SPERM PREPARATION,
HANDLING & STORAGE

Solutions for the andrology laboratory
HELP AT EVERY STEP

with simpler processes, less stress and better results

Day 1
- HELP AT EVERY STEP
- RETRIEVE AND RINSE OOCYTES
- Continuous Single Culture medium
- Hyaluronidase
- DENUDE (ICSI)
- Continuous Single Culture medium
- PREINCUBATE
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- Continuous Single Culture medium
- ICSI
- Continuous Single Culture medium
- IVF
- Continuous Single Culture medium
- Separate Sperm
- Multipurpose Handling Medium
- Wash
- Multipurpose Handling Medium
- VITRIFICATION
- Vit Kit®-Thaw
- Multipurpose Handling Medium
- TRANSFER BLASTOCYST
- Multipurpose Handling Medium
- VITRIFICATION
- Multipurpose Handling Medium
- Ivolve Kit®-Freeze
- Multipurpose Handling Medium

Day 3
- HELP AT EVERY STEP
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Day 5
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- RETRIEVE AND RINSE OOCYTES
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LEADING THE WAY
to greater workflow efficiency and increased pregnancy rates

Irvine Scientific has been a well-recognized supplier of innovative media solutions and lab supplies to the A.R.T. 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. Irvine Scientific pioneered the use of vitrification to increase survival rates of cryopreserved oocytes and embryos with Vit Kit-Freeze and Vit Kit-Thaw. Today, with a new generation of optimized, multi-use media, Multipurpose Handling Medium® and Continuous Single Culture®, 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 Irvine Scientific solutions for reproductive technologies in our brochures:
- From gametes to blastocysts
- Vitrification of oocytes and embryos
- Sperm preparation, handling and storage

Visit www.irvinesci.com
“We use ISolate specifically to prepare frozen sperm samples. By using an improved method (provided by 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.

**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

**HIGHER RECOVERY**

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

- Leading commercial medium
- ISolate

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

**HIGH PERCENTAGE OF MORPHOLOGICALLY NORMAL FORMS**

**PREPARE HIGH QUALITY SPERM FROM FRESH OR FROZEN SAMPLES**
**INCREASE 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.

**HIGH RECOVERY OF MOTILE SPERM FROM HEALTHY AND LOW QUALITY SAMPLES**

<table>
<thead>
<tr>
<th>SAMPLES N=20</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 (×10⁶)</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>-</td>
<td>48.9</td>
<td>45.3</td>
<td>30.8</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>

Semen quality parameters before and after separation by three different dual density gradients. (Malvezzi et al. Reproductive Biology and Endocrinology 2014 12:121).

**Select the ISolate product to meet requirements**

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.

**SAVE TIME AND ENSURE CONSISTENCY**

**ISolate**
Rapid one or two layer separations. Ready to use 50% and 90% gradients – no dilution required.

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

**ISolate Concentrate**
Dilute 100% isotonic solution as required.

**PREPARE CUSTOM GRADIENTS**

**SAMPLE QUALITY**

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>UNTREATED</th>
<th>ISolate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oligozoospermia (n=10)</td>
<td>Motile sperm recovery (%) - 32.9</td>
<td></td>
</tr>
<tr>
<td>Normal chromatin (%)</td>
<td>64.3</td>
<td>90.3</td>
</tr>
<tr>
<td>Normozoospermia (n=10)</td>
<td>Motile sperm recovery (%) - 44</td>
<td></td>
</tr>
<tr>
<td>Normal chromatin (%)</td>
<td>80.1</td>
<td>86.9</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 media was found to be a superior cryoprotective media than a glycerol-only sperm freezing medium.”

Chey Dearing, Hammersmith Hospital, London UK

Refrigeration Medium TYB
Simply add medium to semen and refrigerate.
MAXIMIZE SPERM SURVIVAL

Maximize sperm survival rates after long- or short-term storage

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

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

HIGHER POST-THAW RECOVERY WITH IMPROVED QUALITY

<table>
<thead>
<tr>
<th></th>
<th>FRESH RAW SEMEN</th>
<th>POST-THAW FREEZING MEDIUM TYB</th>
<th>COMMERCIAL MEDIUM, GLYCEROL ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor quality semen (n=35)</td>
<td>Normal morphology (%) 11.7 ± 6.1</td>
<td>9.3 ± 5.6</td>
<td>7.8 ± 4.2</td>
</tr>
<tr>
<td></td>
<td>Condense chromatin (%) 78.9 ± 10.3</td>
<td>70.7 ± 10.8</td>
<td>64.6 ± 13.0</td>
</tr>
<tr>
<td></td>
<td>Motility (%) 28.3 ± 22.5</td>
<td>13.3 ± 9.9</td>
<td>10.7 ± 7.5</td>
</tr>
<tr>
<td>Healthy semen (n = 25)</td>
<td>Normal morphology (%) 26.3 ± 7.5</td>
<td>22.2 ± 6.4</td>
<td>19.4 ± 6.5</td>
</tr>
<tr>
<td></td>
<td>Condense chromatin (%) 92.4 ± 8.5</td>
<td>88.7 ± 11.2</td>
<td>85.5 ± 12.5</td>
</tr>
<tr>
<td></td>
<td>Motility (%) 52.8 ± 27.3</td>
<td>32.7 ± 19.1</td>
<td>29.1 ± 17.1</td>
</tr>
</tbody>
</table>


HIGHER MOTILITY THAN COMPETITOR’S MEDIUM

![Graph showing comparison of post-thaw motility between different suppliers.]

