ESCO
ANIMAL IVF

Animal Assisted
Reproductive Technology

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About Esco

Welcome to Esco

Since the establishment of Esco in 1978, we never stopped developing, providing, and delivering innovative solutions. From one, we have progressed into five business units with a worldwide presence, namely Esco Scientific, Esco Healthcare, Esco Medical, Esco Aster, and Esco Ventures—remaining true to our tagline "World-class. Worldwide."

This 2020, we are shifting from Esco Group of Companies to **Esco Lifesciences Group**, carrying a new tagline **"Improving lives through science."** The transformation of the company name and brand signifies Esco's vigor in keeping up, responsive, and adaptive with the fastchanging world while keeping focused on its mission to deliver enabling technologies and provide service all over the world—and improve lives through science.

In Esco Animal IVF, we value life.

During the past years, evident shifts in acceptance and usage of in vitro technologies have been observed. A notable number of laboratories are making the change to in vitro production as newer technologies emerge.

With the extent of application from research to animal breeding to conservation medicine, assisted reproductive technology (ART) in animals is rapidly growing. Esco Animal IVF, as part of Esco Group of companies, aims to be the leading manufacturer of innovative equipment to animal IVF laboratories and animal breeding companies.

Esco Animal IVF products are designed to meet the demands of IVF laboratory conditions. We aim at prioritizing advancement and safety of practice to give all around solutions for animal assisted reproductive technology.

IVF Application

In vitro fertilization (IVF), a type of assisted reproductive technology, is a process of fertilization where an egg is combined with sperm inside a laboratory with controlled environment conditions. The process involves monitoring and stimulating the ovulatory process, removing an ovum or ova from the ovaries and letting sperm fertilize the eggs in a laboratory setting. After the fertilized egg (zygote) undergoes embryo culture for 2–6 days, it is implanted in the same or a different uterus, with the intention of establishing a successful pregnancy.

IVF is a form of technology used for infertility treatment and gestational surrogacy. It is a useful technique for the following purposes:

A means to study how to improve current culture systems in order to have higher pregnancy and birth rates. Moreover, ART like IVF is a good technique in studying sperm/egg interaction, and the basic molecular and cellular mechanisms of mammalian fertilization.

Genetic improvement wherein livestock with superior genetics can be bred with shorter generation intervals as a means of growing food production and minimizing animal wastage.

Eliminate risk of disease transmission and overcome certain biological problems. Case in point is when IVF is done in an infected animal or has an impaired reproductive system; the embryo transferred (with proper screening) to a surrogate animal, is still able to carry the superior qualities of the animal leaving behind possible infection spread.

Conservation Tool for producing offspring of endangered animals, sterile animals or animals with low reproductive performance. Through the field of Conservation Medicine, assisted reproductive technologies are used to help critically endangered species to avoid extinction.

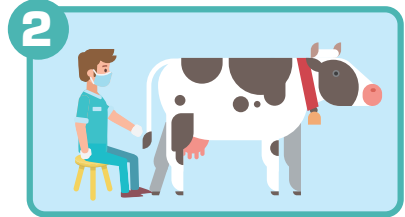# General Workflow for Animal *In Vitro* Fertilization

1 Media Preparation

2 Oocyte Collection

3 Oocyte Maturation

4 Sperm Preparation

5 Fertilization

6 Embryo Culture

7 Embryo Transfer

MIRI® Time-Lapse Incubator

MIRI® TL is a time-lapse incubator that monitors embryo development. The Esco MIRI® TL, optimized for IVF and other ART procedures, is designed to support existing work and quality assurance routines. This value-added treatment provides the most unique incubation environment with the market's most secure and safest procedures. It lessens disturbance and minimizes stressful factors that may be introduced when taking the dishes out of the incubator. This incubation system also ensures predictability in the daily handling and currently offers the market's lowest cost of ownership.

Key Features

This equipment is a CE-marked device and is in conformity with the essential requirements of the medical devices EU regulation 2017/745.

Unique Incubation Environment
- Individual temperature set point for each chamber
- Uniform gas settings for all chambers
- Built-in pH meter for accurate validation

Time-Lapse Monitoring
- As images are digitally-stored, a video can be generated to enable a more objective and reliable grading of embryos.
- The Time-Lapse video enables detailed scoring of of cultured embryos, to better predict embryo development and implantation potential.

Validation ports
Easy validation for temperature, CO_2 and O_2. The 6 chambers have uniform gas settings and individual temperature set point.

Embryo Analysis and Evaluation System

The MIRI® TL Viewer Software is a simple yet sophisticated information-providing tool that can help embryologists process the data generated. You can review, annotate and compare the morphokinetic parameters of each embryo to select or deselect embryos for transfer and export data for retrospective analysis.

Navigation through the stacked timeline is easy and intuitive as the revolver shows the videos of the 14 wells of one single CultureCoin®. You can play the individual videos, annotate and compare each single embryo.
Shown on the image is a magnified view of embryo #7

Assisted Annotation
The MIRI® "Assist" tool automatically detects early embryo cleavage events.

High Quality Airstream Via:

Volatile Organic Compounds or VOCs are toxic to an embryo. VOCs attach directly to DNA and this can be detrimental to embryo development. The MIRI® TL is specially equipped with HEPA/VOC filter to help eliminate harmful VOCs and particulates.

CultureCoin®, a culture dish, exclusively designed for the MIRI® TL

One (1) MIRI® TL chamber can hold one (1) CultureCoin®. Each dish can accommodate up to fourteen (14) embryos, each with a numbered well assignment. The MIRI® TL6 can hold up to 84 embryos, and the MIRI® TL12 up to 168 embryos.

Key Features
- Holds up to 14 embryos with individual numbered wells (1-14).
- For single and separated culture where each embryo are cultured in its own environment.
- Ergonomic design for easy handling and location of embryos.
- Separate well for pH measurements.
- Oxygen plasma treated for high wet-ability (hydroscopic).
- Packed in 1 dish pouches and delivered in boxes of 25 pcs.

