Sperm Preparation, Handling, and Storage

SOLUTIONS FOR THE ANDROLOGY LABORATORY
Help at Every Step
Simpler processes, less stress, and better results

- RETRIEVE/RINSE OOCYTES
- PREINCUBATE
- DENUDE (ICSI)
- PREINCUBATE
- WASH
- MULTIPURPOSE HANDLING MEDIUM
- ISOLATE
- SEPARATE SPERM
- CONTINUOUS SINGLE CULTURE MEDIUM
- HYALURONIDASE
- MULTIPURPOSE HANDLING MEDIUM

Day 0
VITRIFICATION

Day 3
Continuous Single Culture Medium

Day 5
Continuous Single Culture Medium

Transfer Blastocyst

Vit Kit
Vit Kit-NX

Uninterrupted Culture

2 | FUJIFILM IRVINE SCIENTIFIC
Leading The Way to Greater Workflow Efficiency and Increased Pregnancy Rates

FUJIFILM Irvine Scientific has been a well-recognized supplier of innovative media solutions and lab supplies to the ART community for almost 30 years.

Media solutions, such as ISolate for sperm preparation and Freezing Medium TYB for cryopreservation, have set industry standards in the field of andrology. FUJIFILM Irvine Scientific pioneered the use of vitrification to increase survival rates of cryopreserved oocytes and embryos with Vit Kit and Vit Kit-NX.

Today, with a new generation of optimized, multi-use media, Multipurpose Handling Medium and Continuous Single Culture, FUJIFILM Irvine Scientific continues to increase workflow efficiency and contribute to successful pregnancies in clinics throughout the world.

Sperm Preparation, Handling and Storage

- Maintain high quality, viable sperm
- Improve chance of fertilization
- Maximize survival rates

Learn about the latest FUJIFILM Irvine Scientific solutions for reproductive technologies in our brochures:

- From gametes to blastocysts
- Vitrification of oocytes and embryos
- Sperm preparation, handling and storage

Visit our website at www.irvinesci.com

Peace of Mind at Every Step

FUJIFILM Irvine Scientific was the first ART manufacturing company in the USA to receive ISO 13485:2016 quality system certification, the rigorous international quality assurance standard designed specifically for Medical Devices. Every FUJIFILM Irvine Scientific product is subject to a stringent Quality System, unrivaled in the industry, and produced in well-established, cGMP compliant facilities.
Improve Chance of Fertilization from any semen sample

ISolate is one of the most widely used media for isolation and purification of sperm prior to IUI, ICSI and IVF.

Since 1997, its use for density gradient centrifugation of semen samples has been referenced in more than 250 peer-reviewed publications. ISolate maintains physiological pH under ambient conditions by utilizing a colloidal suspension of silica particles stabilized with covalently-bound hydrophilic silane in HEPES-buffered HTF.

Select the ISolate product to meet requirements and IVF.

Well-established as a standard technique for separating healthy sperm, the concentrations of ISolate used in density gradient centrifugation can vary according to requirements for speed of preparation, level of purity or final sperm concentration. ISolate is available in a range of concentrations and sizes to meet the needs of every laboratory.

High recovery of motile sperm from healthy and low quality samples

**Samples n=20**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Pre-wash</th>
<th>ISolate</th>
<th>Commercial alt. 1</th>
<th>Commercial alt. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motility %</td>
<td>57.8±9.1</td>
<td>81.4±6.6</td>
<td>62.5±13.2</td>
<td>85.7±8.0</td>
</tr>
<tr>
<td>Total motile sperm (x10⁶)</td>
<td>26.1±16.7</td>
<td>15.8±18.2</td>
<td>14.2±15.9</td>
<td>10.6±19.7</td>
</tr>
<tr>
<td>Recovery %</td>
<td>48.9</td>
<td>45.3</td>
<td>30.8</td>
<td></td>
</tr>
<tr>
<td>DNA damage %</td>
<td>7.5±9.2</td>
<td>7.2±5.2</td>
<td>8.8±4.7</td>
<td>11.2±7.4</td>
</tr>
</tbody>
</table>


**Save Time and Ensure Consistency**

**ISolate**
- Rapid one or two layer separations
- Ready to use 50% and 90%—no dilution required

**ISolate Stock Solution**
- Rapid one layer separations
- Ready-to-use, 90% gradients or dilute as required

**Prepare Custom Gradients**

**ISolate**
- Dilute 100% isotonic solution as required
We use ISolate specifically to prepare frozen sperm samples. By using an improved method (provided by FUJIFILM Irvine Scientific) in combination with ISolate, we have improved the yield of motile spermatozoa and so reduced the number of vials required for each treatment cycle.

