

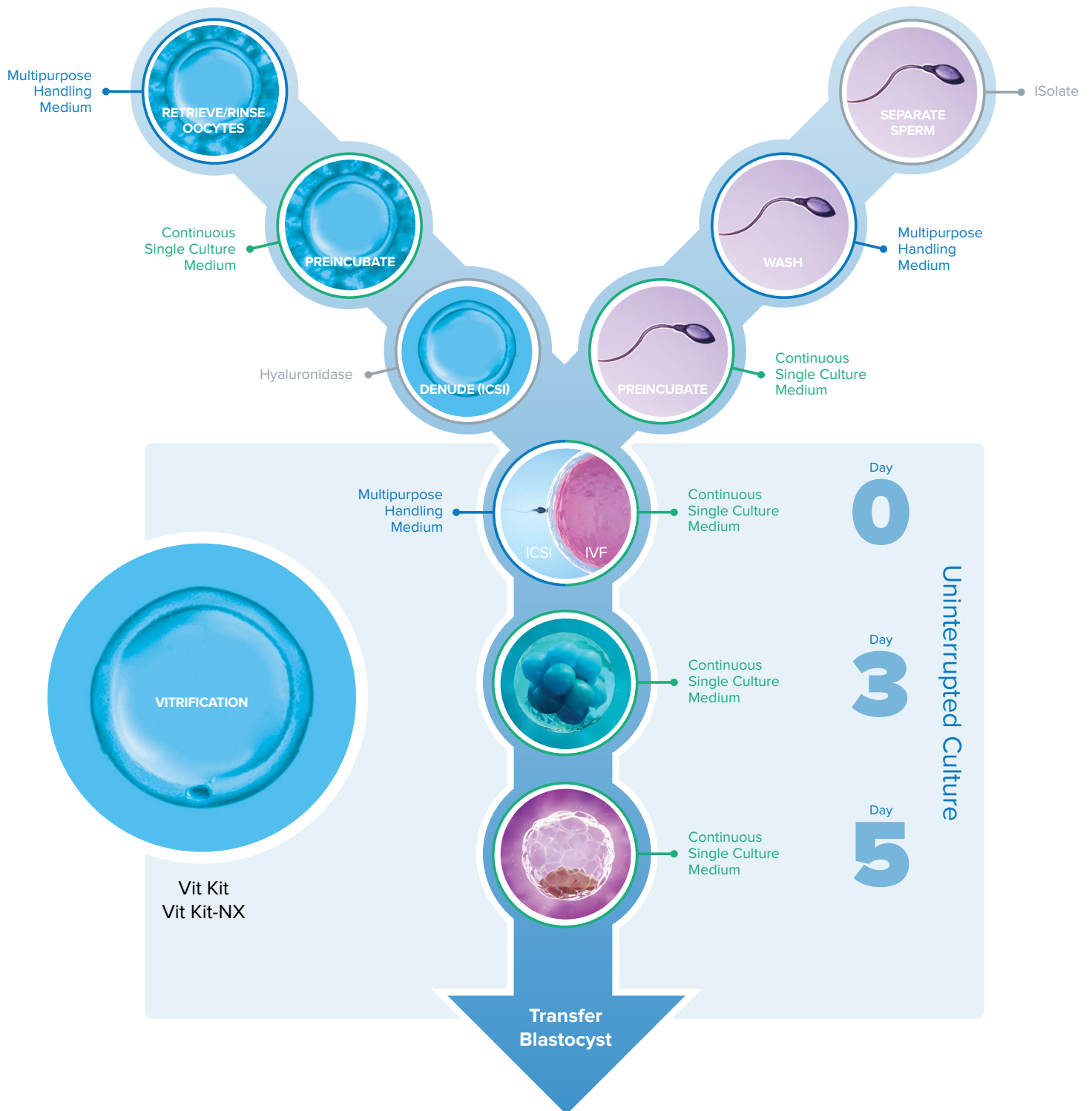


# Sperm Preparation, Handling, and Storage

SOLUTIONS FOR THE ANDROLOGY LABORATORY

# Help at Every Step

Simpler processes, less stress,  
and better results



# 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.

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## 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](http://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	Pre-wash	ISolate	Commercial alt. 1	Commercial alt. 2
Motility %	57.8 ± 9.1	81.4 ± 6.6	62.5 ± 13.2	85.7 ± 8.0
Total motile sperm (x10 <sup>6</sup> )	26.1 ± 16.7	15.8 ± 18.2	14.2 ± 15.9	10.6 ± 19.7
Recovery %	-	48.9	45.3	30.8
DNA damage %	7.5 ± 9.2	7.2 ± 5.2	8.8 ± 4.7	11.2 ± 7.4

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

