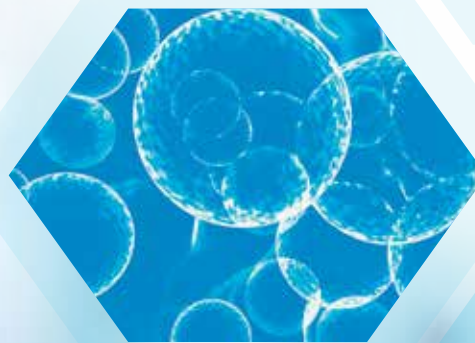




# CelCradle™

Cradle for High Cell Density



## The Cradle for Your Cells

CelCradle™ is a cost-effective, single-use, benchtop bioreactor system capable of supporting high density culture of anchorage-dependent or adherent cells. It is a single-use, packed-bed bioreactor system that has linear scalability from laboratory scale to production scale, complete with automated cell harvesting system.

The CelCradle™ operates through the Tide Motion principle wherein cells, attached to BioNOC™ II carriers, are alternately exposed to aeration and nutrition via the decompression and compression of the bellows holding the culture medium. The gentle vertical oscillation of the culture medium creates a dynamic interface between air and culture medium on the surface of the cells, providing the cells with an environment that is of low shear stress, high aeration and nutrition levels, zero foaming, and no O<sub>2</sub> limitation. This efficient nutrient and oxygen transfer allows the CelCradle™ system to produce high cell density yield.

### Applications

The CelCradle™ can be used in many different applications, as exhibited by journal articles (see literature support). These include the following applications:

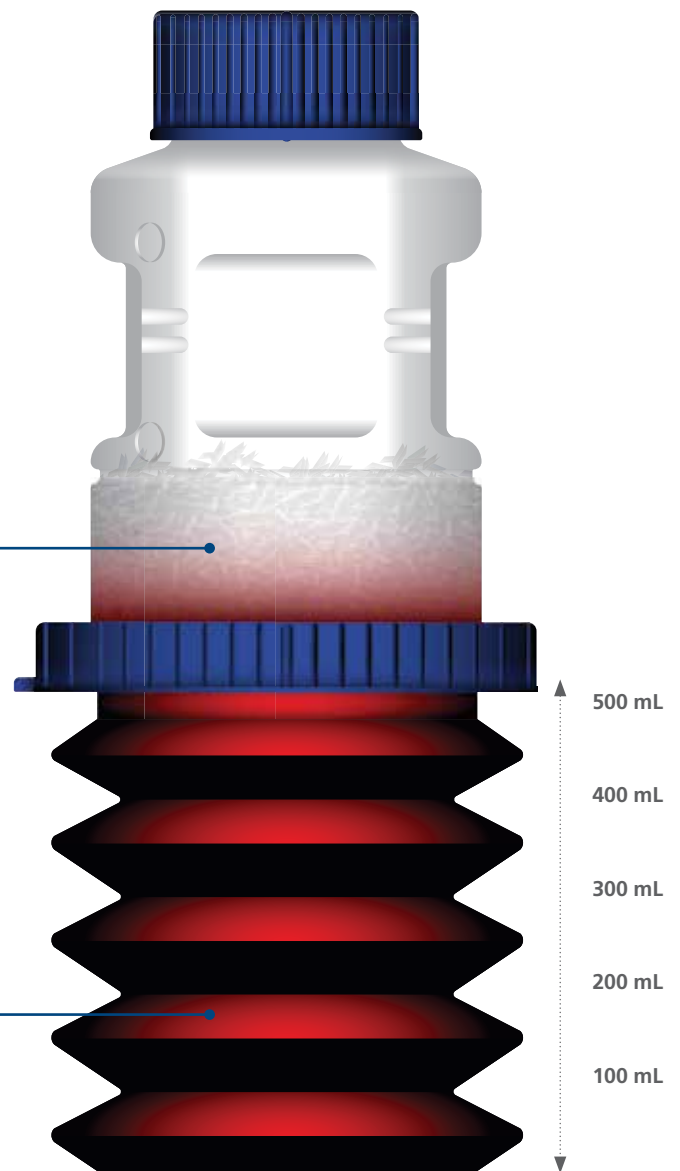
- Culture of anchorage-dependent or adherent cells
- Conversion from roller bottles to single-use, closed system
- Overcome limitations of microcarrier-stirred tank bioreactor technology
- Autologous and allogeneic cell therapy
- Human and animal vaccines

#### 5.5 grams of BioNOC™ II

- Serves as the packed bed where cells adhere to and stabilize within the culture vessel
  - Enhanced biocompatibility
  - Long-lasting hydrophilicity (negatively charged surface for coating)
  - High porosity
  - Low lint content
  - Excellent mechanical strength

#### Media reservoir

- 500 mL culture medium containing compartment



Dimension: 480 x 300 x 140 mm

Weight: 2 kg

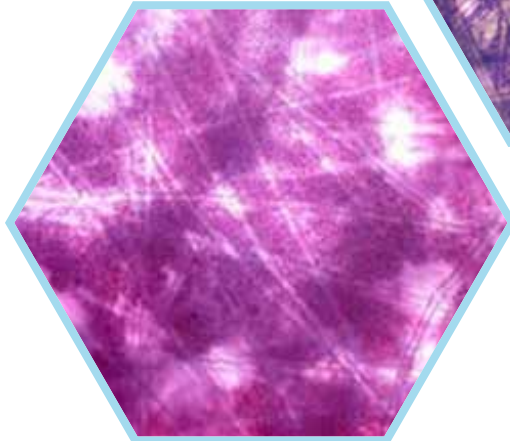
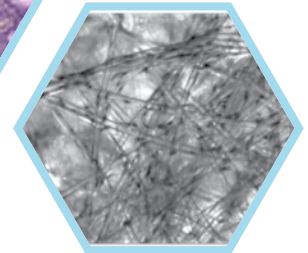
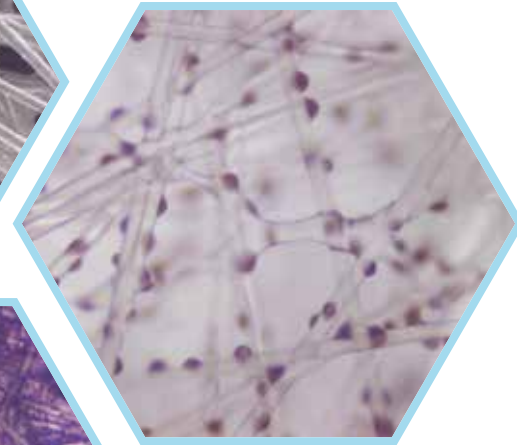
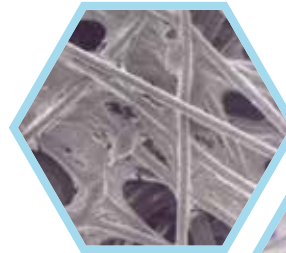
## Key Features



