

*Esco PCR Cabinet, Model PCR-4A,  
Shown with optional support stand.*

## **Polymerase Chain Reaction Cabinets**

*The Proven Solution for Contaminant-Free PCR*





Esco PCR Cabinet, Model PCR-4A, shown with optional support stand.



### Main Features

- Greater protection against contamination from the ambient environment and cross-contamination within the main chamber.
- High quality polyester pre-filter and main HEPA filter with a typical efficiency of >99.99% at 0.3 microns.
- Built-in UV lamp with timer to facilitate decontamination between PCR cycles.
- Sentinel™ Microprocessor controller supervises all functions - 0.9 m (3') and 1.2 m (4') models only.
- Esco antimicrobial coating on all painted surfaces.
- Available in 0.6, 0.9 and 1.2 meter models (2', 3' and 4').



## Introduction

### What is PCR

Polymerase Chain Reaction\* (PCR) is a process where millions of copies of DNA are amplified from a single copy or low copy number template. This reaction is fundamental to almost all applications requiring a high copy number of starting material and is used in all laboratories working with DNA and RNA.

### Why PCR Cabinet

Because of the high copy number generated during PCR, it is essential to prevent possible contamination of the PCR reaction.

The ideal PCR laboratory should consist of three areas, each isolated from the other. Reagents should be prepared in the reagent preparation area and transferred to the sample preparation area through a pass box or inside closed containers. After preparation of the final reaction mix, the tubes should be transferred to the amplification area, again through a pass box or in a closed container. The PCR amplification and results analysis take place in this area.



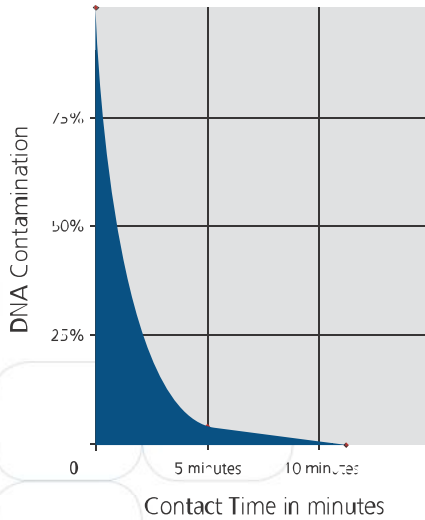
In practice, all these procedures are conducted in the same room. Under these circumstances, PCR Cabinets are used for reagent preparation and sample preparation to minimize contamination. In the case of biohazardous samples, biological safety cabinets must be used for sample preparation

\* Polymerase Chain Reaction (PCR) is a patented process owned by Hoffman La Roche

## How Esco PCR Cabinets Prevent Contamination

### UV Decontamination Technology

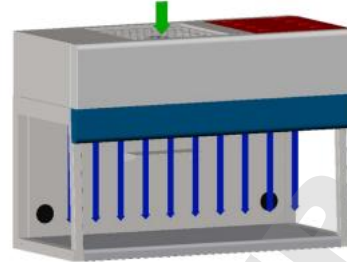
- Powerful, uniformly distributed, UV-C.
- Proven effect on DNA contamination.
- Shelf enables placement of items closer to the UV source, increasing decontamination efficacy.
- UV-C is ozone-free.
- UV hour meter monitors bulb life, simplifies maintenance.
- Adjustable timer.



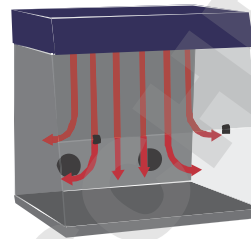
The Effect of UV on DNA Contamination

### HEPA-Filtered Laminar Airflow

- Laminar, not turbulent flow provides superior sample protection.



Laminar Flow (Esco PCR cabinets)



Turbulent Flow

Note: many competitors' cabinets have turbulent flow

- ISO Class 4 air cleanliness.
- Minipleat, separatorless HEPA filters, tested to a typical efficiency of >99.99% for 0.3 micron particles are superior to conventional aluminium separator HEPA filters. Minipleat filters have a greater surface area and a longer service life, which reduce operating costs.

## More Benefits

### Easy-to-Use

- Timer is easy to adjust
- UV hour meter monitors bulb life
- Automatic decontamination for 0.9 m (3') and 1.2 m (4') models
  - Close sash: UV turns on automatically for decontamination
  - Open sash: airflow activates automatically

### Safety

- UV interlock prevents UV exposure
- UL recognized electrical components
- UV filtering sash and side walls

### Two-in-One

Can be used as a regular laminar flow cabinet and UV can also be used for decontamination of regular lab items.

