Introduction to **SPERM HY-LITER™** Tests for Forensic Laboratories

Monoclonal Antibody-Based Fluorescent Detection of Human Sperm from Sexual Assault Evidence

**SPERM HY-LITER™**

**SPERM HY-LITER PLUS™**
Forensic DNA laboratory

Accreditations: ISO 17025, NY-DOH, AABB, CLIA

Specialize in LCN / Trace Protocols

Profiles from < 0.1 ng

Products for Forensic Laboratories

Contract R & D

Laboratory personnel: MS and Ph.D. scientists

5,600 sq ft of combined laboratory and office space

Suburban Chicago – 18 minutes from O’Hare
- 30 minutes from The Loop
R & D contract from Federal Law Enforcement Agency

Lateral Flow Immunochromatographic Strip Tests

RSID™-SEmen
RSID™-Saliva
RSID™-Blood

Fluorescent Detection of Sperm from Sexual Assault evidence

SPERM HY-LITER™
SPERM HY-LITER PLUS™
Test Format: Microscopic Screening Method for Sperm

Antigen Detected: Human Sperm Heads

Antibodies: Mouse monoclonal

Labeling: Sperm: Alexa 488 / Nuclei: DAPI

Sensitivity: Single Human Sperm Head

Cross-reaction: None detected

Test Read-out: Visual

Preparation Time: 120 minutes – 10 minutes ‘hands-on’
Sexual Assault Smear Slide

'Strictly' Hydrophobic Barrier Ring Marker

Step 1:
Sample Preparation 30 min

Step 2:
Fix Permeabilize 10 min

Step 3:
Blocking Solution 30 min

Step 4:
Sperm Staining 30 min

Step 5:
Mounting Media / DAPI 1 min

Stained, Mounted Cover Slipped Slide
SPERM HY-LITER™ staining

Cell Type Specificity
Buccal Extract, Smear slide
*with* Sperm

Phase Contrast

DAPI Filter

FITC Filter
**SPERM HY-LITER™**

**Phase Contrast View**

**SPERM HY-LITER™** staining

Cell Type Specificity
Post-Coital Sample, Smear slide
*with* Sperm

**DAPI Filter**

**FITC Filter**
SPERM HY-LITER PLUS™

Step 1:
Sample Preparation
30 min

Step 2:
Fix
Permeabilize
10 min

Step 3:
Blocking Solution
30 min

Step 4:
Sperm Staining
30 min

Step 5:
Mounting Media / DAPI
1 min

Two Position Masked Slide + Extract from Sexual Assault Evidence → Stained, Mounted Cover Slipped Slide

Phase

DAPI

FITC

Independent Forensics
DNA TESTING & TECHNOLOGIES
**SPERM HY-LITER PLUS™**

**SPERM HY-LITER PLUS™** staining

Cell Type Specificity
Buccal, Urine & Blood extracts
*without* Sperm

**Phase Contrast**

**DAPI Filter**

**FITC Filter**
SPERM HY-LITER™ staining

Cell Type Specificity
Buccal, Urine & Blood extracts

with Sperm

Phase Contrast

DAPI Filter

FITC Filter
SPERM HY-LITER™ staining

Sensitivity & Specificity
Buccal, Urine & Blood Extracts
Down to a Single Sperm

Phase Contrast

DAPI Filter

FITC Filter
**SPERM HY-LITER**™ staining

Species Specificity
Animal Semen (various)
*without* Human Semen

Phase Contrast

**DAPI Filter**

**FITC Filter**

---

**Independent Forensics**
DNA TESTING & TECHNOLOGIES
SPERM HY-LITER™ staining

Species Specificity
Animal Semen (various) *with* Human Semen

Phase Contrast

- DAPI Filter
- FITC Filter
First *Positive* Identification for Human Sperm

First *Specific* Identification for Human Sperm

Sensitivity down to a single sperm

Fully Compatible with Automated Methods

Scan slides at lower magnification: 10X or 20X
Acknowledgements:

SPERM HY-LITER™
SPERM HY-LITER PLUS™

Jennifer Old, Ph.D.

Brett Schweers, Ph.D.

P.W. Boonlayangoor, Ph.D.  Chicago

Liz Graffy, MS

Marisa Farhner, M.S
<table>
<thead>
<tr>
<th>Test For</th>
<th>Current</th>
<th>Issue/Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semen</td>
<td>p30/PSA</td>
<td>specificity / sensitivity</td>
</tr>
<tr>
<td>Blood</td>
<td>hemoglobin</td>
<td>specificity</td>
</tr>
<tr>
<td>Saliva</td>
<td>amylase activity</td>
<td>specificity</td>
</tr>
<tr>
<td>Sperm</td>
<td>KPIC / morphology</td>
<td>specificity / sensitivity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test For</th>
<th>New</th>
<th>Issue/Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semen</td>
<td>RSID-SEmen™ semenogelin</td>
<td>Solved</td>
</tr>
<tr>
<td>Blood</td>
<td>RSID-Blood™ glycophorin A</td>
<td>Solved</td>
</tr>
<tr>
<td>Saliva</td>
<td>RSID-Saliva™ (\alpha)-amylase</td>
<td>Better</td>
</tr>
<tr>
<td>Sperm</td>
<td>SPERM HY-Liter™ sperm head</td>
<td>Solved</td>
</tr>
</tbody>
</table>
Karl Reich

Tel 708.234.1200
Fax 708.978.5115

karl@IFI-test.com

www.IFI-test.com