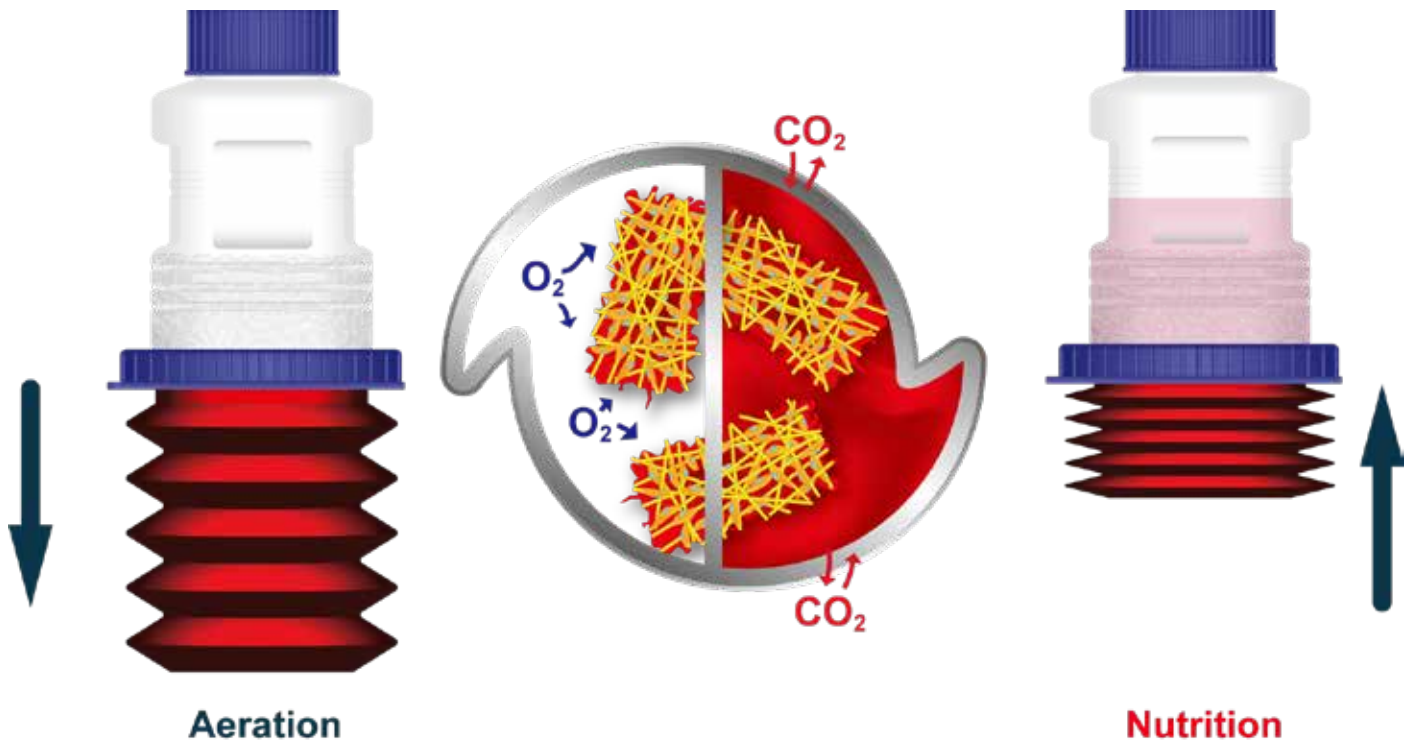
- Single-use, pre-sterilized, and ready-to-use bottles
- Compact and small footprint (standard system fits inside a 170 L or 6 ft<sup>3</sup> CO<sub>2</sub> incubator)
- Compatible with most serum-free culture medium
- Harvest whole cells or cell components
- Linear scale-up by direct multiplication of bottles or the use of TideXCell™
- Reduced labor, costs, and space requirements
- Large surface area for cell attachment and growth
- Available in batch, fed-batch, and recirculation

## Established Cell Lines

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> VERO     | <input checked="" type="checkbox"/> MSC      |
| <input checked="" type="checkbox"/> MDCK     | <input checked="" type="checkbox"/> CHO      |
| <input checked="" type="checkbox"/> MDBK     | <input checked="" type="checkbox"/> XC-18    |
| <input checked="" type="checkbox"/> Sf9      | <input checked="" type="checkbox"/> ST       |
| <input checked="" type="checkbox"/> HEK-293  | <input checked="" type="checkbox"/> CEF      |
| <input checked="" type="checkbox"/> HEK-293T | <input checked="" type="checkbox"/> GL 37    |
| <input checked="" type="checkbox"/> BHK 21   | <input checked="" type="checkbox"/> Marc 145 |



## The Tide Motion Principle



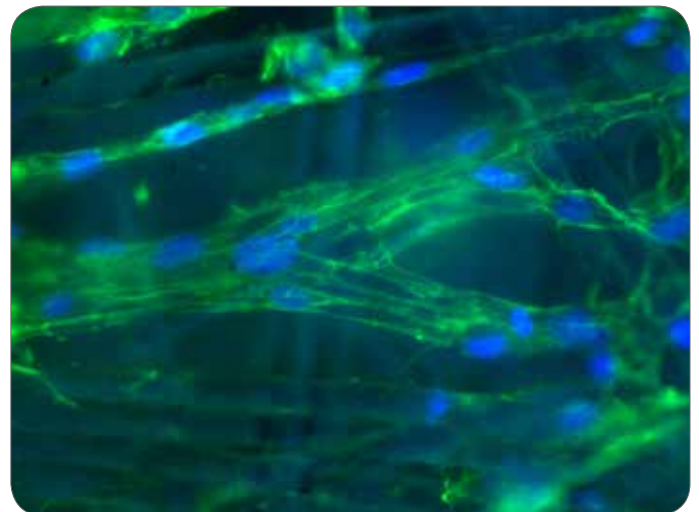
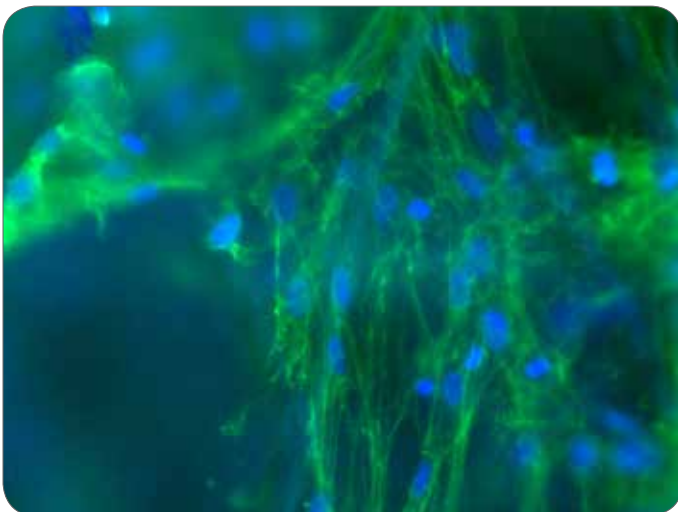
Bellows are released exposing the carriers to carbon dioxide. The cells attached to the carriers will take in aeration.

Bellows are pushed up submerging the carriers with culture medium. The cells attached to the carriers will take in nutrition from the culture medium

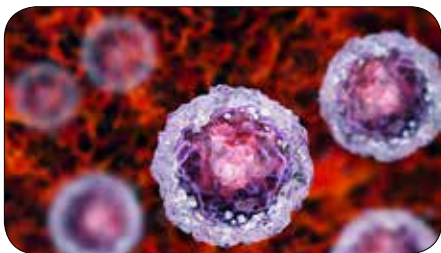
### Anchorage-dependent cell culture

- One CelCradle™ bottle consists of 5.5 grams of BioNOC™ II providing up to 2,400 cm<sup>2</sup>/g of surface area for cell attachment and growth. The carriers are proven to have enhanced biocompatibility, long-lasting hydrophilicity, low lint content, and excellent mechanical strength.

*Note: surface area may vary depending on the cell line to be cultured.*



*Fibronectin antibody stained cells attached to the BioNOC™ II carriers*



## Autologous and Allogeneic Cell Therapy

Cell Therapy is the use of live whole cells for the treatment of diseases and involves cultivation of cells to a certain density prior to administration. A commonly used cell type in cell therapy is mesenchymal stem cells, which are anchorage-dependent. Currently, cultivation of cells for cell therapy is done using T-flasks; however this method is quite laborious, time and space consuming. T-flasks have limited surface area for growth and thus, require handling of several hundred T-flasks and multiple passaging. The CelCradle™ system's large surface area and compact design help solve these problems, with a single CelCradle™ bottle equalling the productivity of several hundred T-flasks.

## Human and animal vaccine

Cell culture-based vaccine production is the current trend in vaccine production as it offers several advantages over traditional vaccine production technologies including simpler mass production, rapid manufacturing, independent of SPF animal, controllable quality, and hypoallergenic products.

