EFFECTIVE LONG-TERM PRESERVATION OF BIOLOGICAL EVIDENCE

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The preservation of biological evidence is necessary in order to maintain the quality and quantity of valuable DNA for forensic casework analysis. Once evidentiary material such as blood, saliva, semen, and/or vaginal fluid is collected on a substrate, it is subject to degradation by nucleases from environmental microbes as well as oxidation from environmental forces. This presents a problem, as some evidence may be stored for months or even years before a crime lab receives it for analysis. Many current forensic evidence collection substrates do not include methods for DNA preservation. However, commercially available off-the-shelf (COTS) preservatives that have been used for decades in the food and cosmetic industries may have direct applications for forensic practices to preserve biological evidence. These COTS preservatives are inexpensive, safe, and are easily applied to cotton swabs by the forensic investigator at the crime scene. The ability to apply a DNA preservative directly to the swab eliminates the risk of DNA degradation and preserves the integrity of the DNA profile. Under NIJ award # 2010-DN-BX-K193, the focus of this study is to identify the optimum method to preserve DNA associated with forensic evidence using commercially available off-the-shelf chemical preservatives that can be directly applied to evidence collection substrates. The four main categories of chemical preservatives being tested on forensically relevant biological fluids are: nuclease inhibitors, antimicrobial agents, chelators/fixatives, and antioxidants. The interim results to date of this study will be presented. ⌘