

A CONFIRMATORY TEST FOR SPERM IN SEXUAL ASSAULT SAMPLES USING A MICROFLUIDIC-INTEGRATED CELL PHONE IMAGING SYSTEM

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The failure to test and analyze evidence connected to sexual assaults constitutes a growing problem for victims, public safety and the criminal justice system. The demand for DNA testing is increasing; expanded awareness of the power of forensic technology to help crime solving creates new demands for scientific advances in the field.

Forensic sample screening is commonly performed using UV light, alternative light sources, acid phosphatase (AP) overlay or P-30 (PSA, prostate specific antigen), which are presumptive tests for semen identification. To our knowledge, currently no rapid and portable forensic screening technology based on a confirmatory test for sperm to identify the most probative samples in a sexual assault kit is available. Here, we integrate microfluidics and imaging platforms and present a novel sample screening tool, *i.e.*, microchip-integrated with an innovative cell phone imaging platform. This integrated platform will be controlled on an embedded cell phone application, which records, processes images, as well as transferring data to a virtual machine for further investigation and storage. In the future, this innovative platform technology can also potentially help downstream forensic analysis in a laboratory, hospital or sexual assault treatment center.