Ordering Information
Item code: 1320088
Model Code: MRI-CC
Description: CultureCoin® for Time-Lapse of 14 embryos (25 pcs. per pack)

General Specifications

Specifications	TL6	TL12
Overall Dimensions	805 x 585 x 375 mm (31.7 x 23.0 x 14.8")	950 x 685 x 375 mm (37.4 x 27.0 x 14.8")
Weight	70 kg	100 kg
Temperature Control Range	28.7 - 41.0 °C	
Gas Consumption (CO_2) *	< 2 L/h	
Gas Consumption (N_2) **	< 5 L/h	
CO_2 Control Range	2.9% - 9.9%	
O_2 Control Range	2.0% - 20.0%	
Input Gas Pressure	0.6 bar (8.7 psi)	
Built-in Microscope	Zeiss 20x, objective has numerical aperture of 0.35, specialized for 635 nm illumination	
Embryo Illumination	0.064s per image, using 1W single red LED (635nm)	
Camera Resolution	1280 x 1024. Monochrome, 8-bit, IDS system	
Optics Tube Ratio	2.22 px/µm	
Imaging Focal Planes	5 min. image interval in 3 to 7 focal planes	

*   Under normal condition (CO_2 set point reached at 6.0%, all lids closed).
**   Under normal condition (O_2 set point reached at 5.0%, all lids closed).

Ordering Information

ITEM CODE	MODEL CODE	DESCRIPTION
Unit		
2070091	MRI-TL-MN-6C-8	MIRI® Time-Lapse Incubator, Mini, 6 Chambers, 230 V, 50/60 Hz
2070092	MRI-TL-MN-6C-9	MIRI® Time-Lapse Incubator, Mini, 6 Chambers, 115 V, 50/60 Hz
2070098	MRI-TL-MN-6C-SS-8	MIRI® Time-Lapse Incubator, Mini, 6 chambers with SAFE Sens, 230 V, 50/60 Hz
2070099	MRI-TL-MN-6C-SS-9	MIRI® Time-Lapse Incubator, Mini, 6 chambers with SAFE Sens, 115 V, 50/60 Hz
2070100	MRI-TL-12C-8	MIRI® Time-Lapse Incubator, 12 Chambers, 230 V, 50/60 Hz
2070101	MRI-TL-12C-9	MIRI® Time-Lapse Incubator, 12 Chambers, 115 V, 50/60 Hz
2070114	MRI-TL-12C-SS-8	MIRI® Time-Lapse Incubator, 12 Chambers, 230V 50/60Hz, with SAFE Sens
2070115	MRI-TL-12C-SS-9	MIRI® Time-Lapse Incubator, 12 Chambers, 110V 50/60Hz, with SAFE Sens
Accessories		
1320011	MRA-1007	HEPA + VOC filter (to be replaced every 3 months)
1320088	MRI-CC	CultureCoin® for Time-Lapse of 14 embryos (25 pcs. per pack)
1320045	MRI-GA	MIRI® GA CO_2/O_2 & Temperature Validation Unit, 115V/ 230V

MIRI® Multiroom Incubator

The MIRI® is a revolution, in form and functionality, of CO_2 incubators for *In Vitro* Fertilization (IVF). With 6 chambers, the MIRI® is a Multiroom Incubator that allows users to access their cultures in one chamber without affecting the neighbouring chambers. Thus, the harmful effects of fluctuations in temperature and gas caused by frequent incubator access are avoided. Built specifically to equip IVF laboratories and clinics to provide the best standard of care, it boasts a unique set of features that cannot be found elsewhere.

Key Features

Fast Recovery
• 1 minute temperature recovery.
• 3 minutes gas recovery.

Built-in pH meter
For accurate validation.

Solid Validation System
• Six (6) PT1000 sensors and Gas ports for validation outputs
• SAFE Sens Integration for pH monitoring (optional).
• External Data Logging.
• Alarm relay contact
• Total capacity of up to 48 standard culture dishes.
• Separate CO_2 and O_2 regulation, expensive mixed gases not required!
• Air is continuously cleaned by HEPA/VOC filters, and UV light.

This equipment is a CE-marked device and is in conformity with the essential requirements of the medical devices EU regulation 2017/745.
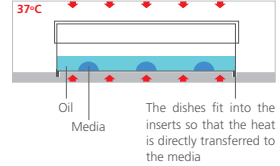
The little details count

IVF practitioners deal with precious, fragile and sensitive embryos, and often, the little details make a big difference. The MIRI® has a large LED display that can be easily seen from a distance. Also, the glass lid tops, can be written on — a very useful feature for organization.
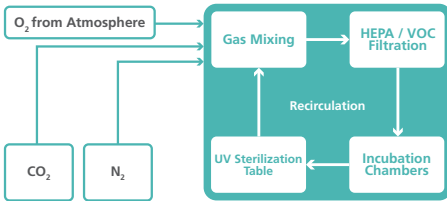
Heating Optimization Plates

Each chamber contains a heating optimization plate to facilitate direct heat transfer to the culture dishes.

- Has inserts to fit various dish sizes
  (please see page 10)
- Removable for easy cleaning

Oil
Media
The dishes fit into the inserts so that the heat is directly transferred to the media

Airflow Diagram

O$_2$ from Atmosphere

Gas Mixing

HEPA / VOC Filtration

Recirculation

CO$_2$

N$_2$

UV Sterilization Table

Incubation Chambers

Provides total control of the gas phase environment. The built-in gas mixer and the high-performance CO$_2$ and O$_2$ sensors allow accurate control of gas composition in the chambers.

General Specifications

Product Code	MRI-6A10-_-_
Overall Dimensions (W x D x H)	700 x 585 x 165 mm (27.6 x 23.0 x 6.5")
Compartment Dimensions	200 x 176 x 25 mm (7.9 x 6.9 x 1")
Power Supply	115 / 230V, 50/60 Hz
Power Consumption	300 W
Temperature Control Range	24.9 - 40°C
*Gas Consumption (CO$_2$)	<2 L/h
**Gas Consumption (N$_2$)	<12 L/h
CO$_2$ Control Range	2 - 9.9%
O$_2$ Control Range	5 - 20%
Input Gas Pressure (CO$_2$)	0.6 bar (8.7 psi)
Input Gas Pressure (N$_2$)	0.6 bar (8.7 psi)
Net Weight	35 kg (77.2 lbs)
Shipping Weight	40 kg (88.2 lbs)
Shipping Dimension	840 x 735 x 300 mm (33.1" X 29" x 11.9")

*   Under normal condition (CO$_2$ set point reached at 5.0%, all lids closed)
** Under normal condition (O$_2$ set point reached at 5.0%, all lids closed)