### Ergonomics

- Low noise
- Angled front
- Glass sides
- Curved work surface front edge
- Powder-coated rear wall eliminates reflections
- Vertical airflow minimizes direct airflow towards operator, causing dry eyes



## Energy Efficiency



- Even more energy efficient than regular laminar flow clean benches
- UV timer shuts off UV after pre-set duration
- The backward curved wheel with external rotor motor delivers class-leading energy efficiency for lower operating costs

**ESCO**

WORLD CLASS. WORLDWIDE.

# Esco PCR Cabinets

Provide Product Protection

## Pre-Filters

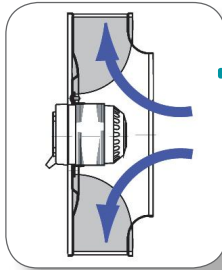
An additional disposable pre-filter traps large particles in the inflow air prior to reaching the main filter, protecting against damage and prolonging filter life.

## High Performance Fan System

German made ebm-papst® permanently lubricated, centrifugal motor/blowers with external rotor designs.

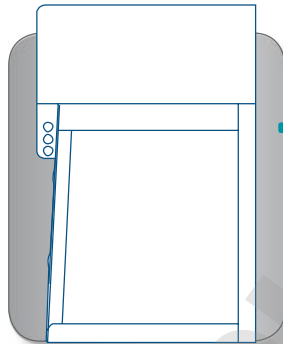
Motors selected for energy efficiency, compact design, and flat profile. Completely integrated assembly optimizes motor cooling.

All rotating parts balanced for smooth, quiet, vibration-free operation.



## User Interface

An angled front, rounded work surface front edge, and glass sides promote ergonomics. The powder-coated work zone rear wall eliminates harsh reflections which may be associated with conventional stainless steel interiors. The vertical airflow design minimizes direct airflow which may lead to dry eyes and fatigue.



## UV Decontamination System

Each cabinet includes a powerful, built-in, 253.7 nanometer, UV lamp to enable the work zone to be decontaminated between experimental runs, thus preventing cross contamination.

The decontamination cycle time may be set with the UV timer, thus extending UV bulb life.



UV-filtering polycarbonate front and glass sides shield the user from accidental UV exposure. A proximity sensor ensures the frontal shield is lowered before allowing the UV to activate.

## Air Cleanliness Standards

(ISO 14644-1, Air Cleanliness Particle Limits)  
(No. of Particles / m<sup>3</sup>)

| Particle Size (µm) | Cleanliness Class |         |         |         |         |         |
|--------------------|-------------------|---------|---------|---------|---------|---------|
|                    | Class 1           | Class 2 | Class 3 | Class 4 | Class 5 | Class 6 |
| 0.1                | 10                | 100     | 1000    | 10000   | 100000  | 1000000 |
| 0.2                | 2                 | 24      | 237     | 2370    | 23700   | 237000  |
| 0.3                | -                 | 10      | 102     | 1020    | 10200   | 102000  |
| 0.5                | -                 | 4       | 35      | 352     | 35200   | 35200   |
| 1.0                | -                 | -       | 8       | 83      | 835     | 8320    |
| 5.0                | -                 | -       | -       | -       | 29      | 293     |

## Superior Air Cleanliness

Esco PCR cabinets provide ISO Class 4 air cleanliness within the work zone as per ISO 14644.1, significantly cleaner than the usual Class 5 classification on clean benches offered by the competition.

Esco PCR Cabinet,  
Model PCR-4A\_  
with optional support stand

## Other Features

- All Esco products are manufactured for the most demanding laboratory applications. All components are designed for maximum chemical resistance and enhanced durability for a long service life. The main body of the cabinet is constructed of industrial-grade electrogalvanized steel.
- One-piece formed stainless steel work surface with a rounded front edge is designed for maximum operator comfort.
- Built-in warm white, electronic ballasted, 5000k lighting provides excellent illumination of the work zone and reduces operator fatigue. The reliable lighting system is zero-flicker and instant start.
- Each PCR cabinet is individually factory tested for safety and performance in accordance with international standards.

**Caution:** PCR cabinets do not provide operator protection. They should not be used with applications involving unknown or hazardous agents.

