



## SpermTrap

Eurofins Forensic Services is delighted to announce the implementation of the new method for the recovery of sperm in sexual assault cases, SpermTrap. Following extensive research and development, this innovative technique:

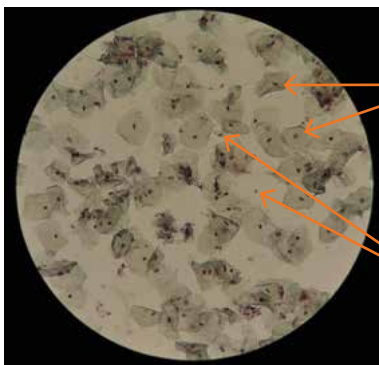
- Significantly increases the recovery of semen from swabs and fabrics when compared with traditional laboratory methods.
- Produces microscope slides that are easier to search (thereby reducing the possibility that sperm heads are not detected).
- Improves the chances of detecting of male DNA.
- Optimises the DNA process and increases the likelihood of obtaining clear, male profiles.

We understand the critical importance of sexual offence investigations to our customers, therefore, we continually invest in detailed research and development to ensure we have optimal techniques available for these cases. To ensure the validation of the new technique resembled real casework submissions as

closely as possible, post coital vaginal swabs from volunteers were used in our study. This provided the necessary assurance that the benefits seen during the validation could be replicated in a true casework scenario. During the research project we investigated many complex variables and the following key elements of the process were implemented:

- Specially formulated chemical reagents
- Increased exposure of fibres of swabs/fabric to the chemical reagents
- Manual agitation of the fibres is undertaken to maximise release of the sperm cells
- Female cells broken open but sperm left intact (therefore female cells don't mask the sperm on microscope slides)
- Removes residual female DNA to reveal male DNA from the sperm cells.

This technique has been fully accredited by UKAS to ISO 17025 standards and we are pleased to be able to provide this new, innovative and highly effective process as part of our routine service, at no additional cost to our customers.

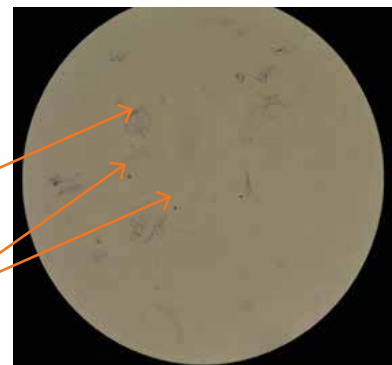


Traditional method slide

Female epithelial cells

Cell debris

Sperm heads



SpermTrap slide

## Case Studies

**1** A female went to visit friends in a flat and fell asleep on the sofa; when she awoke she believed she had been vaginally raped. The offender was not identified at this stage. Vaginal swabs were taken 3½ to 4 days after the alleged incident during which time the victim had showered.

Using the new SpermTrap extraction method, trace sperm heads (<10) were observed in material extracted from the vulval swabs, high vaginal swabs and the endo-cervical swabs; no sperm heads were recovered from the low vaginal swabs. The sperm heads were noted by the examiner as being 'easy to find' on the slides and no nucleated epithelial cells from the victim's vagina were seen. Remaining material from the high vaginal swab was submitted for DNA and a mixed DNA profile was

obtained consisting of a clear major profile from a male individual, with an additional trace of DNA from at least one other source. The major male profile was suitable for permanent inclusion onto the NDNAD.

It is not possible to determine whether we would have recovered these sperm heads using the old extraction method but the expectation of finding semen on the victim's intimate swabs would have been low given the time since intercourse. Furthermore, when using the old method we would have expected to obtain a low level mixture from this type of sample which would have unlikely been suitable for loading onto the NDNAD. Overall the new SpermTrap method has demonstrated the successful detection of trace amounts of semen and subsequently a loadable DNA profile.

**2** The Eurofins Cold Case team has recently reviewed the violent rape of a sex worker in 2000. At the time of the original examination, one sperm head was found on the high vaginal swab which was not suitable for DNA profiling. Semen was also discovered inside the crotch of the victim's trousers (no knickers worn); a DNA profile from at least 3 people was obtained from the trousers. This profile was not suitable for loading to the NDNAD.

The case was recently reviewed and the cold case scientist decided to wait for the new SpermTrap method to be available. The vaginal swab remains were then re-extracted using

the new method which resulted in the recovery of many more sperm cells. On DNA profiling, two male profiles were obtained, one of which generated a match on the NDNAD. The new results were used to re-interpret the results from the trousers; as well as the two males already identified from the vaginal swabs, a third male profile was obtained and searched against the NDNAD and a further match obtained.

The SpermTrap method has improved the original result of a single sperm head first time round, to many more heads generating two matches on the NDNAD and a third suitable for searching.



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