The CelCradle™ is an ideal system for laboratory-scale, cell-culture based vaccine production as it is capable of supporting high cell density culture, production of high viral titer, and linear scalability to production level. VacciXcell's Tide Motion bioreactor system has been used for the research and development, and production of vaccines for several indications including:

- Influenza
- JEV
- Rabies
- Hog Cholera
- Hepatitis A
- EV71
- Rabies
- IBDV



Apart from these, the CelCradle™ has also been used for other applications including recombinant protein production, pharmacokinetic studies, and cellular component production. Details of these applications can be found from literature support.

## Literature Support

The following are some of the available literature support online for the various applications of the CelCradle™ system.

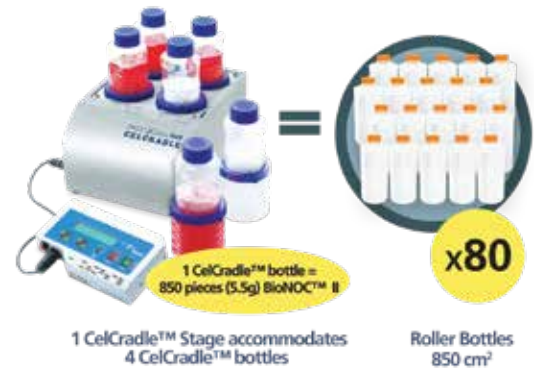
- [1] Asaoka, Y., Tanaka, T., Tsumoto, K., Tomita, M., & Ide, T. (n.d.). Efficient expression of recombinant soluble human FcγRI in mammalian cells and its characterization. *Protein Expression and Purification*, 155-161.
- [2] Brown, A., Singer, D., Mcsharry, J., Barnard, R., Hazuda, D., & Drusano, G. (n.d.). In Vitro Dose Ranging Studies for Serine Protease Inhibitor, MK-4519, Against a Hepatitis C Virus (HCV) Replicon using the Bellocell System. *Antiviral Research*.
- [3] Chen, Y., Wu, J., Wang, K., Chiang, Y., Lai, C., Chung, Y., & Hu, Y. (n.d.). Baculovirus-mediated production of HDV-like particles in BHK cells using a novel oscillating bioreactor. *Journal of Biotechnology*, 135-147.
- [4] Drugmand, J., J.-F., J., Agathos, S., & Schneider, Y. (n.d.). Growth of Mammalian and Lepidopteran Cells on BioNOC® II Disks, a Novel Macroporous Microcarrier. *Cell Technology for Cell Products*, 781-784.
- [5] Hammonds, J., Chen, X., Zhang, X., Lee, F., & Spearman, P. (n.d.). Advances in methods for the production, purification, and characterization of HIV-1 Gag-Env pseudovirion vaccines. *Vaccine*, 8036-8048.
- [6] Ho, L., Greene, C., Schmidt, A., & Huang, L. (n.d.). Cultivation of HEK 293 cell line and production of a member of the superfamily of G-protein coupled receptors for drug discovery applications using a highly efficient novel bioreactor. *Cytotechnology*, 117-123.
- [7] Hu, Y., Lu, J., & Chung, Y. (n.d.). High-density cultivation of insect cells and production of recombinant baculovirus using a novel oscillating bioreactor. *Cytotechnology*, 145-153.
- [8] Huang, K., Lo, W., Chung, Y., Lai, Y., Chen, C., Chou, S., & Hu, Y. (n.d.). Combination of Baculovirus-Mediated Gene Delivery and Packed-Bed Reactor for Scalable Production of Adeno-Associated Virus. *Human Gene Therapy*, 1161-1170.
- [9] Lu, J., Chung, Y., Chan, Z., & Hu, Y. (n.d.). A Novel Oscillating Bioreactor BelloCell: Implications for Insect Cell Culture and Recombinant Protein Production. *Biotechnology Letters Biotechnol Lett*, 1059-1065.
- [10] Mcsharry, J., Singer, D., Kulawy, R., Brown, A., & Drusano, G. (n.d.). Use of the BelloCell System to Determine the Optimal Dose of Ribavirin to Inhibit the Expression of an HCV Replicon in 2209-23 Cells. *Antiviral Research*.
- [11] Toriniwa, H., & Komiya, T. (n.d.). Japanese encephalitis virus production in Vero cells with serum-free medium using a novel oscillating bioreactor. *Biologicals*, 221-226.

## Conversion from roller bottle to single-use, closed system cell culture

The roller bottle system plays a major role in cell culture-based vaccine production as it is easy to operate, has a simple scale-up method, observable cell growth and cytopathic effect (CPE), and limited contamination; however, the system has many limitations including intensive labor, large space requirement, high running costs, and low efficiency of culture medium utilization.

In principle, the roller bottle system is very similar to CelCradle™ system. In both systems, cells are alternately exposed to aeration and nutrition. The CelCradle™, however, can overcome the limitations of the roller system while improving output. The advantages of the CelCradle™ system over the roller bottle include:

- One CelCradle™ system is equivalent to eighty roller bottles
- Reduced labor and space requirements
- More controllable
- Reduced contamination risks
- Cell harvest in a closed system
- More efficient use of culture medium
- Higher cell density and viral titer



## CelCradle™ System Complete

CelCradle™ System is simple to operate and virtually no learning curve. CelCradle™ 500 and 500A bottles are placed in the CelCradle™ unit stage for batch and semi-batch operation where process components are easily traceable.



### Filtered Cap

0.22 µm ventilation filter provided in the cap

### CelCradle™ Stage

Stainless Steel 316 L Carcass that can hold up to 4 CelCradle™ bottles.

### Controller

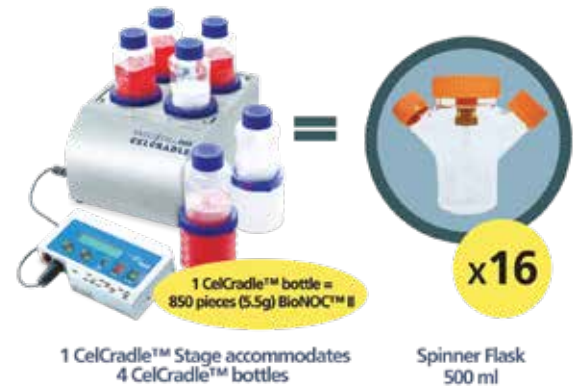
Magnetized back for convenient positioning on the side or on the front of a CO<sub>2</sub> Incubator.

Place inside  
a 170 L or 6 ft<sup>3</sup>  
CO<sub>2</sub> incubator

## Overcome limitations of microcarrier-stirred tank bioreactor technology

Another technology used for the culture of adherent cells is the use of microcarriers, specially-treated micro-beads where cells attach to and grow on. The microcarriers are suspended in culture medium in stirred tank bioreactors where the medium is continuously agitated and parameters are automatically monitored and controlled. The microcarrier technology, however, has several disadvantages including reduced cell attachment efficiency, shear stress, foaming, and lack of linear scalability, all of which the CelCradle™ system are able to overcome. The CelCradle™ system also has improved features compared to the microcarrier system in terms of the following:

- Viral titer and cell density
- Cell harvest efficiency
- Culture medium usage efficiency
- Harvest purity



### BioNOC™ II (packed bed)

Cells remain entrapped in the carriers simplifying media replacement and product harvesting

### Compressible Bellows

Compresses for nutrition and decompresses for aeration

## CelCradle™ Continuous System Complete

Same CelCradle™ unit stage but utilizes CelCradle™ 500P and 500AP bottles for recirculation/continuous processes.

Each CelCradle™ System accommodates up to four single-use bottles, making this an ideal screening device to test varying medium formulations or cell lines.

No steam or water lines, autoclave or utilities required, just a power outlet and CO<sub>2</sub> incubator

Fits in a 240 L or 8 ft<sup>3</sup> CO<sub>2</sub> incubator

Place inside  
a 240 L or 8 ft<sup>3</sup>  
CO<sub>2</sub> incubator

### CelCradle™ Stage

Stainless Steel 316 L Carcass that can hold up to 4 CelCradle™ bottles.