Ordering Information

ITEM CODE	MODEL CODE	DESCRIPTION
MIRI® Multiroom Incubator		
2070047	MRI-6A10-8	MIRI® Incubator, 230V, 50/60Hz
2070048	MRI-6A10-9	MIRI® Incubator, 115V, 50/60Hz
2070086	MRI-6A10-SS-8	MIRI® Incubator, with SAFE Sens for pH measurement, 230V, 50/60Hz
2070087	MRI-6A10-SS-9	MIRI® Incubator, with SAFE Sens for pH measurement, 115V, 50/60Hz
1320045	MRI-GA	MIRI® GA CO$_2$ / O$_2$ & Temperature Validation Unit, 115V / 230V

CelCulture® CO$_2$ Incubators

The CO$_2$ Incubator has a vital role in providing an optimal environment in embryo development during IVF and other ART procedures. Sleek, reliable and intuitive, the Esco CelCulture® CO$_2$ incubator is packed with outstanding features such as rapid parameter recovery, ISO Class 5 Cleanliness, ISOCIDE™ antimicrobial coating, optional Inner Door Kit that reduces contamination risk, and other accessories for specialized applications.

CelCulture® CO$_2$ Incubators
available in 3 sizes, 50 L, 170 L, and 240 L.

CelCulture® CO$_2$ Incubators
CelCulture® is equipped with 90°C Moist Heat Decontamination System evaluated by HPA-UK. It utilizes ULPA filter to keep the chamber at ISO Class 5 cleanliness which ensures that all contaminants are filtered and clean air is recirculated.

Key Features
- Wider temperature range, from (ambient+3) temperature to 60°C above ambient.
- Complete contamination control methods to protect your precious samples.
- All gas inputs are filtered via 0.2micron in-line filter and ULPA filtration system.
- 90°C moist heat decontamination cycle, validated by HPA-UK.

ISOCIDE™

Inner Door Kit Feature
A standard feature that helps to hasten the recovery of parameters and prevent cross-contamination. The 50 L chamber is divided into two sections while the 170 L has 4 sections. The 240 L model can either have 4 or 6 sections. Each section has a dedicated door panel.

Ordering Information

ITEM CODE	MODEL CODE	DESCRIPTION
IR Sensor Model with Stainless Steel Chamber		
2170257	CCL-050B-8-IVF	CelCulture® Incubator, 50L, IR sensor, CO$_2$ control, Moist Heat Decon, with Sealed Inner Door Kit for 50L (2 Glass Doors With Latches), Factory Installed, 230VAC, 50/60 Hz
2170272	CCL-170B-8-IVF	CelCulture® Incubator 170L IR Sensor, CO$_2$ Control ULPA, Moist Heat Decon, with Sealed Inner Door Kit for 170L (4 Glass Doors With Latches), Factory Installed, 230VAC 50/60Hz
2170258	CCL-050B-9-IVF	CelCulture® Incubator, 50L, IR sensor, CO$_2$ control, Moist Heat Decon, with Sealed Inner Door Kit for 50L (2 Glass Doors With Latches), Factory Installed, 115VAC, 50/60 Hz
2170273	CCL-170B-9-IVF	CelCulture® Incubator 170L IR Sensor, CO$_2$ Control ULPA, Moist Heat Decon, with Sealed Inner Door Kit for 170L (4 Glass Doors With Latches), Factory Installed, 115VAC 50/60Hz
Suppressed O$_2$ Model with Stainless Steel Chamber		
2170260	CCL-050T-8-IVF	CelCulture® Incubator, 50L, IR sensor, CO$_2$ & O$_2$ control, Moist Heat Decon, with Sealed Inner Door Kit for 50L (2 Glass Doors With Latches), Factory Installed, 230VAC, 50/60 Hz
2170275	CCL-170T-8-IVF	CelCulture® Incubator 170L IR Sensor, CO$_2$ & O$_2$ Control ULPA, Moist Heat Decon, with Sealed Inner Door Kit for 170L (4 Glass Doors With Latches), Factory Installed, 230VAC 50/60Hz
2170261	CCL-050T-9-IVF	CelCulture® Incubator, 50L, IR sensor, CO$_2$ & O$_2$ control, Moist Heat Decon, with Sealed Inner Door Kit for 50L (2 Glass Doors With Latches), Factory Installed, 115VAC, 50/60 Hz
2170276	CCL-170T-9-IVF	CelCulture® Incubator 170L IR Sensor, CO$_2$ & O$_2$ Control ULPA, Moist Heat Decon, with Sealed Inner Door Kit for 170L (4 Glass Doors With Latches), Factory Installed, 115VAC 50/60Hz

Esco Multi-Zone ART Workstation

The Esco Multi-Zone ART Workstation is the most advanced workstation in its class. It is designed for use in applications that require a high level of control over environmental conditions. Applications can range from animal embryo culture in research to human embryo manipulation done in fertility laboratories.

Key Features

Multi-Zone Heating System
1 set point, 10 independent zones with their own heating elements and sensors allow excellent uniformity.
- Accuracy: ± 0.2 ºC
- Uniformity: ± 0.2 ºC

Low Noise, Low Vibration
Esco has a state-of-the art design and features resulting in very low noise and vibration level that makes the workstation suitable for sensitive microscopic work.

Superior Air Cleanliness
Esco workstations provide ISO Class 3 air cleanliness within the workzone as per ISO 14644.1.

Non-radiating Stainless Steel Tabletop
The main material used in the tabletop surface is stainless steel. while aluminum is used for covering the bottom of the tabletop.
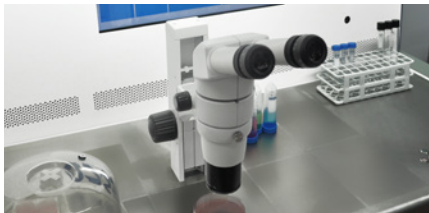

Microscope Integration Provision
Having an integrated stereomicroscope in the work chamber makes it possible to keep the culture dishes at the right temperature at all times while observation and manipulation are carried out.

Humidification System
Gas outlet is located on the table surface. The plastic cover encloses the humidified gas effectively and creates a small incubator environment.
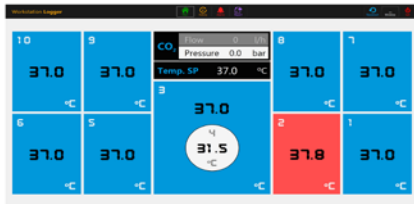
Surveillance System
Provides the user with real-time information of zone performance and other work area parameters such as gas pressure and flow rate.