Charlotte Hall, Senior Embryologist, Sussex Downs Fertility Centre, Eastbourne, U.K.

Mean Sperm Count Recovery (mil/mL) by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Leading commercial medium</th>
<th>ISolate</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-30</td>
<td>9</td>
<td>12.5</td>
</tr>
<tr>
<td>31-35</td>
<td>12.7</td>
<td>17.8</td>
</tr>
<tr>
<td>36-40</td>
<td>11</td>
<td>17.3</td>
</tr>
<tr>
<td>&gt;40</td>
<td>11</td>
<td>18</td>
</tr>
</tbody>
</table>

Data courtesy of Dr. J. G. Mehta, Laboratory Director, Queen’s Hospital, Romford, U.K.

Prepare high quality sperm from fresh or frozen samples

- Achieve high concentrations of progressive, motile spermatozoa
- Remove cellular debris, abnormal or immature sperm, seminal fluid, bacteria, and lymphocytes
- Increase recovery rate and number of total motile sperm
Maximize Sperm Survival
Maximize sperm survival rates after long- or short-term storage

Use less medium to reduce costs and minimize dilution of samples

Arctic Sperm Cryopreservation Medium is a new TYB-free, dual-buffered medium designed for modern sperm processing. It is formulated to require less medium per application to save money and minimize dilution of frozen samples.

- Designed to maintain consistent pH before and after freezing with dual buffer base (HEPES/MOPS)
- Use 3:1 ratio of semen to medium
- Improve post-thaw performance with the aid of key antioxidants and amino acids

Increase recovery, maintain post-thaw viability

Freezing Medium TYB uses glycerol and the unique ability of TEST-yolk buffer (TYB) to protect sperm at low temperatures during long term storage. Freezing Medium TYB is the first and only CE-marked, FDA-cleared cryopreservation medium that contains egg yolk.

- Maximize sperm survival from healthy or poor quality samples

Higher post-thaw recovery with improved quality

<table>
<thead>
<tr>
<th>Supplier A</th>
<th>Arctic SCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>117%</td>
</tr>
<tr>
<td>100%</td>
<td>117%</td>
</tr>
<tr>
<td>100%</td>
<td>127%</td>
</tr>
</tbody>
</table>

% Motility (Test/Control)

<table>
<thead>
<tr>
<th>% Motility (Test/Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 %</td>
</tr>
<tr>
<td>20 %</td>
</tr>
<tr>
<td>40 %</td>
</tr>
<tr>
<td>60 %</td>
</tr>
<tr>
<td>80 %</td>
</tr>
<tr>
<td>100%</td>
</tr>
<tr>
<td>120%</td>
</tr>
<tr>
<td>140%</td>
</tr>
<tr>
<td>160%</td>
</tr>
<tr>
<td>180%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poor quality semen (n=35)</th>
<th>Normal morphology (%)</th>
<th>Condense chromatin (%)</th>
<th>Motility (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arctic SCM</td>
<td>11.7 ± 6.1</td>
<td>78.9 ± 10.3</td>
<td>28.3 ± 22.5</td>
</tr>
<tr>
<td>Commercial medium, glycerol only</td>
<td>9.3 ± 5.6</td>
<td>70.7 ± 10.8</td>
<td>13.3 ± 9.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Healthy semen (n = 25)</th>
<th>Normal morphology (%)</th>
<th>Condense chromatin (%)</th>
<th>Motility (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arctic SCM</td>
<td>26.3 ± 7.5</td>
<td>92.4 ± 8.5</td>
<td>52.8 ± 27.3</td>
</tr>
<tr>
<td>Commercial medium, glycerol only</td>
<td>22.2 ± 6.4</td>
<td>88.7 ± 11.2</td>
<td>32.7 ± 19.1</td>
</tr>
</tbody>
</table>

One-step alternative to cryopreservation—enable semen storage off-site

- Preserve sperm viability during short-term storage at 2° to 8°C
- Store semen up to four days—no freezing, glycerol-free*

TYB Protects Sperm During Refrigeration

<table>
<thead>
<tr>
<th></th>
<th>Seminal fluid: TYB 1:1, 4°C</th>
<th>Seminal fluid only, 4°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motility after 48 hours</td>
<td>29.6 ± 21.5</td>
<td>6.2 +/- 9.2</td>
</tr>
</tbody>
</table>

*Baek et al. Can men produce and store semen at home?
Poster presented at: ASRM 2006, Louisiana, USA P-1006

High number CASA analysis demonstrated significantly increased parameters for CASA motility categories.
CE-marked TYB medium was found to be a superior cryoprotective medium than a glycerol-only sperm freezing medium.