## Control System



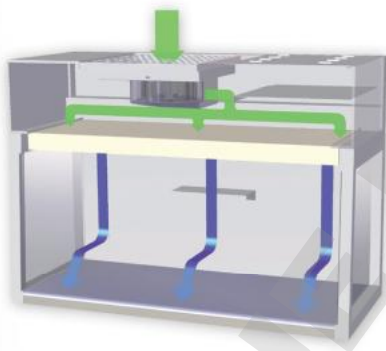
0.6 m (2') models are equipped with rocker switches for blower, light and UV

or



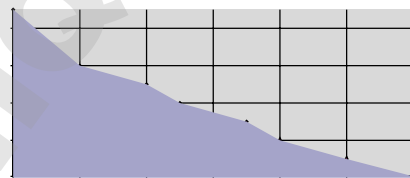
0.9 m (3') and 1.2 m (4') models are equipped with a microprocessor control system and soft touch controls for blower, light and UV.

Both models have a UV timer function; however, the microprocessor has additional program functions including automatic activation of UV when front shield is lowered, UV countdown on LCD display, total UV run hours, and more.



### Proven Product Protection

Vertical laminar airflow with HEPA-filtration, >99.99% at 0.3 microns, provides a sterile work space for PCR sample preparation.



### Built-In Protection

External surfaces are powder coated with Esco **ISOCIDE**® to eliminate 99.9% of surface bacteria within 24 hours of exposure.

**ESCO**

WORLD CLASS. WORLDWIDE.