Sample quality	Parameters	Untreated	ISolate
Oligozoospermia (n=10)	Motile sperm recovery (%)	-	32.9
	Normal chromatin (%)	64.3	90.3
Normozoospermia (n=10)	Motile sperm recovery (%)	-	44
	Normal chromatin (%)	80.1	86.9

Good motile sperm recovery and normal chromatin condensation in healthy and low quality semen samples (Claassens et al. *Hum. Reprod.* 1998 Nov;13(11):1998).



### Save Time and Ensure Consistency

**ISolate** 2 - 2.1. p.d.

- One or two layer separations
- Ready to use 50% and 90%—no dilution required

#### ISolate Stock Solution

- One layer separations
- Ready-to-use, 90% gradients or dilute as required

### Prepare Custom Gradients

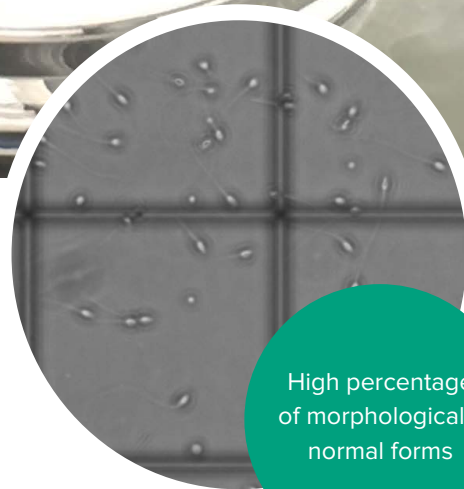
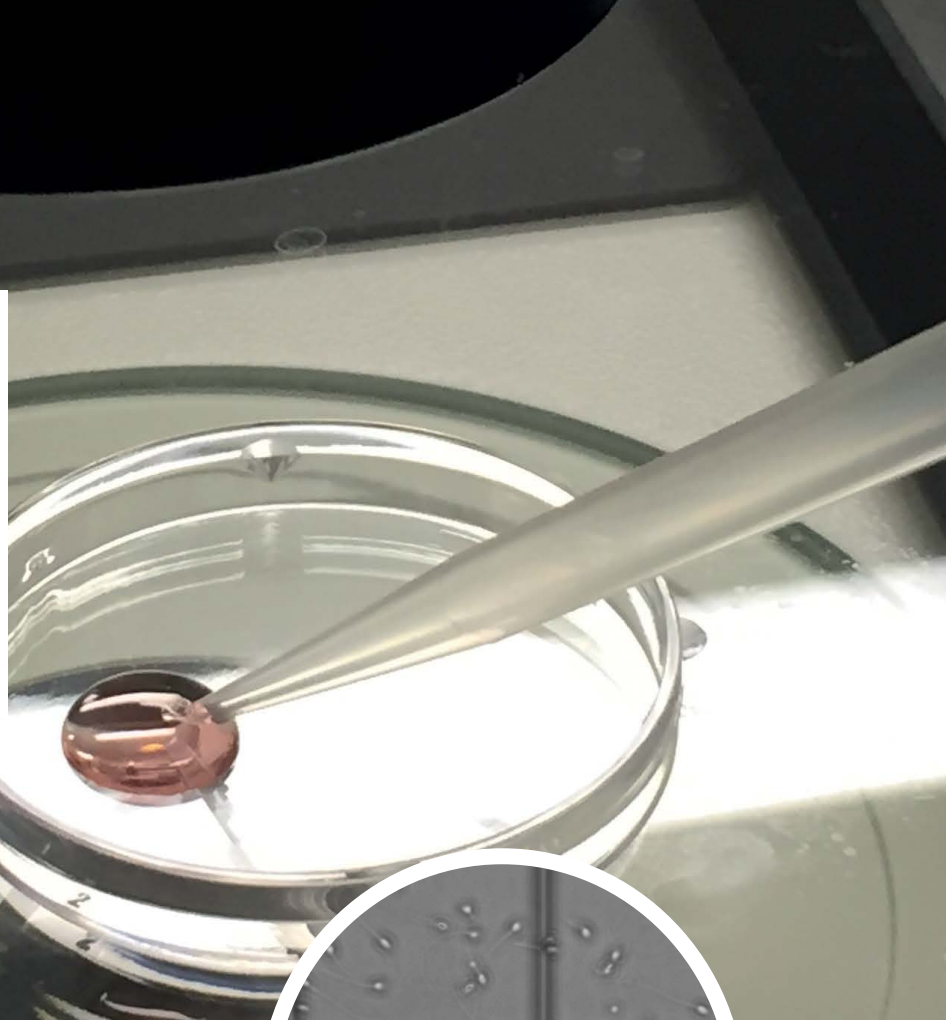
#### ISolate

