B62 Indirect DNA Transfer—A Murder Case With Unexplained DNA Traces on a Spent Cartridge Case

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Learning Overview: After attending this presentation and reading about this murder case and the research ideas regarding indirect DNA transfer on spent cartridge cases, attendees will have gained more information about this frequently and intensely discussed relevant topic in forensic genetic research.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by informing attendees that indirect DNA transfer is currently a highly analyzed and cited topic in forensic genetic research. Further research in this field is needed, and the publication of cases where indirect DNA transfer occurred and complicated criminal investigations is of the utmost importance.

In 2019, the murder of a 20-year-old woman in Zell am See, Salzburg, Austria, was committed. Her neighbors found her shot and barely alive in front of her apartment door in the stairwell of a mid-sized apartment building, where she succumbed to her injuries not much later. The murderer was eventually found on detours and through coincidences, and he was finally convicted one year later after making a partial confession to the fatal shooting. However, his DNA-profile could not be found on the crime scene even though in total 25 useful traces could be secured and were processed, some of them even leading to DNA database hits.

Thus, there were numerous useful DNA traces at the crime scene and after analyzing those, there were no DNA profiles unaccounted for. Especially interesting was one specific trace: a precise female profile of a woman who was eventually ruled out as a suspect was found on one spent cartridge case lying inside her apartment, close to the front door. This woman was acquainted with the victim and was occasionally at her apartment but was not involved in the actual shooting and was not present when it happened. So how did this DNA profile end up on the cartridge case with a very strong and good profile quality without her being involved in the murder? In this case, based on DNA analysis alone without the coincidental finding of other indicators leading to the conviction of the real murder, this woman would have stayed the lone suspect.

In this study, based on this murder case involving likely indirect DNA transfer, the aim is to find more answers regarding this topic. Therefore, this study plans the evaluation of diverse scenarios as to how DNA could be transferred on cartridge cases without the donor present, before and after shooting a weapon.

A research project is needed to possibly find additional answers for this specific murder case from Salzburg and to improve the understanding of the mystery of indirect DNA transfer in the context of spent cartridge cases in general.

DNA Transfer, Cartridge Cases, Forensic Genetics

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