Chey Dearing, Hammersmith Hospital, London UK
Maintain Quality
Maintain high quality, viable sperm

Process sperm in a safe environment
Multipurpose Handling Medium provides a versatile solution for swim up preparation, sperm washing, oocyte retrieval and rinsing, IUI, ICSI, and embryo transfer.

- Maintain physiological pH 7.2–7.4 and osmolality over a broad temperature range
- Support maintenance of cellular homeostasis
- Reduce risk of toxicity using a dual buffer system (HEPES and MOPS)
- Save time—no mixing or filtering, ready to use

Multipurpose Handling Medium
Add preferred supplements.

Multipurpose Handling Medium-Complete
Ready-to-use.
Use of a combination buffering system containing HEPES and MOPS, such as MHM, allows adjustment of pKa and optimal buffering capacity not available in mono-buffered media. This permits formulation of a custom medium with a lower individual buffer concentration while maintaining a similar buffer range, which creates a low toxicity and stable environment for gametes and embryos. This comparison is demonstrated by comparing pH after an acid/base challenge.

Multipurpose Handling Medium provides the ideal environment for handling oocytes and embryos, whether it is retrieval, ICSI, or biopsying.

Martyn Blayney, Head of Science, Bourn Hall Clinic, U.K.

pH maintained between the ideal range of 7.2–7.4 at room temperature and in an incubator under oil.
Work Outside the Incubator

Sperm Washing Medium is suitable for washing, swim up preparation, holding sperm prior to IUI and IVF, and other sperm processing procedures performed outside of a CO₂ incubator.

- Save time: ready-to-use, no mixing or filtering
- Maintain physiological pH 7.2–7.4 at ambient temperature

Discover the FUJIFILM Irvine Scientific Advantage

With more than four decades of cell culture experience, FUJIFILM Irvine Scientific has cultivated deep industry knowledge, advanced technical expertise, superior customer service, and reliable results—positioning us as a trusted partner of ART professionals across the world.

From novel IVF media solutions to innovative technology, FUJIFILM Irvine Scientific delivers the most advanced, economical, and flexible range of products for the modern IVF laboratory.
### ISolate
- **Catalog #**: 99264
- **Size**: 12 x 6 mL (up to 18 isolations), 2 x 50 mL (up to 25 isolations), 2 x 100 mL (up to 50 isolations)
- **Additional Information**: Ready-to-use density gradient: 50% upper layer, 90% lower layer
- **Shelf Life**: 2 years*
- **Storage**: 2–8°C

### ISolate Stock Solution
- **Catalog #**: 99275
- **Size**: 100 mL
- **Additional Information**: Ready-to-use or for dilution: 90% density gradient
- **Shelf Life**: 2 years*
- **Storage**: 2–8°C

### ISolate Concentrate
- **Catalog #**: 99306
- **Size**: 100 mL
- **Additional Information**: 100% isotonic solution for custom dilution
- **Shelf Life**: 2 years*
- **Storage**: 2–8°C

### Freezing Medium TYB
- **Catalog #**: 90128
- **Size**: 20 x 5 mL, 100 mL
- **Additional Information**: Contains 20% egg yolk—from USDA certified SPF (Virus Free) laying flocks, heat inactivated at 56°C for 30 minutes, 12% (w/v) glycerol, gentamicin 10 µg/mL
- **Shelf Life**: 2 years*
- **Storage**: -10°C

### Arctic Sperm Cryopreservation Medium
- **Catalog #**: 90170
- **Size**: 12 x 5 mL
- **Additional Information**: Ready-to-use, egg yolk-free and antibiotic-free. Contains 28% (v/v) glycerol, 2% HSA
- **Shelf Life**: 18 months*
- **Storage**: 2–8°C

### Refrigeration Medium TYB
- **Catalog #**: 90129
- **Size**: 20 x 5 mL
- **Additional Information**: Contains 20% egg yolk - from USDA certified SPF (Virus Free) laying flocks, heat inactivated at 56°C for 30 minutes, gentamicin 10 µg/mL
- **Shelf Life**: 2 years*
- **Storage**: -10°C