When any of the heating zones are OFF, the monitor shall not display real-time temperature as there are no controlled heating to give uniformity across the OFF zone.
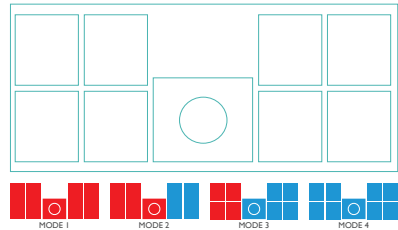
Four Temperature Modes
Temperature Modes
- Mode 1: All zones are heated
- Mode 2: Right zones turned off
- Mode 3: Right and middle zones turned off
- Mode 4: All zones turned off

Available in a variety of sizes and configurations to meet the needs of the laboratory

MAW-4D_
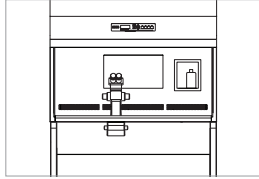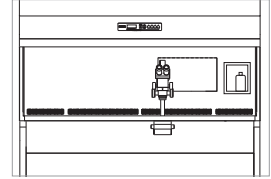Width: 4ft
Microscope: Single
Basic Configuration
1 user
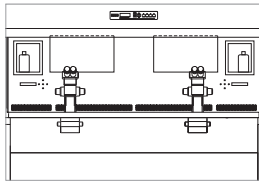For small Laboratories

(Front View)

MAW-6D_ MONO
Width: 6ft
Microscope: Single
1 user
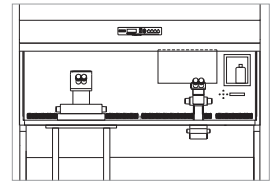More space for other work.

(Front View)

MAW-6D_-DUAL
Width: 6ft
Microscope: Dual
2 users
For efficient use of space

MAW-6D_-MP
Width: 6ft
Microscope: Single
Stereomicroscope,
1 Inverted microscope set-up

General Specifications

Model	MAW-4D_	MAW-6D_	MAW-6D_-DUAL	MAW-6D_-MP
Nominal Size	1.2 meter (4")	1.8 meter (6")	1.8 meter (6")	1.8 meter (6")
Work area dimension* (Width x Depth x Height)	1260 x 500 x 710mm (49.6" x 19.7" x 28")	1870 x 500 x 710mm (73.6" x 19.7" x 28")	1870 x 500 x 710mm (73.6" x 19.7" x 28")	1870 x 500 x 710mm (73.6" x 19.7" x 28")
Laminar air velocity	Average of 0.21m/s or 41 fpm (± 20%)			
Filter efficiency	>99.999% for particle size between 0.1 to 0.3 microns per IEST-RP-CC001.3 / H14 per EN 1822			
Noise level (per NSF 49)**	47 dBA	52 dBA	52 dBA	52 dBA
Pre-filter	Disposable and non-washable polyester fibers with 85% arrestance / EU3 rated			
Set of (9+1) heating zone	1 set	1 set	2 sets	1 set
Surveillance system	1 set	1 set	2 sets	1 set
Microscope	Position for 1 microscope	Position for 1 microscope	Position for 2 microscopes	Position for 1 microscope and 1 inverted microscope
Transmitted light source	1 set	1 set	2 sets	1 set
Humidification system***	1 set	1 set	2 sets	1 set
PT 1000 ports	5 ports	5 ports	10 ports	5 ports
Shipping weight	140 kg (308.6 lbs)	182 kg (401.2 lbs)	182 kg (401.2 lbs)	182 kg (401.2 lbs)

Ordering Information

ITEM CODE	MODEL CODE	DESCRIPTION
2070017	MAW-4D8	Esco Multi-Zone ART Workstation, 4ft (1.2m), 230V 50/60Hz
2070025	MAW-4D9	Esco Multi-Zone ART Workstation, 4ft (1.2m), 110V 50/60Hz
2070018	MAW-6D8-MONO	Esco Multi-Zone ART Workstation, 6ft (1.8m), 220V 50/60Hz
2070026	MAW-6D9-MONO	Esco Multi-Zone ART Workstation, 6ft (1.8m), 110V 50/60Hz
2070050	MAW-6D8-DUAL	Esco Multi-Zone ART Workstation, Double Heated Zone, 6ft (1.8m), 220V 50/60Hz
2070039	MAW-6D9-DUAL	Esco Multi-Zone ART Workstation, Double Heated Zone, 6ft (1.8m), 110V 50/60Hz
2070036	MAW-6D8-MP	Esco Multi-Zone ART Workstation, Multi-Purpose, 6ft (1.8m), 220V 50/60Hz
2070038	MAW-6D9-MP	Esco Multi-Zone ART Workstation, Multi-Purpose, 6ft (1.8m), 110V 50/60Hz

VIVA® Animal Research Workstations

VIVA® Universal Animal Containment Workstation

The Esco Universal Animal Workstation provides Biosafety Cabinet Class II performance to protect animals inside the enclosure from exposure to airborne particulates/ambient contamination, as well as, the operator from exposure to allergens and other potentially hazardous materials.

Esco's line of animal workstations are all ELISA-verified allergen containments that guarantee more safety for the user.

Key Features
• Sentinel™ Gold Microprocessor Control System
• Ergonomic, ADA-compliant
• Sloped Front Angle
• Available Sizes: 4 and 6 ft