## General Specifications, Polymerase Chain Reaction Cabinets

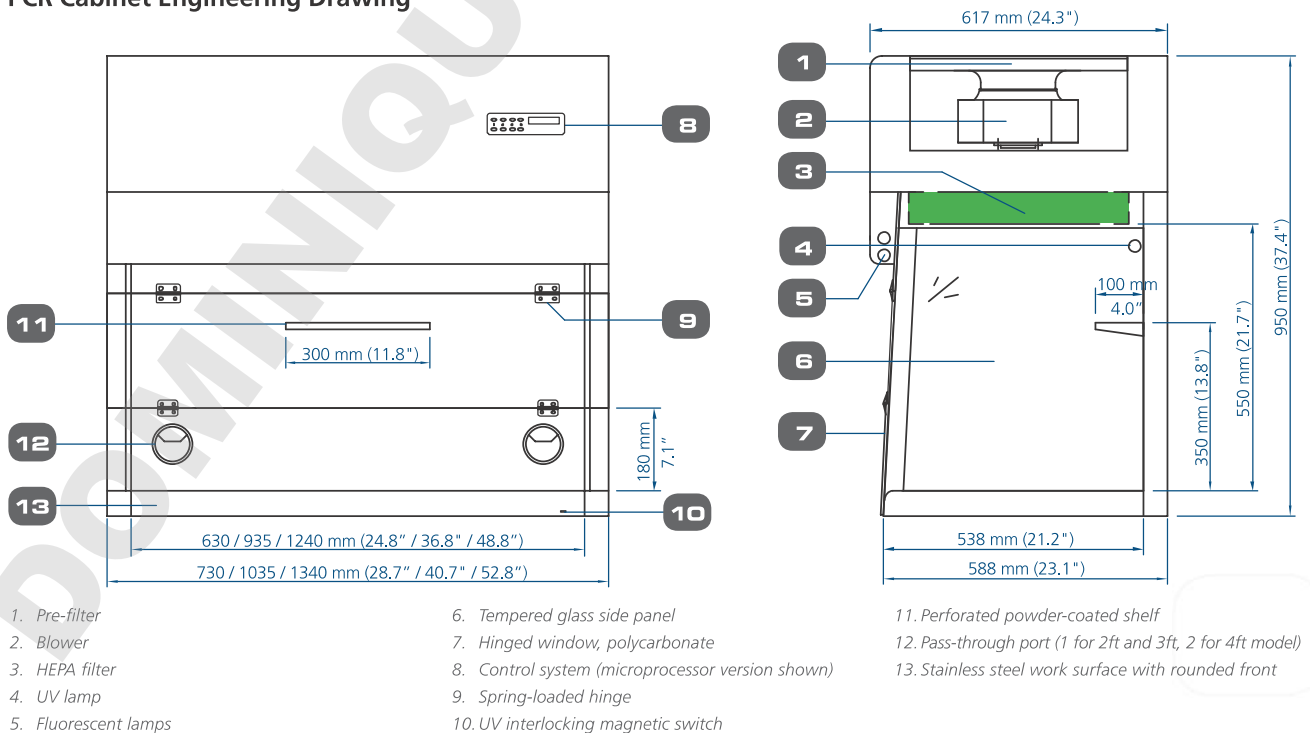
| Model                                       | SCR-2A_  |   |  | PCR-3A_   |   |  | PCR-4A_   |   |  |  |
|---|--|---|--|---|---|--|---|---|--|--|
| Nominal Size                                | 0.6 meter (2')                                   |   |  | 0.9 meter (3')                                  |   |  | 1.2 meter (4')                                  |   |  |  |
| External Dimensions (L x W x H)             | 730 x 617 x 950 mm<br>(28.7" x 24.3" x 37.4")    |   |  | 1035 x 617 x 950 mm<br>(40.7" x 24.3" x 37.4")  |   |  | 1340 x 617 x 950 mm<br>(52.8" x 24.3" x 37.4")  |   |  |  |
| Internal Dimensions (L x W x H)             | 630 x 538 x 550 mm<br>(24.8" x 21.2" x 21.7")    |   |  | 935 x 538 x 550 mm<br>(36.8" x 21.2" x 21.7")   |   |  | 1240 x 538 x 550 mm<br>(48.8" x 21.2" x 21.7")  |   |  |  |
| Laminar Airflow Velocity                    | 0.30 m/s (60 fpm)                                |   |  |   |   |  |   |   |  |  |
| Pre-Filter                                  | Washable polyurethane fibers with 85% arrestance |   |  |   |   |  |   |   |  |  |
| Sound Emission*                             | <63 dBA  |   |  | <56 dBA   |   |  | <58 dBA   |   |  |  |
| Fluorescent Lamps Intensity                 | >800 Lux (>75 foot candles)                      |   |  | >975 Lux (>91 foot candles)                     |   |  | >1230 Lux (>114 foot candles)                   |   |  |  |
| UV Lamp                                     | 253.7 nanometer 15-watt UV lamp                  |   |  |   |   |  | 253.7 nanometer 30-watt UV lamp                 |   |  |  |
| Controller                                  | Rocker Switches                                  |   |  | Esco Sentinel™ Microprocessor Control           |   |  |   |   |  |  |
| Construction                                | Main Body  | Electrogalvanized steel with white oven-baked epoxy-polyester powder-coated finish. Coated with Esco Isocide™ antimicrobial coating |  |   |   |  |   |   |  |  |
|   | Work Zone  | 1.2 mm (0.05") 18 gauge stainless steel grade 304   |  |   |   |  |   |   |  |  |
| Electrical**                                | Model  | SCR-2A1<br>(2150009)<br>220-230 VAC,<br>50 Hz   | SCR-2A2<br>(2150010)<br>110-120 VAC,<br>50/60 Hz | SCR-2A3<br>(2150011)<br>220-230 VAC,<br>60 Hz   | PCR-3A1<br>(2150001)<br>220-230 VAC,<br>50 Hz | PCR-3A2<br>(2150003)<br>110-120 VAC,<br>50/60 Hz | PCR-3A3<br>(2150005)<br>220-230 VAC,<br>60 Hz   | PCR-4A1<br>(2150005)<br>220-230 VAC,<br>50 Hz | PCR-4A2<br>(2150007)<br>110-120 VAC,<br>50/60 Hz | PCR-4A3<br>(2150008)<br>110-120 VAC,<br>50/60 Hz |
|   | Cabinet Full Load Amps (FLA)                     | 1 A   | 1.5 A  | 1 A   | 0.75 A  | 1.1 A  | 0.75 A  | 1.8 A   | 3.8 A  | 1.8 A  |
|   | Cabinet Nominal Power                            | 136 W   | 165 W  | 117 W   | 135 W   | 146 W  | 144 W   | 184 W   | 260 W  | 180 W  |
|   | Cabinet BTU                                      | 464   | 563  | 400   | 461   | 498  | 491   | 628   | 887  | 614  |
| Net Weight                                  | 76.5 Kg (169 lbs)                                |   |  | 99 Kg (218 lbs)                                 |   |  | 115.4 Kg (254 lbs)                              |   |  |  |
| Shipping Weight***                          | 100.5 Kg (222 lbs)                               |   |  | 123.3 Kg (272 lbs)                              |   |  | 139.8 Kg (308 lbs)                              |   |  |  |
| Shipping Dimensions, Maximum (L x W x H)*** | 850 x 730 x 1150 mm<br>(33.5" x 28.7" x 45.3")   |   |  | 1130 x 730 x 1150 mm<br>(44.5" x 28.7" x 45.3") |   |  | 1420 x 730 x 1150 mm<br>(55.9" x 28.7" x 45.3") |   |  |  |
| Shipping Volume, Maximum***                 | 0.71 m <sup>3</sup> (25 cu.ft.)                  |   |  | 0.95 m <sup>3</sup> (34 cu.ft.)                 |   |  | 1.19 m <sup>3</sup> (42 cu.ft.)                 |   |  |  |