Dimension	264 x 359 x 170 mm W/L/H (10.4 x 14 x 6.7 inches)
Weight	7.0 kg (15.4 lb)
Power	100~230 VOLTS AC, 50/60 Hz (Input); 12 VOLTZ DC (Output_)
Up-Down Rate:	0.25 to 2.0 mm/sec. Step of 1.0 sec or 1.0 min.
Delay Time:	0 to 99 min 59 sec Step of 1.0 sec or 1.0 min.
Driver Motor:	DC stepping-motor
Environment	20~42 °C, 0~90% relative humidity (in a CO <sub>2</sub> incubator)
Mechanical Protection:	Hi-Low Optical Sensor
Transmission:	Gear set (ratio 1:1.2) and belt
Materials:	Aluminum alloy, chromic steel
Recommended CO <sub>2</sub> incubator dimension	CCL-170L model: 505 x 535 x 633 mm (19.9" x 21.1" x 24.9" and CCL-240L model: 595 x 640 x 633 mm (23.4" x 25.2" x 24.9")



### CelFeeder

Enables four-pump operation with individual programming setting.



### Media Reservoir

Fresh culture medium bottle in either  
1 L or 2 L volume

### Tubing Complete Set (Connection Set)

Connects the media reservoir bottle to  
the CelCradle™ bottle



### Disposable Tubing Set and Pump Head

Replacement tubings and pump head for tubing  
complete set (connection set)

### Culture Medium Sampling Port

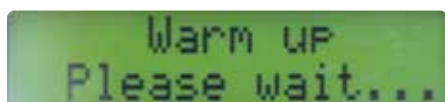
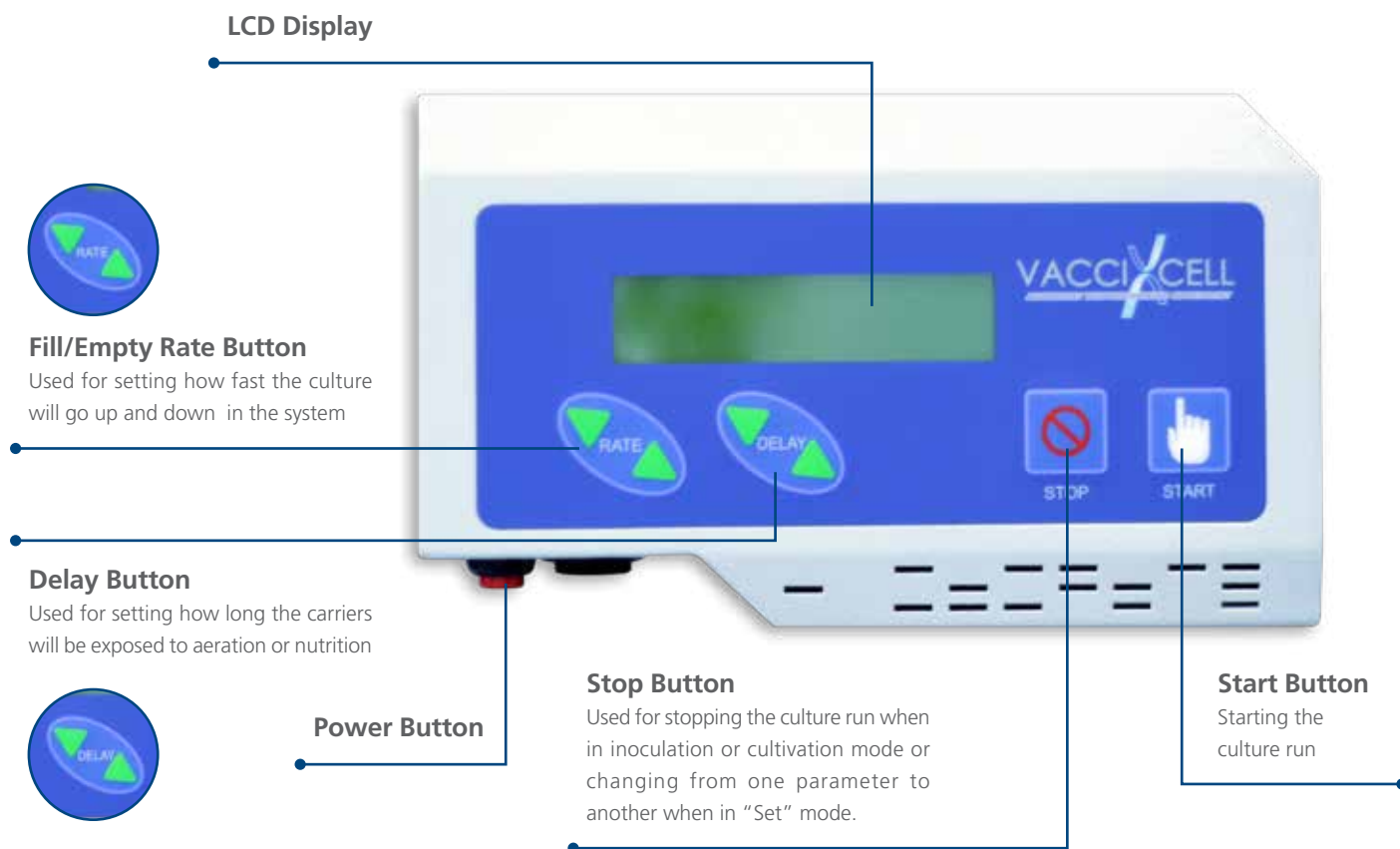
Needle closed sampling for cell culture growth  
monitoring

### Pump Head

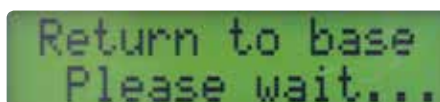
Calibration-free autoclavable pump head for up to  
three times to support consistent feeding rate.



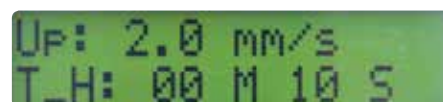
## The Main Controller



Message displayed on screen once controller is turned on



Message that will be displayed when stage is rendered on top before opening



Display message after system has warmed up

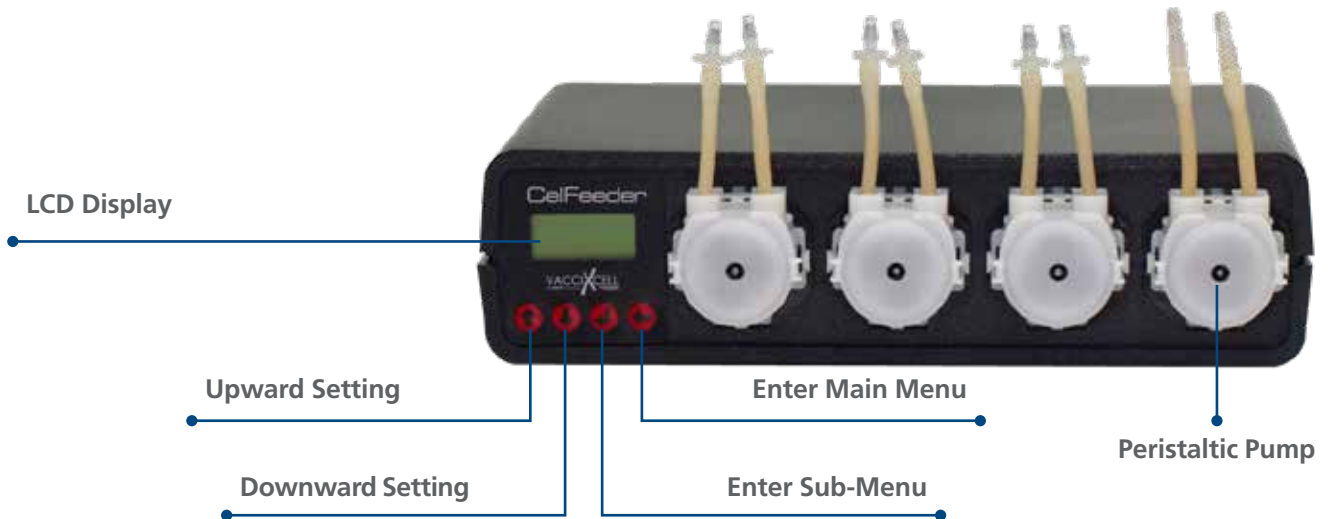


<b>Dimension</b>	137 x 226 x 40 m/m L/W/D (5.4 x 8.9 x 1.6 inches)
<b>Weight</b>	1.16 kg (2.6 lb)
<b>Power</b>	100~230 VOLTS AC 50/60 Hz (Input) ; 12 VOLTS DC (Output_)
<b>Environment</b>	Room temperature (outside CO2 incubator)
<b>Materials</b>	Magnetic back plate, to hold the controller to the side of the incubator.