General Specifications

		VA2-4A_ -E	VA2-6A_ -E
Model		VA2-4A_ -E	VA2-6A_ -E
Nominal Size		1.2 meter (4')	1.8 meter (6')
External Dimensions (W x D x H)		1423 x 815 x 1510 mm (56" x 32.1" x 59.4")	2030 x 815 x 1510 mm (79.9" x 32.1" x 59.4")
Maximum External Dimensions with Support Stand (W x D x H)		1585 x 852 x 2235 mm (62.4" x 33.5" x 88.0")	2193 x 852 x 2235 mm (86.3" x 33.5" x 88.0")
Internal Work Area (W x D x H)		1270 x 623 x 680 mm (50.0" x 24.5" x 26.7")	1870 x 620 x 680 mm (73.6" x 24.4" x 26.7")
Average Airflow Velocity	Inflow	0.45 m/s (90 fpm)	
	Downflow	0.35 m/s (70 fpm)	
Airflow Volume	Inflow	625 m³ / h (368 cfm)	921 m³ / h (542 cfm)
	Downflow, 60%	959 m³ / h (547 cfm)	1414 m³ / h (832 cfm)
	Exhaust, 40%	625 m³ / h (368 cfm)	921 m³ / h (542 cfm)
ULPA Filter Typical Efficiency		>99.999% for particle size between 0.1 to 0.3 microns per IEST-RP-CC001.3	
Sound Emission*	NSF / ANSI 49	63 dBA	64 dBA
	EN 12469	60 dBA	61 dBA
Fluorescent Lamp Intensity		> 1400 lux (> 130 foot candles)	> 1230 lux (> 114 foot candles)
Cabinet Construction		1.5 mm (16 gauge) electrogalvanized steel with Isocide white oven-baked epoxy power coating	
Net Weight Cabinet including stand		406 Kg (895 lbs)	528 Kg (1164 lbs)
Shipping Weight Cabinet including stand		456 Kg (1005 lbs)	570 Kg (1257 lbs)
Shipping Dimensions, Maximum (W x D x H) Cabinet excluding stand		1550 x 950 x 1900 mm (61.0" x 37.4" x 74.8")	2150 x 950 x 1900 mm (84.6" x 37.4" x 74.8")
Shipping Volume, excluding stand		2.80 m³ (99 cu.ft.)	3.88 m³ (137 cu.ft.)

	Model	Voltage	Model	Voltage
Electrical*	VA2-4A1-E	220-240 VAC, 50/60 Hz, 1Ph, 5.5 amps	VA2-6A1-E	220-240V, AC, 50/60 Hz, 1Ph, 6 amps
	VA2-4A2-E	110-120 VAC, 50/60 Hz, 1Ph, 11 amps	VA2-6A2-E	110-120V, AC, 50/60 Hz, 1Ph, 12 amps

*Note to customer: Insert electrical voltage number into last model number digit when ordering.

VIVA® Dual Access Animal Containment Workstation

Esco's line of animal workstations are all ELISA-verified allergen containments that guarantee more safety for the user.

Key Features
- Sentinel™ Gold Microprocessor Control System
- Ergonomic, ADA-compliant
- Advanced Work Tray Design
- Available Sizes: 4 and 5 ft

General Specifications

Model		VDA-4A_	VDA-5A_
Nominal Size		1.2 meter (4')	1.5 meter (5')
External Dimensions (W x D x H)	Minimum Height	1340 x 762 x 1961 mm (52.8" x 30.0" x 77.2") min height	1645 x 762 x 1961 mm (64.7" x 30.0" x 77.2") min height
	Maximum Height	1340 x 762 x 2245 mm (52.8" x 30.0" x 88.4") max height	1645 x 762 x 2245 mm (64.7" x 30.0" x 88.4") max height
Internal Work Area (W x D x H)		1100 x 465 x 564 mm (43.3" x 18.3" x 22.2")	1405 x 465 x 564 mm (55.3" x 18.3" x 22.2")
Downflow Velocity		0.24 m/s (47 fpm)	
Pre-Filter		Disposable and non-washable polyester fibres with 85% arrestence / EU3 rated	
ULPA Filter Typical Efficiency		>99.999% for particle size between 0.1 to 0.3 microns, per IEST-RP-CC001.3	
Sound Emission per EN 12469*		53 dBA	54 dBA
Fluorescent Lamp Intensity at Zero Ambient		1725 lux (160 foot candles)	1525 lux (142 foot candles)
Construction, Main Body		1.5 mm (0.06") 16 gauge EG Steel with Isocide™ Oven-Baked Epoxy-Polyester Powder Coated Finish	
Shipping Dimensions, Maximum (W x D x H)		1720 x 820 x 2240 mm (67.7" x 32.2" x 88.1")	2025 x 820 x 2240 mm (79.7" x 32.2" x 88.1")
Shipping Weight		342 Kg (754 lbs)	432 Kg (952 lbs)
Shipping Volume, Maximum		3.16 m³ (111.6 cu.ft.)	3.72 m³ (131.4 cu.ft.)
Electrical Rating	VDA-_A8	220-240 VAC, 50/60 Hz, 1Ø	
	VDA-_A9	110-130 VAC, 50/60 Hz, 1Ø	
Power Consumption	VDA-_A8	190 W	230 W
	VDA-_A9	210 W	250 W
Accessories	Foldable Side Tray (SS Shelf Kit)	VDA-001 5170257	
	Side Shield	VDA-004 5170562	VDA-005 5170563
	Feed Hopper	VDA-006 5170594	

Noise as measured in open field / anechoic chamber.

Contact Esco or your local Sales Representative for ordering information.

VIVA® Bedding Disposal Animal Containment Workstation

Esco's line of animal workstations are all ELISA-verified allergen containments that guarantee more safety for the user.

Key Features
- Sentinel™ Silver Microprocessor Control System
- Integrated Waste Bin
- Nanocarb™ Activated Carbon Filter for Removing Odor
- Available Size: 4 ft only

General Specifications

Model	VBD-4A_		
Nominal Size	1.2 meter (4')		
External Dimensions (W x D x H)	1247 x 760 x 1966 mm (49.1" x 30.0" x 77.4") minimum height 1247 x 760 x 2271 mm (49.1" x 30.0" x 89.4") maximum height		
Internal Work Area (W x D x H)	1040 x 680 x 594 mm (40.9" x 26.8" x 23.4")		
Work Surface Height	920 mm ~ 1225 mm (36.2" ~ 48.2")		
Front Opening	400 mm (15.7")		
Inflow Velocity	0.35 m/s (70 fpm) at initial setpoint		
Pre-Filter	Disposable, non-washable polyester fiber, 85% arrestance, EU3 rated		
ULPA Filter Typical Efficiency	>99.999% at 0.1 to 0.3 microns as per IEST-RP-CC001.3 USA		
Sound Emission* Per EN 12469	58 dBA		
Fluorescent Lamps	> 1,300 lux (> 121 foot candles)		
Workstation Construction	Main Body	1.2 mm (0.05") 18 gauge electro-galvanized steel with Isocide™ white oven-baked epoxy-polyester powder-coating	
	Work Top	1.2 mm (0.05") 18 gauge stainless steel, type 304, with 4B finish	
	Inner Liner	0.9 mm (0.035") 20 gauge stainless steel, type 304, with 4B finish	
Net Weight	233 Kg (514 lbs)		
Shipping Weight	294 Kg (648 lbs)		
Shipping Dimensions, Maximum (W x D x H)	2150 x 1840 x 1230 mm (84.6" x 72.4" x 48.4")		
Shipping Volume, Maximum	4.87 m³ (172 cu.ft.)		
Electrical**	Model	VBD-4A1	VBD-4A2	VBD-4A3
	Voltages	220-240 VAC, 50 Hz, 1Φ	110-120 VAC, 60 Hz, 1Φ	220-240 VAC, 60 Hz, 1Φ

Noise as measured in open field / anechoic chamber.