\*Noise reading in open field condition / anechoic chamber

\*\* Additional voltages may be available; contact Esco for ordering information.

\*\*\*Cabinet only; excludes optional stand.

### PCR Cabinet Engineering Drawing



| Standards Compliance | Cabinet Performance        | Air Quality  | Filtration  | Electrical Safety  |
|----------------------|----------------------------|--|---|--|
|                      | IEST-RP-CC002.2, Worldwide | ISO 14644.1 Class 3, Worldwide<br>AS 1386 Class 1.5, Australia<br>JIS B9920 Class 3, Japan | IEST-RP-CC034.1, Worldwide<br>IEST-RP-CC007.1, Worldwide<br>IEST-RP-CC001.3, Worldwide<br>EN1822 (H 13), Europe | IEC 61010-1, Worldwide<br>EN 61010-1, Europe<br>UL-61010-1, USA<br>CAN/ CSA 22.2 No. 61010-1 |

## Accessories



### Support Stand with Caster Wheels (SPC)

- For 0.6 m (2'), 0.9 m (3') and 1.2 m (4') models
- Available in two standard heights: 711mm (28.0") or 860mm (34.0")
- Durable polyurethane caster wheels with 360 degree horizontal rotation
- Total brake system on front wheels
- Maximum weight supported: 600 Kg (1323 lbs)



### Support Stand with Leveling Feet (SAL)

- For 0.6 m (2'), 0.9 m (3') and 1.2 m (4') models
- Available in two standard sizes: 737 mm (29.0") or 864 mm (34.0"),  $\pm 38.1$  mm (1.5")
- Maximum weight supported: 500 Kg (1,100 lbs)



### Telescoping Support Stands with Leveling Feet (STL)

- For 0.9 m (3') and 1.2 m (4') models
- Allow manual adjustment of the product height. The cabinet must be removed from a Telescoping Support Stand prior to adjustments
- Adjustable height range: 660-940 mm (26.0"-37.0"), adjustable in 25.4 mm (1.0") increments
- White oven-baked epoxy powder-coated finish
- Maximum weight supported: 600 Kg (1323 lbs)



### Telescoping Support Stands with Caster Wheels (STC)

- For 0.9 m (3') and 1.2 m (4') models
- Allow manual adjustment of the product height. The cabinet must be removed from a Telescoping Support Stand prior to adjustments
- Adjustable height range: 660-880 mm (26.0"-34.6"), adjustable in 25.4 mm (1.0") increments
- White oven-baked epoxy powder-coated finish
- total brake system on front wheels
- Maximum weight supported: 600 Kg (1323 lbs)