## The CelFeeder

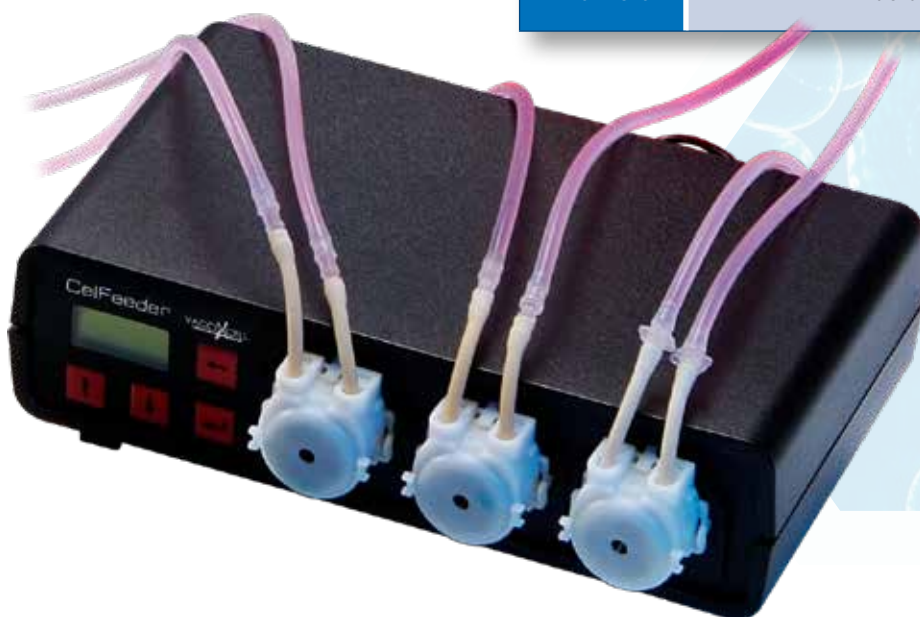
CelFeeder is a microprocessor-controlled pumping unit of the CelCradle™ Continuous Complete or other cell culture systems.

The CelFeeder is designed to simplify user's operation such that daily feeding volume and frequency of the feeding are the only two parameters required. It simplifies setup work by avoiding calibration and calculation as usually needed in conventional peristaltic pumps.



- Controls four (4) peristaltic pumps individually
- Controls four (4) recirculation process of CelCradle™ 500P/AP bottles at a time
- Daily feeding rate ranges from 1 – 1999 mL/day
- Feeding frequency of 1-24 times
- Pump calibration made possible to improve accuracy

<b>Dimension</b>	230 (W) x 131 (D) x 61 (H) mm, (5.2 x 9.1 x 2.4 inches)
<b>Weight</b>	0.645 kg (1.42 lb)
<b>Power</b>	85~240 Volts AC, 50/60 Hz (Input); ~180 mA
<b>Environment</b>	Ambient to 45°C, ~95% Relative Humidity



## Single-Use and Ready-to-Use CelCradle™ Bottles

CelCradle™ bottles are sterilized through gamma irradiation and comes pre-packed with 5.5 grams of carriers as standard. Different models of bottles cover a specific application in cell culture.

**CelCradle™ 500**



Suitable for general purpose, batch/semi-batch culture

**CelCradle™ 500A**



Suitable for cell harvest, transient transfection, slow adhering cells; batch/semi-batch culture

**CelCradle™ 500P**



Suitable for general purpose, continuous culture

**CelCradle™ 500AP**



Suitable for cell harvest, transient transfection, slow adhering cells; continuous culture

Application/ Bottle	Item Code	Secreted Protein, Viruses	Cell Harvest (for non-secreted proteins, viruses or cells)	Carrier Harvest (for protein extraction or reuse of carriers)
CelCradle™ 500	1400001	Best application	Applicable, but not optimal	Applicable, but not optimal
CelCradle™ 500A	1400003	Applicable, but not optimal	Best application	Best application
CelCradle™ 500P	1400002	Best application	Applicable, but not optimal	Applicable, but not optimal
CelCradle™ 500AP	1400004	Applicable, but not optimal	Best application	Best application

## > Carrier Sampling

500/500P Bottles



500A/500AP Bottles



## > Cell Monitoring



GlucCell™

A portable, easy-to-use glucose monitoring system for cell culture. Get results in just 15 seconds. Measurement ranges from 30-500 mg/dL



Crystal Violet Dye

A simple tool for the quantification of cells based on the number of nuclei dyed. The CVD kit contains reagents that disrupt the cells, thereby releasing the nuclei, which are subsequently dyed.

## Inoculation Phase pH Control

### OPTION 1

If using a pre-mixed media with fixed amount of sodium bicarbonate ( $\text{NaHCO}_3$ ), readjusting before culture may be difficult. Alternatively, users can opt to:

#### For Upright Seeding

Seed at a lower  $\text{CO}_2$  concentration



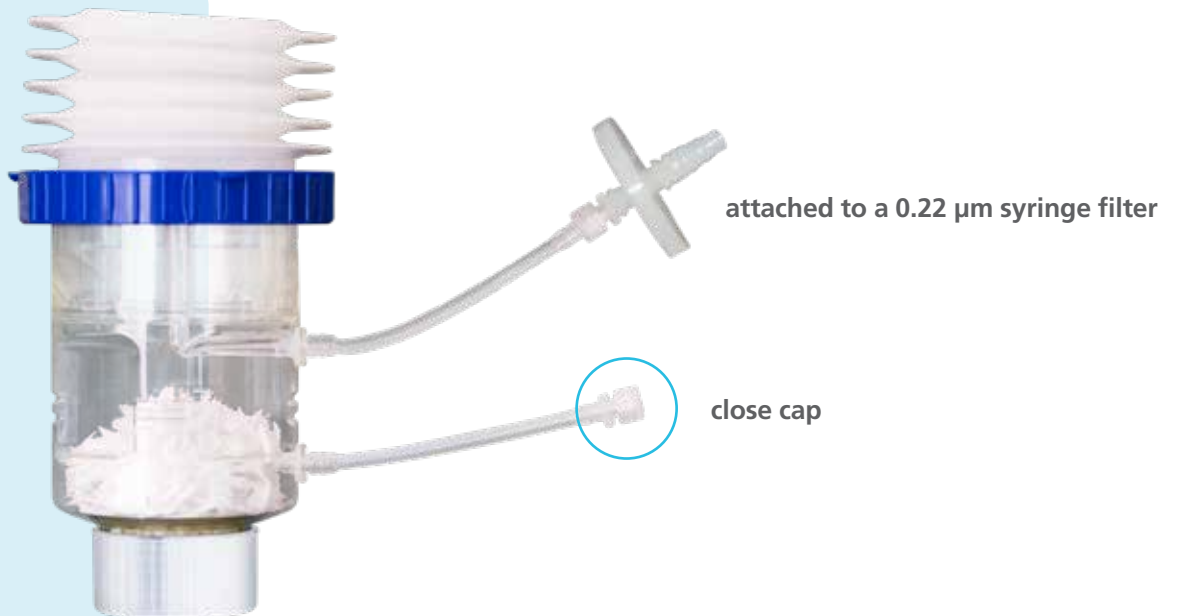
#### For Inverted Seeding

Adjust pH with hydrochloric acid (HCl) to pH 6.8 as a starting point



### OPTION 2

Use 500AP bottle and connect one tubing with air filter and the other leaving tightly closed.



