

TEST SITE STUDIES OF THE PREPFILER™ FORENSIC DNA EXTRACTION KIT. A COMPARISON WITH MANUAL EXTRACTION USING ORGANIC SOLVENTS AND AUTOMATED EXTRACTION WITH THE INVITROGEN IPREP™ PURIFICATION INSTRUMENT

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The Forensic Molecular Biology Department of the Institute of Legal Medicine, University of Berne has over many years developed and validated DNA extraction methods utilising organic solvents from forensic samples on a variety of substrates. Recently, the Invitrogen iPrep™ Purification Instrument has been validated for the extraction of DNA from forensic evidence and reference samples.

The PrepFiler™ Forensic DNA Extraction Kit is designed specifically for the extraction of DNA from a variety of sample types including body fluids, stains and swabs of body fluids and tissues. The kit contains reagents necessary for the lysis of cells, binding of DNA to magnetic nanoparticles, removal of PCR inhibitors and elution of bound DNA.

Our department was approached to take part in the Test Site Studies for this Kit. The study was carried out in three parts on forensic samples, provided by Applied Biosystems, under a variety of experimental conditions. Additionally, each Laboratory was requested to carry out extractions on provided samples utilizing the various in house extraction methods (in our case organic methods and Invitrogen iPrep instrument). As an optional further test procedure, typical forensic samples for each laboratory were tested.

Our results show that the DNA extraction using the PrepFiler™ Forensic DNA Extraction Kit is comparable to extraction with organic solvents and with the Invitrogen iPrep instrument. We present here our results of the Test Site Studies, in particular those with samples which should contain inhibitors. We also address the problems encountered when processing real casework samples and our modifications to overcome these.