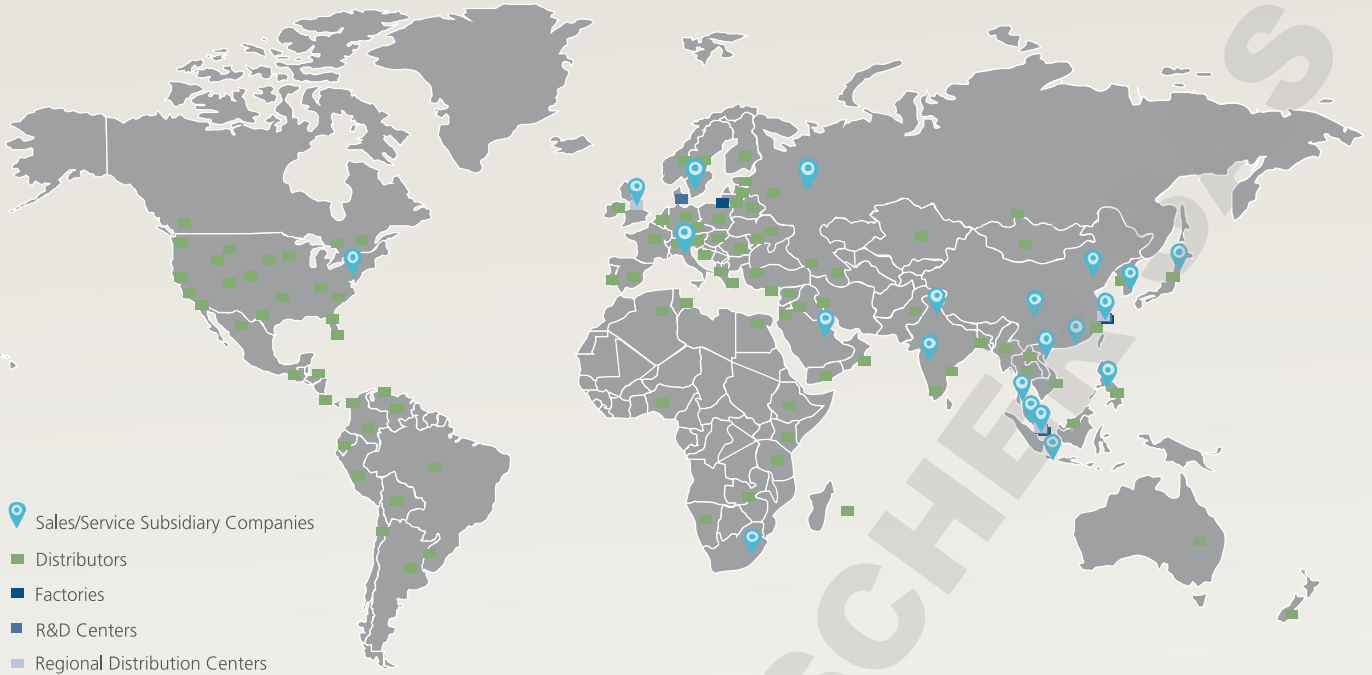


### Hydraulic Motorized Adjustable Support Stand with Casters (SPM)

- For 0.9 m (3') and 1.2 m (4') models
- Adjustable height range : 711-863 mm / (28.0"-34.0")
- Elevates to sitting or standing work surface height, Motorized electrically-adjustable
- Standard with caster wheels
- White oven-baked epoxy powder-coated finish
- Maximum weight supported: 500 Kg (1100 lbs)

*Note: Increases exterior dimensions*

# ESCO GLOBAL NETWORK



- ART Equipment
- Biological Safety Cabinets
- CO<sub>2</sub> Incubators
- Cold Storage
- Compounding Pharmacy Equipment
- Containment / Pharma Products
- Ductless Fume Hoods
- Lab Animal Research Products
- Laboratory Fume Hoods
- Laboratory Incubators
- Laboratory Ovens
- Laminar Flow Cabinets
- PCR Cabinets
- PCR Thermal Cyclers
- Powder Weighing Balance Enclosures

The Esco Group of Companies is a global life sciences tools provider with sales in over 100 countries. The group is active in lab equipment, pharma equipment and medical devices. Manufacturing facilities are located in Asia and Europe. R&D is conducted worldwide spanning the US, Europe and Asia. Sales, service and marketing subsidiaries are located in 12 major markets including the US, UK, Singapore, Japan, China and India. Regional distribution centers are located in the US, UK, and Singapore.

Life Science • Chemical Research • Assisted Reproductive Technology (ART) • Pharmaceutical Equipment • General Equipment



WORLD CLASS. WORLDWIDE.

Esco Micro Pte. Ltd. • 21 Changi South Street 1 • Singapore 486 777  
 Tel +65 6542 0833 • Fax +65 6542 6920 • mail@escoglobal.com  
 www.escoglobal.com

Esco Technologies, Inc. • 903 Sheehy Drive, Suite F, Horsham, PA 19044, USA  
 Toll-Free USA and Canada 1-877-479-3726 • Tel 215-441-9661 • Fax 484-698-7757  
 eti.sales@escoglobal.com • www.escolifesciences.us

Esco Global Offices: Bahrain | Bangladesh | China | India | Indonesia | Italy | Japan | Malaysia  
 Philippines | Russia | Singapore | South Africa | South Korea | Thailand | United Kingdom | USA | Vietnam