Contact Esco or your local Sales Representative for ordering information.

Airstream® Gen 3 Vertical Laminar Flow Cabinet

Airstream® Vertical Laminar Flow Cabinets offer proven protection for your samples and processes where sample protection is required. It offers certain tangible advantages over horizontal flow cabinets (which may be the convention to some parts of the world), such as lower energy consumption (40% of conventional system) levels through the use of exclusive motorized impeller technology and less airflow turbulence (especially when large objects are used on the workzones). In fact, the negative pressure filter mounting system employed on these models is widely recognized to be superior to that of conventional horizontal flow cabinets.

Key Features
- ULPA Filter (ISO Class 3 Work Zone)
- ISOCIDE™ Antimicrobial Powder Coating
- Low Noise Level
- Energy Efficient
- Stable Airflow
- Comfortable Legroom

General Specifications: LVG-4AG-_

Overall Dimensions (W x D x H)	1340 x 784 x 1270 mm (52.8" x 30.8" x 50.0")
Nominal Size	1.2 meter (4')
Internal Work Area, Dimensions (W x D x H)	1270 x 739 x 689 mm (50.0" x 29.1" x 27.1")
Internal Work Area, Space	0.8 m² (8.6 ft²)
Average Airflow Velocity	0.45 m/s (90 fpm) at initial setpoint
Air Volume	1471 m³/hr (866 cfm)
ULPA Filter Typical Efficiency	> 99.999% at particle size between 0.1 to 0.2μm
Sound Emission per IEST-RP-CC002.2*	52.4 dBA
Fluorescent Lamp Intensity at Zero Ambient	1000 Lux (93 foot candles)
Cabinet Construction	1.2 mm (0.05") 18-gauge electro-galvanized steel with white oven-baked epoxy-polyster powder-coated finish 1.2 mm (0.05") 18-gauge stainless steel, grade 304, with 4B finish UV absorbing tempered glass, 5 mm (0.2"), colorless and transparent
Electrical Power Rating 8:	220-240 VAC, 50 / 60 Hz, 1 phase
Electrical Power Rating 9:	110-130 VAC, 50 / 60 Hz, 1 phase
Net Weight**	158 Kg (348 lbs)
Shipping Dimensions, Maximum (W x D x H)**	1400 x 900 x 1590 mm (55" x 35" x 62")

Contact Esco or your local Sales Representative for ordering information

Versati™ Tabletop Centrifuge

Versati™ Tabletop centrifuge stands out among the same-level products with its versatility, running features, and easy handling. It can be used with high-capacity and low-to-high-speed general-purpose centrifuge applications. It is suitable for the sperm purification process during animal IVF because of its adjustable temperature range (-200°C to +400°C).

Key Features
- Compact Design
- Incredible Flexibility
- High Temperature Ramp Rate
- Fast Pre-cooling
- Overspeed Protection
- Over Temperature Protection

Overview of Models

Versati™ Micro Centrifuge

Model: MCV-88
- Maintenance-free brushless motor
- Superior safety
- Audible and visible alarms
- Up to 88 ml capacity

Model: MCR-88
- Maintenance-free brushless motor
- Superior safety
- Temperature Range: -20°C to 40°C
- Up to 88 ml capacity

Versati™ Tabletop Centrifuge

Model: TCV-1500
- Maintenance-free brushless motor
- Superior safety (Automatic rotor recognition)
- Audible and visible alarms
- Up to 1500 ml capacity

Model: TCR-1500
- Maintenance-free brushless motor
- Superior safety (Automatic rotor recognition)
- Temperature Range: -20°C to 40°C
- Up to 1500 ml capacity

Options and Accessories

General Accessories for Versati™ Micro Centrifuge

Aerosol-tight Fixed-angle Rotor
This *TÜV Nord Certified Bioseal Rotor* is used for 1.5/2.0 ml tubes. Adapters are used to run 0.5 ml and 2.0 ml / 0.4 ml PCR tubes.

Fixed-angle Rotor
Aluminum rotor used for 5 ml conical tubes. Adapters are also used in this rotor to run 1-1.8 ml Cryo tubes and 1.5 ml / 2.0 ml PCR tubes.

Microhematocrit Rotor
Rotor ideal for medical field in the determination of hematocrit value through its circular reader accessory. This rotor can only be used in MCV model.

Fixed-angle Rotor for PCR Strips
Rotor made of polypropylene used for 4 x 8 (0.2 ml) PCR strips.

Note: There are a total of 6 rotor options for MCR, 7 rotor options for MCV, and 5 available adapters for both models.

General Accessories for Versati™ Tabletop Centrifuge

Swing-bucket Rotor
Aluminum swing-bucket rotor with circular flat-bottom buckets made of polypropylene can hold up to 4 x 250 ml tubes. It has flexible adapters ideal for medical and biotechnology laboratories.

Microtiter Plate Rotor
This microtiter plate rotor has a maximum capacity of up to 6 plates. This can also accommodate deep well plate, culture plate, microtest/ terasaki plate, microsonic system, and PCR well plate.

Fixed-angle Rotor
The maximum capacity of this fixed-angle rotor is 6 x 250 ml. It can also run tubes ranging from 1.5/2.0 ml to 50 ml using suitable adapters.

Aerosol-tight Fixed-angle Rotor
This TÜV Nord Certified Bioseal Rotor used for 1.5/2.0 ml tubes is also available in tabletop centrifuge models. Adapters are used to run 0.5 ml and 2.0 ml / 0.4 ml PCR tubes.

Note: There are a total of 12 rotor options for TCV/ TCR and 47 available adapters for both models.