### Multipurpose Handling Medium–Complete (MHM-C)
- **Catalog #**: 90166
- **Size**: 100 mL, 500 mL, 12 x 12 mL
- **Additional Information**: Ready-to-use. Contains key amino acids, 0.5% HSA, gentamicin 10 mg/L
- **Shelf Life**: 12 months*
- **Storage**: 2–8°C

### Multipurpose Handling Medium (MHM)
- **Catalog #**: 90163
- **Size**: 100 mL, 500 mL
- **Additional Information**: Contains gentamicin 10 mg/L. Add preferred supplements.
- **Shelf Life**: 12 months*
- **Storage**: 2–8°C

### Sperm Washing Medium
- **Catalog #**: 9983
- **Size**: 12 x 12 mL, 100 mL
- **Additional Information**: Ready-to-use outside the incubator. Contains 0.5% HSA. Add preferred antibiotics.
- **Shelf Life**: 2 years*
- **Storage**: 2–8°C

*From date of manufacture.
## Ordering Information

### Supplements and micromanipulation solutions

<table>
<thead>
<tr>
<th>Item</th>
<th>Catalog #</th>
<th>Size</th>
<th>Additional Information</th>
<th>Shelf Life</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7% Polyvinylpyrrolidone (PVP) Solution with HSA</td>
<td>90121</td>
<td>5 x 0.5 mL</td>
<td>Decrease sperm motility for easier micromanipulation during ICSI. Contains 5 mg/mL HSA.</td>
<td>6 months*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>10% Polyvinylpyrrolidone (PVP) Solution with HSA</td>
<td>90123</td>
<td>5 x 0.5 mL</td>
<td>Decrease sperm motility for easier micromanipulation during ICSI. Contains 5 mg/mL HSA.</td>
<td>6 months*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>Polyvinylpyrrolidone (PVP) – Lyophilized</td>
<td>99219</td>
<td>10 x 1 mL</td>
<td>Sterile, lyophilized powder for custom PVP concentrations. Must be reconstituted in Modified HTF Medium (90126).</td>
<td>2 years*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>Modified HTF Medium</td>
<td>90126</td>
<td>100 mL</td>
<td>For handling sperm outside of an incubator. HEPES-buffered. Contains 10 mg/L gentamicin. Requires protein supplement.</td>
<td>12 months*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>Human Serum Albumin Solution (HSA)</td>
<td>9988</td>
<td>12 x 5 mL</td>
<td>Essential supplement to basal medium. Contains HSA 100 mg/mL in normal saline.</td>
<td>3 years*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>Serum Substitute Supplement (SSS)</td>
<td>99193</td>
<td>12 x 12 mL</td>
<td>Essential supplement to basal medium. Contains HSA 50 mg/mL, alpha and beta globulins 10 mg/mL.</td>
<td>2 years*</td>
<td>2 years*</td>
</tr>
</tbody>
</table>

*From date of manufacture

### Counting and motility evaluation of undiluted sperm

<table>
<thead>
<tr>
<th>Item</th>
<th>Catalog #</th>
<th>Size</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centrifuge</td>
<td>IS-300</td>
<td>1 unit</td>
<td></td>
</tr>
<tr>
<td>NUNC 4 Well Dish</td>
<td>N176740</td>
<td>120 dishes per case</td>
<td>For IVF use.</td>
</tr>
<tr>
<td>Makler Counting Chamber Kit</td>
<td>IS-363</td>
<td>1 unit</td>
<td>Requires a standard microscope with 20X objective or 20X eyepiece.</td>
</tr>
<tr>
<td>Makler Counting Chamber – Chamber Grip</td>
<td>IS-363CG</td>
<td>1 unit</td>
<td>Requires an inverted microscope.</td>
</tr>
<tr>
<td>Makler Counting Chamber (Inverted)</td>
<td>IS-365</td>
<td>1 unit</td>
<td></td>
</tr>
<tr>
<td>Makler Counting Chamber (CASA)</td>
<td>IS-373</td>
<td>1 unit</td>
<td>Same as IS-363 but without grid.</td>
</tr>
<tr>
<td>Replacement Cover Glass (CASA)</td>
<td>IS-374</td>
<td>1 unit</td>
<td>Without grid. Compatible with IS-363 and IS-373.</td>
</tr>
<tr>
<td>Replacement Cover Glass</td>
<td>IS-364</td>
<td>1 unit</td>
<td>With grid. Compatible with IS-363.</td>
</tr>
</tbody>
</table>