- 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.

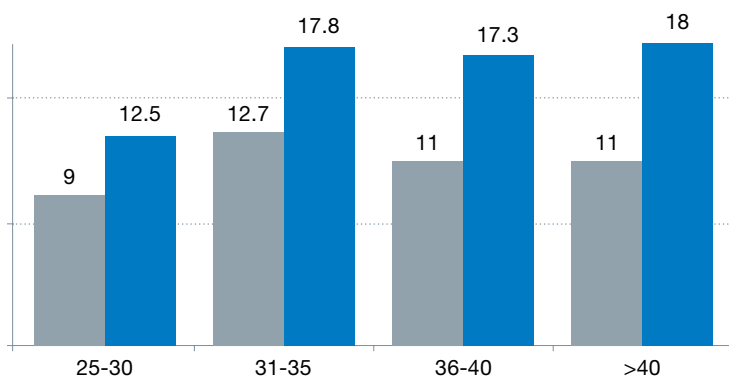
*Charlotte Hall, Senior Embryologist,  
Sussex Downs Fertility Centre,  
Eastbourne, U.K.*



## 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.

### 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

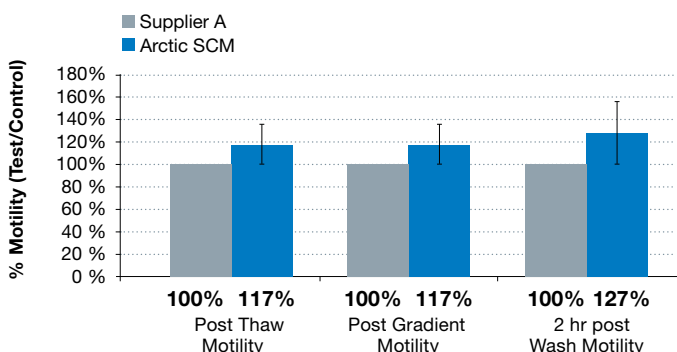
Maximize sperm survival rates after long- or short-term storage

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

## Higher motility than competitor's medium



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

		Fresh	Post-thaw	
		Raw semen	Freezing Medium TYB	Commercial medium, glycerol only
Poor quality semen (n=35)	Normal morphology (%)	11.7 ± 6.1	9.3 ± 5.6	7.8 ± 4.2
	Condense chromatin (%)	78.9 ± 10.3	70.7 ± 10.8	64.6 ± 13.0
	Motility (%)	28.3 ± 22.5	13.3 ± 9.9	10.7 ± 7.5
Healthy semen (n = 25)	Normal morphology (%)	26.3 ± 7.5	22.2 ± 6.4	19.4 ± 6.5
	Condense chromatin (%)	92.4 ± 8.5	88.7 ± 11.2	85.5 ± 12.5
	Motility (%)	52.8 ± 27.3	32.7 ± 19.1	29.1 ± 17.1

Hammadeh et al., *J Androl.* 2001 Nov-Dec;22(6):1012-8.