### OPTION 3

Compress the bellows before closing the bottles with a non-vented cap (white cap). This method lessens excessive air in the CelCradle™ bottle which may affect the pH value of the culture medium. This can be attributed to the decrease of CO<sub>2</sub> concentration in the liquid rendering it basic.



## Ordering Information

Item Code	Product Name	Dimension	Weight	Package
2230006	CelCradle™ System Complete	590 x 380 x 420 mm	14 kg	1 x CelCradle™ Stage 1 x GlucCell™ Glucose Monitoring System
2230007	CelCradle™ Continuous System Complete	590 x 380 x 420 mm	15 kg	1 x CelCradle™ Stage 1 x CelFeeder Pump 2 x Tubing Complete Set
2230005	CelCradle™ Stage	360 x 265 x 170 mm	9.88 kg	1x Main Console 1x Control Box 1x 100-240 V power adapter 1x Signal Cable 1x Manual CD 2x Forceps 1x Crystal Violet Dye Nucleus Count Kit
1400067	CelFeeder Pump	290 x 210 x 80 mm	1 kg	1 x CelFeeder Pump
1400011	Tubing Complete Set	370 x 150 x 75 mm	0.5 kg	1x Disposable Tubing Accessory 1x Pump Head
1400012	Disposable Tubing Set & Pump Head	370 x 150 x 75 mm	0.5 kg	1x Tubing Set 1x Pump Head
1400013	Disposable Tubing Accessory	370 x 150 x 75 mm	0.5 kg	5x Disposable Tubing Accessory
1400009	GlucCell™ Glucose Monitoring System	96 x 60 x 18.5 mm	0.5 kg	1 x GlucCell™ Glucose meter 2 bottles of Glucose Test Strip (1bt = 25 test strips)
1400010	GlucCell™ Glucose Test Strip	80 x 70 x 35 mm	0.05 kg	2 x Glucose Test Strip bts (2 x 25 pcs)
1400014	Crystal Violet Dye Nucleus Count Kit	50 x 50 x 105 mm	0.5 kg	1 x CVD Bottle (100 ml/bt)
1400015	Filtered Cap	370 x 150 x 75 mm	0.5 kg	Cap for CelCradle™ Bottle
1400016	Non-Vented Cap	370 x 150 x 75 mm	0.5 kg	Cap for CelCradle™ Bottle
1400017	Forceps	250 x 15 x 10 mm	0.1 kg	Used for sampling of BioNOC™ II carriers
1400021	CelCradle™ 500A/500AP Strainer	370 x 150 x 75 mm	0.5 kg	Single-use Strainer (Pack of 10)

## CelCradle™ and Esco CO<sub>2</sub> Incubator

### The Perfect Combination for High Density Adherent Culture

The CelCradle™ system can be incorporated into an existing CO<sub>2</sub> incubator or can be purchased with an Esco CO<sub>2</sub> incubator. Esco offers a wide range of CO<sub>2</sub> incubators that suit clients' different requirements, provide superior performance and cell protection.



## CelCulture® CO<sub>2</sub> Incubator

Sleek, reliable, and intuitive, Esco CelCulture® CO<sub>2</sub> incubators provide all-rounded sample protection that brings your scientific dreams one step closer to reality.

### Features:

- HPA-validated 90°C overnight moist heat decontamination cycle
- Rounded corners and seamless design for easy cleaning
- Constructed using electrogalvanized with ISOCIDE™ powder-coating to eliminate 99.9% of surface bacteria within 24 hours of exposure
- With optional copper interiors for added antimicrobial protection
- Available in 50 L, 170 L, and 240 L sizes
- ULPA Filter
  - 99.999% efficient, superior to conventional HEPA filters
  - Filters air continuously
  - Chamber returns to ISO Class 5 cleanliness in 11 minutes upon door closing to prevent contamination
- Direct Heat & Air Jacket
  - Fast and uniform heating
  - Rapid temperature recovery without overshoot
  - Air jacket improves chamber stability
- O<sub>2</sub> Sensor (for suppressed O<sub>2</sub> Model)
  - Long life
  - Stable output signal
  - No influence from CO<sub>2</sub>
- CO<sub>2</sub> Sensor
  - CelCradle™ and CO<sub>2</sub> Incubator Combination
  - Single-beam, dual-wavelength IR sensor is drift-free



- Auto-zeroing
- SmartSense™ Microcontroller Interface
  - Intuitive, fully equipped control and monitoring system

### CelCulture® CO<sub>2</sub> Incubators IR Sensor Model with Stainless Steel Chamber

230 VAC, 50/60 Hz		115 VAC, 50/60 Hz		Description
Item Code	Model	Item Code	Model	
2170034	CCL-050B-8	2170054	CCL-050B-9	CelCulture® Incubator, 50 L, IR sensor, CO <sub>2</sub> Control, Moist Heat Decon (Without Decon Pump)
2170002	CCL-170B-8	2170004	CCL-170B-9	CelCulture® Incubator, 170 L, IR sensor, CO <sub>2</sub> Control, ULPA, Moist Heat Decon
2170068	CCL-170B-8-NF	2170075	CCL-170B-9-NF	CelCulture® Incubator, 170 L, IR sensor, CO <sub>2</sub> Control, Moist Heat Decon (No ULPA Filter)
2170058	CCL-240B-8	2170060	CCL-240B-9	CelCulture® Incubator, 240 L, IR sensor, CO <sub>2</sub> Control, ULPA, Moist Heat Decon
2170069	CCL-240B-8-NF	2170079	CCL-240B-9-NF	CelCulture® Incubator, 240 L, IR sensor, CO <sub>2</sub> Control, Moist Heat Decon (No ULPA Filter)

### CelCulture® CO<sub>2</sub> Incubators Suppressed O<sub>2</sub> Models with Stainless Steel Chamber

230 VAC, 50/60 Hz		115 VAC, 50/60 Hz		Description
Item Code	Model	Item Code	Model	
2170055	CCL-050T-8	2170056	CCL-050T-9	CelCulture® Incubator, 50 L, IR sensor, CO <sub>2</sub> Control, Moist Heat Decon (Without Decon Pump)
2170047	CCL-170T-8	2170048	CCL-170T-9	CelCulture® Incubator, 170 L, IR sensor, CO <sub>2</sub> & O <sub>2</sub> Control, ULPA, Moist Heat Decon
2170070	CCL-170T-8-NF	2170076	CCL-170T-9-NF	CelCulture® Incubator, 170 L, IR sensor, CO <sub>2</sub> & O <sub>2</sub> Control, Moist Heat Decon (No ULPA Filter)
2170061	CCL-240T-8	2170062	CCL-240T-9	CelCulture® Incubator, 240 L, IR sensor, CO <sub>2</sub> & O <sub>2</sub> Control, ULPA, Moist Heat Decon
2170071	CCL-240T-8-NF	2170080	CCL-240T-9-NF	CelCulture® Incubator, 240 L, IR sensor, CO <sub>2</sub> & O <sub>2</sub> Control, Moist Heat Decon (No ULPA Filter)

## CelCulture® CO<sub>2</sub> Incubator with Stainless Steel Exterior Cabinet

The Esco CelCulture® CO<sub>2</sub> incubator is also available with stainless steel exterior with the same superior features.