Arctic™ Sperm Cryopreservation Medium
Convenient kit size and refrigerated storage. Ready to use.
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

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
## ORDERING INFORMATION

<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>ISolate</td>
<td>99264</td>
<td>12 x 6 mL (up to 18 isolations) 2 x 50 mL (up to 25 isolations) 2 x 100 mL (up to 50 isolations)</td>
<td>Ready-to-use density gradient: 50% upper layer, 90% lower layer</td>
<td>2 years*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>ISolate Stock Solution</td>
<td>99275</td>
<td>100 mL</td>
<td>Ready-to-use or for dilution: 90% density gradient</td>
<td>2 years*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>ISolate Concentrate</td>
<td>99306</td>
<td>100 mL</td>
<td>100% isotonic solution for custom dilution</td>
<td>2 years*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>Freezing Medium TYB</td>
<td>90128</td>
<td>20 x 5 mL</td>
<td>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</td>
<td>2 years*</td>
<td>-10°C</td>
</tr>
<tr>
<td>Arctic Sperm Cryopreservation-Medium</td>
<td>90170</td>
<td>12 x 5 mL</td>
<td>Ready-to-use, egg yolk-free and antibiotic-free. Contains 28% (v/v) glycerol, 2% HSA</td>
<td>18 months*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>Refrigeration Medium TYB</td>
<td>90129</td>
<td>20 x 5 mL</td>
<td>Contains 20% egg yolk - from USDA certified SPF (Virus Free) laying flocks, heat inactivated at 56°C for 30 minutes, gentamicin 10 µg/mL</td>
<td>2 years*</td>
<td>-10°C</td>
</tr>
<tr>
<td>Multipurpose Handling Medium - Complete (MHM-C)</td>
<td>90166</td>
<td>100 mL 500 mL</td>
<td>Ready-to-use. Contains key amino acids, 0.5% HSA, gentamicin 10 mg/L.</td>
<td>12 months*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>Multipurpose Handling Medium (MHM)</td>
<td>90163</td>
<td>100 mL 500 mL</td>
<td>Contains gentamicin 10 mg/L. Add preferred supplements.</td>
<td>12 months*</td>
<td>2–8°C</td>
</tr>
<tr>
<td>Sperm Washing Medium</td>
<td>9983</td>
<td>12 x 12 mL 100 mL</td>
<td>Ready-to-use outside the incubator. Contains 0.5% HSA. Add preferred antibiotics.</td>
<td>2 years*</td>
<td>2–8°C</td>
</tr>
</tbody>
</table>

*From date of manufacture
## ORDERING INFORMATION

### SUPPLEMENTS AND MICROMANIPULATION SOLUTIONS

<table>
<thead>
<tr>
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<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 5mg/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 5mg/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 500 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</td>
<td>9988</td>
<td>12 x 5 mL 100 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™</td>
<td>99193</td>
<td>12 x 12 mL 100 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>2–8°C</td>
</tr>
</tbody>
</table>

*From date of manufacture

### COUNTING AND MOTILITY EVALUATION OF UNDILUTED SPERM

<table>
<thead>
<tr>
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<th>CATALOG #</th>
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<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></td>
</tr>
<tr>
<td>Makler Counting Chamber (Inverted)</td>
<td>IS-365</td>
<td>1 unit</td>
<td>Requires an inverted microscope.</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>
Irvine Scientific was the first ART manufacturing company in the USA to receive ISO 13485:2003 quality system certification, the rigorous international quality assurance standard designed specifically for Medical Devices.

Products are manufactured in accordance with the Guidelines for Manufacture of Medical Device and In Vitro Diagnostic Products and the Good Manufacturing Practices (GMPs) for Medical Devices.

Every Irvine Scientific product is subject to a stringent Quality System, unrivalled in the industry, and produced in well-established, cGMP compliant facilities.

Formulations use WFI Grade Water and chemicals that meet USP and ACS standards where available. All products are membrane-filtered and aseptically processed according to manufacturing procedures which have been validated to meet a sterility assurance level of $10^{-3}$. Every batch of medium is thoroughly tested for functionality, endotoxin level, pH, osmolality and sterility. Results are provided in lot-specific Certificates of Analysis.

With the exception of certain ancillary products, all products in this brochure are CE marked and FDA cleared. Quality and regulatory management systems ensure compliance with the broadest scope of regulatory requirements, including ISO 13485:2012, FDA’s QSR, European Medical Devices Directive (93/42/EEC).
Irvine Scientific develops and supplies products and services wherever our expertise in the growth and handling of mammalian cells can contribute to the health and well-being of mankind – today and in the future.