**Freezing Medium TYB**  
For cryopreservation,  
FDA-cleared.  
Ready-to-use.



2.2 Spermatozoidų  
šaldymo terpė,  
šaldoma santykiu 3:1

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

Arctic SCM is easier to store, easier to aliquot. We actually improved our post-thaw survival rate up to 93%. Also, by using less medium, we have a lower dilution ratio and less waste. It is definitely cost-effective for us to use a medium with better performance for the same price as our previous product.

Elena Williams,  
Xytex Laboratory Supervisor, Augusta

## 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

	Seminal fluid: TYB 1:1, 4°C	Seminal fluid only, 4°C
Motility after 48 hours	29.6 + 21.5	6.2 +/- 9.2

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

**Refrigeration Medium TYB**  
Simply add medium to  
semen and refrigerate.



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.

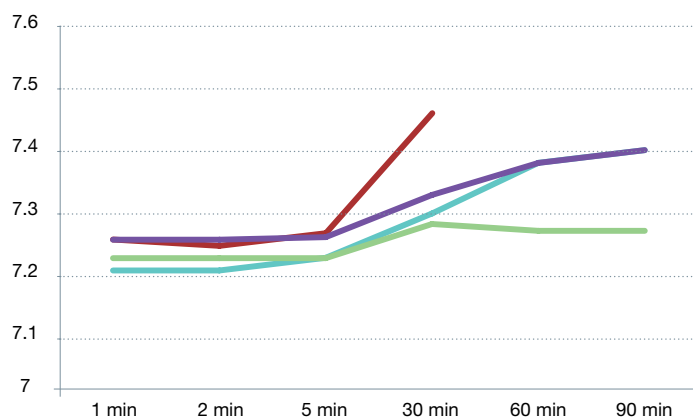


Multipurpose Handling Medium provides the ideal environment for handling oocytes and embryos, whether it is retrieval, ICSI, or biopsying.

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

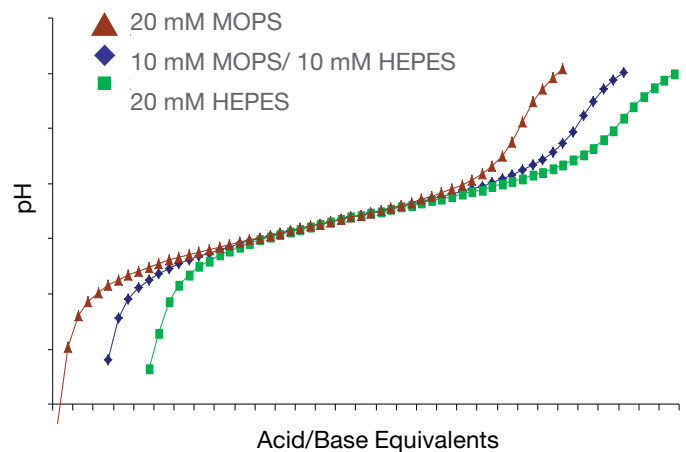
## pH Maintained Across Broad Temperature Range

### Multipurpose Handling Medium-Complete (MHM-C) 100 $\mu$ l drops



— Oil, at 37°C — No oil, at 37°C — Oil, RT — No oil, RT

pH maintained between the ideal range of 7.2–7.4 at room temperature and at 37°C, under oil.



The use of a combined 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.