### Features:

- Corrosion Resistant Surface
- Meets Pharmaceutical and Clinical Laboratory Requirements
- HPA-validated 90°C overnight moist heat decontamination cycle
- ISO Class 5 cleanliness via ULPA Filter System
- Available in 50 L, 170 L and 240 L sizes



## Ordering Information

IR SENSOR MODEL WITH STAINLESS STEEL EXTERIOR CABINET		
Models	Item Code	Description
CCL-050B-8-SS	2170128	CelCulture® Incubator 50 L, IR Sensor, CO <sub>2</sub> Control, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz (Without Decon Pump)
CCL-170B-8-SS	2170065	CelCulture® Incubator 170 L, IR Sensor, CO <sub>2</sub> Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz
CCL-240B-8-SS	2170137	CelCulture® Incubator 240 L, IR Sensor, CO <sub>2</sub> Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz

SUPPRESSED O <sub>2</sub> MODEL WITH STAINLESS STEEL EXTERIOR CABINET		
Models	Item Code	Description
CCL-050T-8-SS	2170171	CelCulture® Incubator 50 L, IR Sensor, CO <sub>2</sub> & O <sub>2</sub> Control, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz (Without Decon Pump)
CCL-170T-8-SS	2170129	CelCulture® Incubator 170 L, IR Sensor, CO <sub>2</sub> & O <sub>2</sub> Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz
CCL-240T-8-SS	2170138	CelCulture® Incubator 240 L, IR Sensor, CO <sub>2</sub> & O <sub>2</sub> Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz

## CelCulture® CO<sub>2</sub> Incubator with Cooling System

Esco CelCulture® CO<sub>2</sub> Incubator with Integrated Cooling System provides solution for highly specialized application. The integrated cooling system allows studies of samples that requires temperature at/or below ambient temperature.

### Features:

- Wider temperature range of 8°C below ambient to 60°C above ambient
- Highly efficient, environment friendly Peltier Cooling System
- Constructed using electrogalvanized with ISOCIDE™ powder-coating to eliminate 99.9% of surface bacteria within 24 hours of exposure
- Complete contamination control methods
  - 90°C Validated Moist Heat Decontamination Cycle
  - ULPA Filter
  - 0.2 µm inlet filter
- Available in 170 L and 240 L sizes



### GUIDE TO MODELS, CelCulture® CO<sub>2</sub> Incubators with Cooling System

#### IR Sensor Model With Stainless Steel Chamber

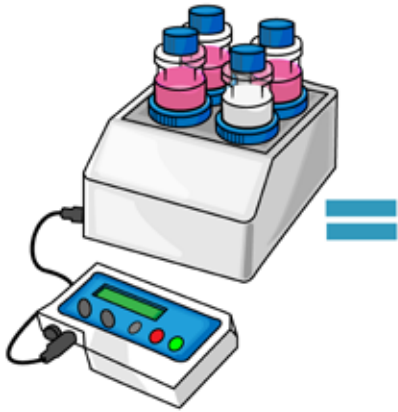
230 VAC, 50/60 Hz		115 VAC, 50/60 Hz		Description
Item Code	Model	Item Code	Model	
2170101	CCL-170B-8-P	2170115	CCL-170B-9-P	CelCulture® Incubator, 170 L, IR sensor, CO <sub>2</sub> control, Moist Heat Decon, Peltier System
2170116	CCL-240B-8-P	2170266	CCL-240B-9-P	CelCulture® Incubator 240 L, IR Sensor, CO <sub>2</sub> Control, Moist Heat Decon, Peltier System

#### Suppressed O<sub>2</sub> Models with Stainless Steel Chamber

230 VAC, 50/60 Hz		115 VAC, 50/60 Hz		Description
Item Code	Model	Item Code	Model	
2170112	CCL-170T-8-P	2170153	CCL-170T-9-P	CelCulture® Incubator, 170L, IR sensor, CO <sub>2</sub> control, O <sub>2</sub> control, Moist Heat Decon, Peltier System
2170267	CCL-240T-8-P	2170268	CCL-240T-9-P	CelCulture® Incubator 240 L, IR Sensor, CO <sub>2</sub> & O <sub>2</sub> Control, Moist Heat Decon, Peltier System

## Highest Yield. Lowest Cost. Linearly Scalable.

A single CelCradle™ bottle replaces hundreds of petri dishes, tissue culture flasks, and dozens of spinner flask, roller bottles etc.



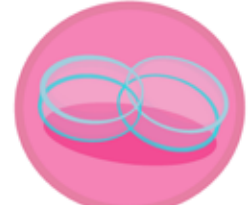
1 CelCradle™ Stage accomodates  
4 CelCradle™ bottles



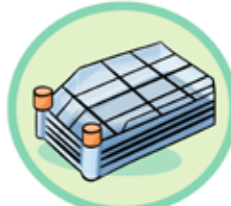
Roller Bottles  
850 cm<sup>2</sup>



Spinner Flask  
500 ml  
x16



Petri Dish  
180 cm<sup>2</sup>  
x400



Plates  
6320 cm<sup>2</sup>  
x8



Flask  
150 cm<sup>2</sup>  
x500

## ESCO GLOBAL OFFICES

### North America

#### USA

#### Esco Technologies, Inc.

##### Life Sciences/Medical

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  
Email: [eti.admin@escoglobal.com](mailto:eti.admin@escoglobal.com)  
Website: <http://escolifesciences.us>

##### Healthcare Division/Factory

2512 Metroprolitan Dr, Suite 120-B  
Feasterville-Treose, PA 19053-6738  
Tel: +1 215-322-2155  
Email: [eti.pharma@escoglobal.com](mailto:eti.pharma@escoglobal.com)  
Website: [www.escopharma.com](http://www.escopharma.com)

## Europe

### DENMARK

#### Esco Medical ApS

Kringelleg 10, DK-8250 Egaa, Denmark  
Tel: +45 5397 3067  
Email: medical@escoglobal.com

### UK

#### Esco GB Ltd

Unit 2 R-Evolution @ Gateway 36,  
Kestrel Way, Barnsley S70 5SZ  
Tel: +44 (0) 1226 360 799 (Pharma)  
+44 (0) 1226 361529 (Lab)  
Email: egb.info@escoglobal.com  
Websites: www.escopharma.com  
www.escolifesciences.co.uk

### GERMANY

#### Esco Lifesciences GmbH

Straßheimer Straße 17  
61169 Friedberg, Germany  
Tel: +49 6031 6873447  
Email: mail@escoglobal.com  
Website www.escoglobal.de

### ITALY

#### Esco Technologies S.r.l.

Operative and Legal office:  
Via Poggio Moiano, 23,  
00199, Rome, Italy  
Tel: +39 06 69271849  
Email: ilenia.nardolillo@escoglobal.com  
Website: escolifesciences.it

### RUSSIA

#### Esco Russia

Building 4, 8, Novovladikinskii proezd  
Moscow, Russian Federation 127106  
Email: esco.russia@escoglobal.com  
Website: escolifesciences.ru

### LITHUANIA

#### Esco Medical Technologies UAB

Draugystes 19  
51230 Kaunas, Lithuania  
Website: escomedicalgroup.com  
Email: medical@escoglobal.com  
support-medical@escoglobal.com

## Asia Pacific

### BANGLADESH

#### Esco Lifesciences (Bangladesh) Pvt. Ltd.

H # 662 (6th Floor), Apt. # A-6, R # 9  
Mirpur DOHS, Mirpur, Dhaka-1216, Bangladesh  
Tel: +8801907-700777  
Mobile: +88 01911 629400  
Email: ebd.customerservice1@escoglobal.com

### CHINA

#### Esco Shanghai Trading Co. Ltd.

Email: mail@escolifesciences.cn  
Website: www.escolifesciences.cn

#### Beijing

Rm.502, Tower A, Times Fortune, Sanyuanqiao  
Chaoyang District, Beijing  
Tel: +86 (10) 5867 7868  
Fax: +86 (10) 5867 9244

#### Shanghai

Room1211, Jiahe International Building,  
No.1, Lane 66, Huayuan Road,  
Hongkou District, Shanghai  
Tel: +86 (21) 6095 1955

#### Guangzhou

Room 901, West Block, No. 21, Huali Road  
Tianhe District, Guangzhou, China 510623  
Tel: +86 (20) 3837 3621

#### Chengdu

Rm. 1-406, Building No. 2, Shangding International Building,  
No.27 4th Block, South Renmin Road, Chengdu City,  
Sichuan Province  
Tel: +86 (28) 8553 6219

#### Qingdao

Room 23C, Fucai Building, No.135 of Yan'an Road,  
Shinan District, Qingdao City,  
Shandong Province  
Tel: +86 (532) 8163 9321

### HONGKONG

#### Esco Technologies (Hong Kong) Limited

Unit 904, Laurels Industrial Centre,  
No.32 Tai Yau Street, San Po Kong,  
Kowloon, Hong Kong  
Tel : +852 3628 3986  
Fax : +852 3186 2821  
Email: mail@escolifesciences.hk  
Website: http://escolifesciences.hk