Ordering Information

ITEM CODE	MODEL CODE	DESCRIPTION
2220005	TCV-1500-8	Tabletop Centrifuge Ventilated 230 VAC, 50/60 Hz
2220006	TCV-1500-9	Tabletop Centrifuge Ventilated 120 VAC, 50/60 Hz

Guide to Models

MCV - 88 - 8

Model	Code	Centrifuge Capacity	Code	Electrical Supply	Code
Micro Centrifuge Ventilated	MCV	Maximum Sample Capacity (ml)	88	230 VAC 50/60 Hz	8
				120 VAC 50/60 Hz	9
Micro Centrifuge Refrigerated	MCR			230 VAC 50/60 Hz	8
				120 VAC 50/60 Hz	9

MCV / MCR High Speed Micro Centrifuge for up to 15,000 rpm
Designed to accelerate your routine sample preparation processes.

Model Code	Item Code	Description
MCV - 88 - 8	2220001	Micro Centrifuge Ventilated 230 VAC, 50/60 Hz
MCV - 88 - 9	2220002	Micro Centrifuge Ventilated 120 VAC, 50/60 Hz
MCR -88 -8	2220003	Micro Centrifuge Refrigerated 230 VAC, 50/60 Hz
MCR -88 -9	2220004	Micro Centrifuge Refrigerated 120 VAC, 50/60 Hz

Guide to Models

TCV - 1500 - 8

Model	Code	Centrifuge Capacity	Code	Electrical Supply	Code
Tabletop Centrifuge Ventilated	TCV	Maximum Sample Capacity (ml)	1500	230 VAC 50/60 Hz	8
				120 VAC 50/60 Hz	9
Tabletop Centrifuge Refrigerated	TCR			230 VAC 50/60 Hz	8
				120 VAC 50/60 Hz	9

TCV / TCR High Speed Tabletop Centrifuge for up to 16,000 rpm
Ideal for multi-purpose centrifugation at high-speed.

Model Code	Item Code	Description
TCV-1500-8	2220005	Tabletop Centrifuge Ventilated 230 VAC, 50/60 Hz
TCV-1500-9	2220006	Tabletop Centrifuge Ventilated 120 VAC, 50/60 Hz
TCR-1500-8	2220007	Tabletop Centrifuge Refrigerated 230 VAC, 50/60 Hz
TCR-1500-9	2220008	Tabletop Centrifuge Refrigerated 120 VAC, 50/60 Hz

Contact Esco or your local Sales Representative for ordering information

Aeris™ Conventional PCR Thermal Cycler

The Aeris™ thermal cyclers can be used for conventional PCR applications. The cycler offers the flexibility to change the thermal blocks depending on the application: from consumable PCR tubes, strips, plates, and slides. System includes excellent heating and cooling rate with accurate and uniform temperature throughout the samples.

Key Features
• Multi-block capability
• Adjustable hot lid temperature and ramp rate
• Excellent temperature accuracy and uniformity
• Can perform standalone operation
• Software allows variety of PCR conditions, can control up to 30 units via one PC
• Password protection for secure system access

OPTION: Choose the appropriate block for your PCR application
Five Interchangeable Blocks

AERIS-BG096
G-96 WELL
Applicable consumables: 0.2 ml tube, 96-well microplate, 12 x 8 strips, 8 x 12 strips

AERIS-B4830
48 x 0.2 ml + 30 x 0.5 ml WELL
Applicable consumables: 0.2 ml tubes, 0.5 ml tubes, 4 x 12 strips

AERIS-BD048
D-48 X 0.2 ml
Two in one! Two independent experiments may be carried out at the same time.
Applicable consumables: 0.2 ml tubes, 6 x 8 strips

AERIS-BG384
G-384 WELL
Applicable consumables: 384-well microplate

AERIS-B4076
4 IN SITU SLIDES
For In Situ PCR
Applicable consumables: 4 slides *in situ*

General Specifications

Model Code	AERIS-BG096	AERIS-B4830	AERIS-BG384	AERIS-BD048	AERIS-B4076
Sample Capacity	96 x 0.2 ml	48 x 0.2 ml + 30 x 0.5ml	384 wells	48 x 0.2 ml + 48 x 0.2 ml	4 slides in situ
Application Consumables	0.2 ml tubes 96-well microplates 12 x 8 strips 8 x 12 strips	0.2 ml tubes 0.5 ml tubes 4 x 12 strips	384-well microplates	0.2 ml tubes 6 x 8 strips	4 slides in situ
Maximum Heating Rate	4.0°C/sec	2.8°C/sec	2.8°C/sec	4.0°C/sec	1.8°C/sec
Maximum Cooling Rate	4.0°C/sec	2.8°C/sec	2.8°C/sec	4.0°C/sec	1.8°C/sec
Gradient Capability	Yes	-	Yes	-	-
Gradient Rate	30-105°C	-	30-105°C	-	-
Max. Gradient	1-30°C	-	1-30°C	-	-
Temperature Control Mode	Tube or Block				
Temperature Range	4-105°C				
Over-temperature Cut-Out	Yes				
Number of Programs	Up to 250 programs, unlimited with USB flash drive				
Maximum Hold Time	59 min and 58 sec				
Temperature Accuracy	≤±0.1°C below 50°C				
Temperature Uniformity	≤±0.2°C below 55°C				
Hot Lid Temperature Range	30-110°C (Adjustable, Default 105°C, Automatic Hot-Lid)				
PCR Sample Volume	10-100 µl				
Tm Calculator	Auto				
Extensive Experiment Application	Option setting for time up/down is between 0-9 min 59 sec, which is suitable for Long PCR Temperature when up/down is between 0.1°C to 9.9°C, it is suitable for Touchdown PCR				
Auto Re-start on Power Failure	Yes				
Connection to PC Control	Yes				
Software	AerisLine™				
Operation System	Windows XP / Windows Vista / Windows 7 / Windows 8				
Pre-Run Sample Cooling	Yes, 4°C				
Language	English, Chinese, Spanish				
USB	Yes				
Display	6.5" Color LCD Touch Screen				
Dimensions (W x D x H)	306 x 386 x 295 mm (12.0" x 15.2" x 11.6")				
Power Supply, Consumption	100-240 VAC, 50/60 Hz, 600 W				
Warranty	3 years for mainbody, 2 years for blocks				
Net Weight	9 Kg (19.8 lbs) (without block)				
Shipping Weight	10 Kg (22.0 lbs)				
Shipping Dimension (W x D x H)	420 x 540 x 370 mm (16.5" x 21.3" x 14.6")				

The parameters are tested under optimized lab environments.

