Usually genetic analysis of mixed samples aims to include or exclude the suspects by the identification of the individual marker profile within the mixed profile. However, in this case, we aimed to identify that the mixture of blood samples collected at the two crime scenes is the same mixture of blood as on a receipt presented by the butcher. Therefore, we analysed the STR DNA profiles, compared the alleles, the allele peak heights and finally the ratio of the allele peak heights (ROAPH).

In control experiments with mixed blood samples we found high reproducibility of ROAPH over a wide range of DNA amounts amplified and at different species tested.

We came to the conclusion that the blood found at the crime scenes and on the receipt consisted of the same mixture of blood. Even though the suspects denied the crime at court, the judge found the guilty, based on the testimony of the butchers employee and the results of our analyses which where the link between the suspects and the crime.