## INDONESIA

### **PT Esco Utama**

Taman Tekno BSD Blok H6 no 10,  
Serpong, Tangerang 15314  
Tel: +6221 29 666 565 / 301  
Fax: +6221 29 666 302  
Email: eucs2@escoglobal.com  
Website: <http://escolifesciences.co.id>

## MALAYSIA

### **Esco Micro (M) Sdn. Bhd.**

Technical Support Hotline:  
1 300 88 ESCO (3726)

#### **Selangor**

No. 15, Jalan Sungai Buloh 27/101A,  
Persiaran Klang, HICOM 27 Industrial Park,  
40400 Shah Alam, Selangor, Malaysia  
Tel: +603 5103 8480  
Fax: +603 5614 3385  
Email: [malaysia@escoglobal.com](mailto:malaysia@escoglobal.com)  
Website: <http://my.escoglobal.com>

#### **Melaka**

No. 13-1, Jalan Melaka Raya 32,  
Taman Melaka Raya 1,  
75000 Melaka, Malaysia  
Tel: +606 284 0007  
Fax: +606 283 0288  
Website: <http://my.escoglobal.com>

## MYANMAR

### **Esco Lifesciences Co.,Ltd**

717(B), Bayintnaung Road,  
Insein Township, Yangon, Myanmar  
Tel: +959 423 488 984  
+959 963 520 535  
Email: [ingyin.haymarn@escoglobal.com](mailto:ingyin.haymarn@escoglobal.com)  
[csts4@escoglobal.com](mailto:csts4@escoglobal.com)

## PHILIPPINES

### **Esco Philippines, Inc.**

#### **Manila**

Unit 710E, 7th floor, East Tower- Four Ecom  
Bldg, Block 22 Seaside Cor Diokno Ave. MOA  
Complex, Pasay City 1300  
Direct Line: +63 (02) 828 1527  
Trunkline: +63 (02) 478 0384  
Email: [philippines@escoglobal.com](mailto:philippines@escoglobal.com)  
Website: <http://escoglobal.com.ph>

#### **Cebu**

Blk 3 Lot 13 Mutual Homes Subd.  
Pajac, Lapu-Lapu City, Cebu 6015  
Tel : +63 (32) 232 5826

#### **Davao**

Unit 104 & 105, G/F Metro Lifestyle Building  
F. Torres St. Cor. E Jacinto Ext., Davao City 8000  
Tel : +63 (82) 333 4132

## SINGAPORE

### **Esco Micro Pte Ltd**

21 Changi South Street 1  
Singapore 486777  
Tel: +65 65420833  
Fax: +65 65426920  
Email: [mail@escoglobal.com](mailto:mail@escoglobal.com)  
Website: [www.escoglobal.com](http://www.escoglobal.com)

## SOUTH KOREA

### **Esco Korea Micro Pte Ltd**

#206, Byucksan Digital Valley 8-Cha, 70,  
Gyeongin-ro 71-gil, Yeongdeungpo-gu, Seoul,  
Republic of Korea  
Tel: +82-2-830-0482  
Fax: +82-2-830-0491  
Email: [info@escoglobal.co.kr](mailto:info@escoglobal.co.kr)  
Website: <http://www.escoglobal.co.kr>

## TAIWAN

### **Esco Lifesciences Taiwan**

No. 112, Sec. 2, Qingfeng Rd., Zongli Dist.,  
Taoyuan City 320, Taiwan  
Tel: +886 34533220  
Fax: +886 34532770  
Email: [mail@escolifesciences.tw](mailto:mail@escolifesciences.tw)  
Website: <http://escolifesciences.tw>

## THAILAND

### **Esco Lifesciences (Thailand) Co.,Ltd.**

8/3 Soi Rimthangduan 2, Sukhumvit Road, Bangchak,  
Phrakanong , Bangkok 10260  
Tel: 062 813 3331  
Fax: 02 117 3746  
Email: csts.th.sales1@escoglobal.com  
Website: <http://escolifesciences.co.th/>

## VIETNAM

### **Esco Vietnam Company Ltd.,**

Email: [vietnam@escoglobal.com](mailto:vietnam@escoglobal.com)  
Website: [vn.escoglobal.com](http://vn.escoglobal.com)

#### **Hanoi**

7th Floor, No. 8, Alley 15,  
Trung Kinh Street,  
Trung Hoa Ward, Cau Giay District,  
Hanoi, Vietnam  
Tel: +84 24 6269 1460  
+84 24 6269 1461

#### **Ho Chi Minh**

No. 14 - Lot G3, Street No. 53,  
Tan Quy Dong Settlements,  
Tan Phong Ward, District 7, HCMC,  
Vietnam  
Tel: +84 28 3776 0363

## Middle East

## DUBAI

### **Esco Lifesciences Trading LLC**

Dubai  
Esco Lifesciences Trading LLC  
1529 Tamani Arts Offices, Al Asayel St.,  
Business Bay, Dubai UAE  
P.O Box: 182099  
Tel: (04) 770 6674  
Email: [alvin.heah@escoglobal.com](mailto:alvin.heah@escoglobal.com)  
[christopher.leonor@escoglobal.com](mailto:christopher.leonor@escoglobal.com)

## Africa

## SOUTH AFRICA

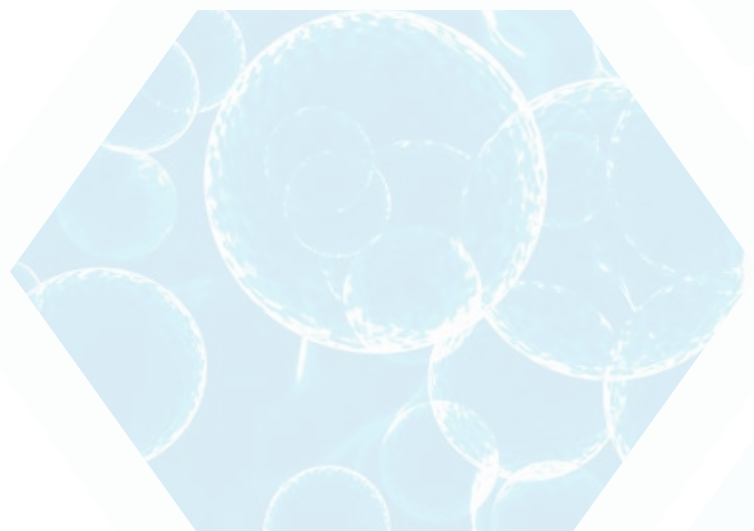
### **Esco Technologies Pty Ltd**

Unit 2 Landsmark Park,  
17 Landmarks Avenue,  
Kosmosdal Extension 11,  
Centurion 0157 South Africa  
Tel : +27 (0) 11 314 3184  
Mobile: +27 (0) 82 853 9655  
Email : [sonja.strydom@escoglobal.com](mailto:sonja.strydom@escoglobal.com)  
Website: <http://za.escoglobal.com>

## CAMEROON

### **Esco Lifesciences Africa SARL**

Immeuble Lepop situé  
avant la station TOTAL de Logpom -  
BP 2692 - Douala- Cameroon  
Tel: +237 233474970  
+ 237 675203867  
Email : [mail@escoglobal.com](mailto:mail@escoglobal.com)  
website: [www.escoglobal.com](http://www.escoglobal.com)



**ESCO**<sup>®</sup>  
Healthcare



*"Discovery to Delivery"*

**ESCO**  
**VACCIXCELL**  
ADHERENT BIOPROCESSING SPECIALIST

21 Changi South Street 1 • Singapore 486777  
Tel +65 6542 0833 • Fax +65 6542 6920 • mail@vaccixcell.com  
www.vaccixcell.com

**CDMO Services:**  
**Esco Aster Pte Ltd**  
#03-20 71 Ayer Rajah Crescent . Singapore 139951  
Tel +65 6251 9361 • mail@escoaster.com  
www.escoaster.com