Ordering Information

ITEM CODE	MODEL CODE	DESCRIPTION
2210003	AERIS-MB	Aeris™ Thermal Cycler Main Body (100-240 VAC)
2210004	AERIS-BG096	Aeris™ Thermal Cycler Block (96 x 0.2 ml)
2210005	AERIS-B4830	Aeris™ Thermal Cycler Combined Block (48 x 0.2 ml + 30 x 0.5 ml)
2210006	AERIS-BG384	Aeris™ Thermal Cycler Block (384 wells)
2210007	AERIS-BD048	Aeris™ Thermal Cycler Dual Block (48 x 0.2 ml)
2210008	AERIS-B4076	Aeris™ Thermal Cycler (4 slides in situ)

Contact Esco or your local Sales Representative for ordering information

MIRI® Anti-Vibration Table

The MIRI® AVT (Anti-Vibration Table) features an anti-vibration mechanism for passive dampening of the microscope. This is mainly used for micromanipulation procedures like Intra-Cytoplasmic Sperm Injection (ICSI) procedures. Exclusively designed in Denmark and made in E.U., the stainless steel table and sturdy frame add mass to the anti-vibration table. AVT is constructed to be easy-to-use and almost maintenance-free.

Key Features
- Anti-vibration mechanism for passive dampening
- Sturdy frame
- Stainless steel table
- Range (HZ) vibration could be eliminated while using this AVT: 5.5-50Hz

General Specifications

Overall Dimensions	1200 x 800 x 800 mm (47.2 x 31.5 x 31.5")
Net weight	114 kg (251.3 lbs)
Material	Powder-painted mild steel, Stainless steel
Float Dimension (W x D)	540 x 340 mm (21.3 x 13.4")

Ordering Information

ITEM CODE	MODEL CODE	DESCRIPTION
1320484	MIRI® AVT	Anti-Vibration Table MIRI® AVT

Quality Assurance and Validation Units

MIRI® GA Gas and Temperature Validation Unit

MIRI® GA is a tabletop device intended to make external incubator validation easier and safer. It is capable of monitoring the temperature (PT1000 connector) & gas concentration, flow and pressure. It can validate up to 6 chambers simultaneously 24 hours a day. It also has an adjustable flow rate which gives it the ability to properly sample small volume incubation chambers. Moreover, MIRI® GA comes with a full Data Logger software which is helpful in monitoring each parameter. The MIRI® GA can connect to any brand of incubator and is a perfect accessory to MIRI® TL and MIRI® Multiroom Incubators.

Key Features

- Constantly validate up to 6 x CO_2 / O_2 incubators
- CO_2 / O_2 incubators controllable flow rate Monitor up to 6 x PT1000 sensors
- 6 ports for sequential gas samples
- Gas feedback returns sampled gas to incubator or exhaust

General Specifications

Input ports	6 x PT1000 ports for temerature monitoring 6 x gas sampling ports
Output ports	1 x gas feedback port, 1 x USB port
Shipping dimensions and weight	440mm x 430mm x 240mm (17.3" x 16.9" x 9.4"), 15kg (33.1lbs)

Ordering Information*

| ITEM CODE	MODEL CODE	DESCRIPTION
1320045	MRI-GA	MIRI® GA CO_2 / O_2 / Temp validation Unit, 115/230V, 50/60Hz

* Includes data logger software, 1pc PT1000 cable, 1pc Gas connection tube, 1pc Gas feedback tube

Accessories

ITEM CODE	MODEL CODE	DESCRIPTION
1320063	MRA-1101	1pc PT1000 cable
1320064	MRA-1102	Set of 6pcs PT1000 cables
1320065	MRA-1103	1pc Gas connection tube
1320066	MRA-1104	Set of 6pcs Gas connection tubes

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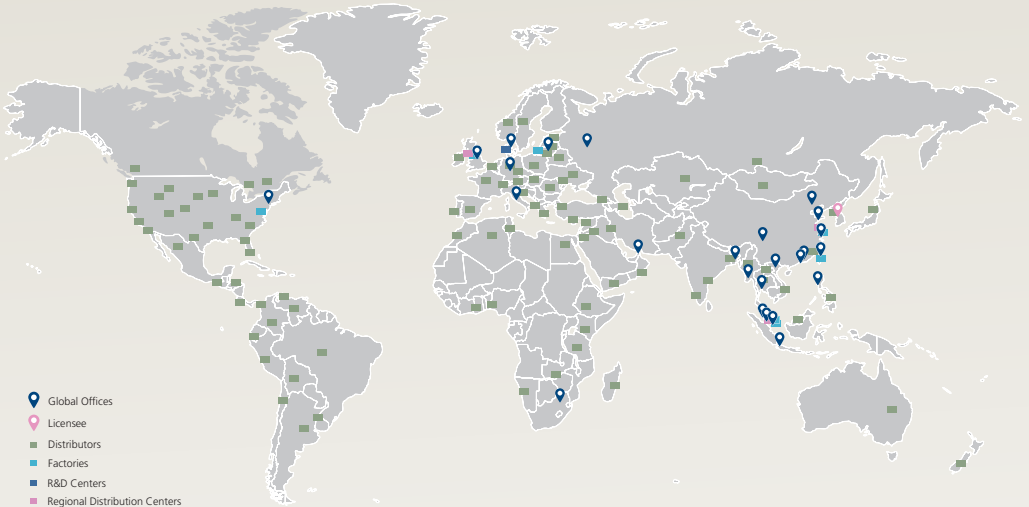
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Esco Animal IVF Products:

MIRI® TL6 Time-Lapse Incubator
MIRI® TL12 Time-Lapse Incubator
MIRI® Multiroom Incubator
MIRI® GA (Gas and Temperature Validation Unit)
CelCulture® CO₂ Incubator
Esco Multi-Zone ART Workstation
MIRI® AVT
Aeris™ Conventional PCR Thermal Cycler
Versati™ Tabletop Centrifuge
Airstream® Gen 3 Vertical Laminar Flow Cabinet
VIVA® Animal Research Workstations
CultureCoin®

Biotechnology, through In vitro fertilization, is becoming an integral tool to the livestock industry to accelerate breed development for better-quality animal health and welfare, improved reproduction, and enriched nutritional quality and safety of animal-derived foods.

Esco Medical is one of the divisions of the Esco Lifesciences Group. We provide innovative technological solutions for fertility clinics, laboratories (both human and animal) and research units. We aim to become the leading manufacturer of high-quality equipment such as long-term embryo incubators, ART workstations, anti-vibration tables, and time-lapse incubators.

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