# 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 CO<sub>2</sub> incubator.

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



**Sperm Washing Medium**  
Add preferred antibiotics

## 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.

## Ordering Information

Item	Catalog #	Size	Additional Information	Shelf Life	Storage
<b>ISolate</b>	<b>99264</b>	12 x 6 mL (up to 18 isolations) 2 x 50 mL (up to 25 isolations) 2 x 100 mL (up to 50 isolations)	Ready-to-use density gradient: 50% upper layer, 90% lower layer	2 years*	2–8°C
ISolate Stock Solution	99275	100 mL	Ready-to-use or for dilution: 90% density gradient	2 years*	2–8°C
ISolate Concentrate	99306	100 mL	100% isotonic solution for custom dilution	2 years*	2–8°C

Item	Catalog #	Size	Additional Information	Shelf Life	Storage
Freezing Medium TYB	90128	20 x 5 mL 100 mL	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	2 years*	-10°C

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

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

Item	Catalog #	Size	Additional Information	Shelf Life	Storage
Multipurpose Handling Medium–Complete (MHM-C)	90166	100 mL 500 mL 12 x 12 mL	Ready-to-use. Contains key amino acids, 0.5% HSA, gentamicin 10 mg/L.	12 months*	2–8°C
Multipurpose Handling Medium (MHM)	90163	100 mL 500 mL	Contains gentamicin 10 mg/L. Add preferred supplements.	12 months*	2–8°C
Sperm Washing Medium	9983	12 x 12 mL 100 mL	Ready-to-use outside the incubator. Contains 0.5% HSA. Add preferred antibiotics.	2 years*	2–8°C

\*From date of manufacture.

## Ordering Information

### Supplements and micromanipulation solutions

Item	Catalog #	Size	Additional Information	Shelf Life	Storage
7% Polyvinylpyrrolidone (PVP) Solution with HSA	90121	5 x 0.5 mL	Decrease sperm motility for easier micromanipulation during ICSI. Contains 5 mg/mL HSA.	6 months*	2–8°C
10% Polyvinylpyrrolidone (PVP) Solution with HSA	90123	5 x 0.5 mL	Decrease sperm motility for easier micromanipulation during ICSI. Contains 5 mg/mL HSA.	6 months*	2–8°C
Polyvinylpyrrolidone (PVP) – Lyophilized	99219	10 x 1 mL	Sterile, lyophilized powder for custom PVP concentrations. Must be reconstituted in Modified HTF Medium (90126).	2 years*	2–8°C
Modified HTF Medium	90126	100 mL 500 mL	For handling sperm outside of an incubator. HEPES-buffered. Contains 10 mg/L gentamicin. Requires protein supplement.	12 months*	2–8°C
Human Serum Albumin Solution (HSA)	9988	12 x 5 mL 100 mL	Essential supplement to basal medium. Contains HSA 100 mg/mL in normal saline.	3 years*	2–8°C
Serum Substitute Supplement (SSS)	99193	12 x 12 mL 100 mL	Essential supplement to basal medium. Contains HSA 50 mg/mL, alpha and beta globulins 10 mg/mL.	2 years*	2 years*

\*From date of manufacture

### Counting and motility evaluation of undiluted sperm

Item	Catalog #	Size	Additional Information
Centrifuge	IS-300	1 unit	
NUNC 4 Well Dish	N176740	120 dishes per case	For IVF use.
Makler Counting Chamber Kit	IS-363	1 unit	Requires a standard microscope with 20X objective or 20X eyepiece.
Makler Counting Chamber – Chamber Grip	IS-363CG	1 unit	
Makler Counting Chamber (Inverted)	IS-365	1 unit	Requires an inverted microscope.
Makler Counting Chamber (CASA)	IS-373	1 unit	Same as IS-363 but without grid.
Replacement Cover Glass (CASA)	IS-374	1 unit	Without grid. Compatible with IS-363 and IS-373.
Replacement Cover Glass	IS-364	1 unit	With grid. Compatible with IS-363.
Replacement Cover Glass (Inverted)	IS-366	1 unit	With grid. Compatible with IS-365.



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