

TURN OUR  
**Advances**  
INTO YOUR  
**Advantage**

FiberCell Systems has unlocked the  
real power of hollow fiber cell culture



Most  
*in vivo*-like  
conditions

Easy cell  
culture  
scale-up

**APPLICATIONS**

**Monoclonal Antibodies**

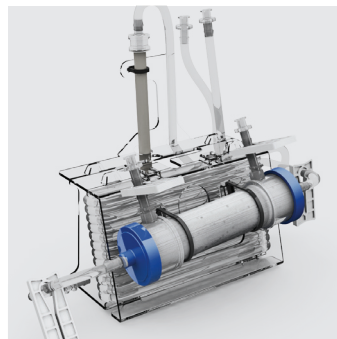
**Recombinant Proteins**

**3-D Cell Culture**

**Exosomes**

**PK/PD**

**Cell Co-culture**



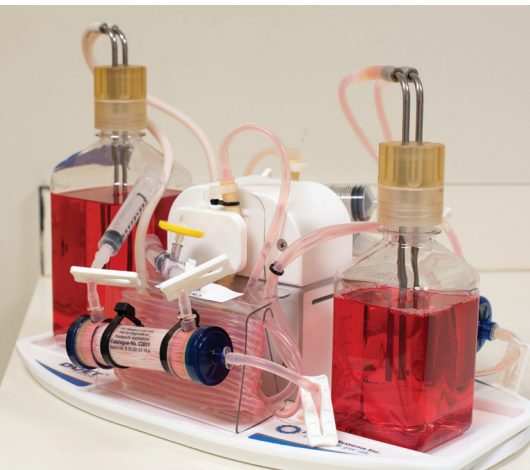
**Up to 100x  
greater  
productivity**

# Products

Pumps  
Cartridges  
Accessories  
CDM-HD

## PUMPS

The **FiberCell Systems Duet (Cat # P3202)** pump provides flexible flow rate support for one or two hollow fiber bioreactor cartridges with independent medium reservoirs. It utilizes a unique positive pressure displacement pumping mechanism to provide high flow rates without friction on the pump tubing. It occupies 1/2 shelf, 1/3 height in a standard CO<sub>2</sub> incubator and comes with a thin cord to fit through the incubator door. Full two year limited warranty.



### FiberCell Systems Duet Specifications

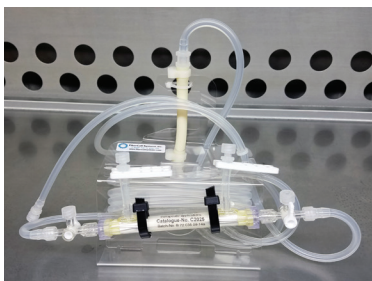
**DIMENSIONS:**  
9.5"X16.5"X8"  
(W x L x H)  
**WEIGHT:** 4.3 kg  
**VOLTAGE:** 100, 120,  
200 (50 or 60 hz)  
**FLOW RATE:** 1-160  
mL/minute,  
continuously  
variable.

## CARTRIDGES

### SMALL CARTRIDGES

#### Cat # C2025 -

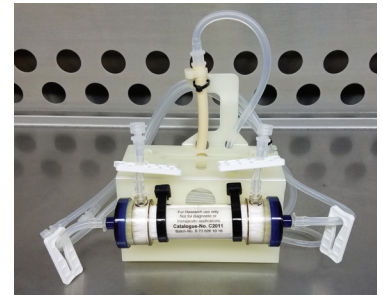
0.1 µm pore size for the highest exchange rates but without protein retention. 80 cm<sup>2</sup> outer surface area. PVDF fiber allow for the attachment of matrix proteins, cytokines and antibodies. Ideal fiber for endothelial cell culture under shear.



**Cat # C2025D** - 20 kD MWCO polysulfone fiber with 450 cm<sup>2</sup> of surface area. Only one wrap of oxygenation tubing to reduce system dead volume.

### MEDIUM CARTRIDGES

**Cat # C2008** - Low MWCO (5 kD @ 50%) hydrophilic polysulfone fiber for recombinant proteins between 25 kD and 100 kD. Appropriate for adherent and suspension cell lines including CHO, HeLa and 293. Can support up to 10<sup>9</sup> cells and produce 100 µg/mL/day or more of recombinant protein in 20 mL ECS.



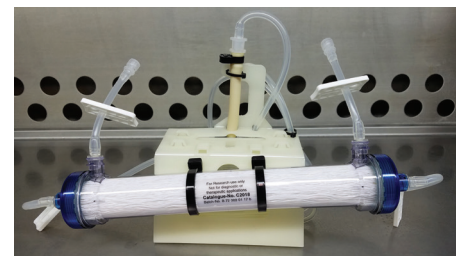
**Cat # C2011** - High MWCO (20 kD @ 50%) hydrophilic polysulfone fiber for monoclonal antibodies and larger recombinant proteins (100 kD or larger). Can support up to 10<sup>9</sup> cells and produce 1-5 mg of a recombinant protein every day or 5-100 mg of a monoclonal antibody every other day. This is the cartridge of choice for PK/PD studies.

**Cat # C5011** - The C5011 is the same cartridge as the C2011 but with twice the oxygenation capacity. It is specifically designed for hybridoma scale-up with 2X greater productivity and twice the antibody concentration of the C2011.

**Cat # C3008** - Low MWCO (5kD at 50%) cellulosic fiber for PK/PD studies. Cellulosic fiber will have resistance to many solvents and low non-specific binding for certain compounds.

### LARGE CARTRIDGES

**Cat # C2003** - Low MWCO (5 kD @ 50%) hydrophilic polysulfone fiber for recombinant proteins between 25 kD - 100 kD. 1.2 m<sup>2</sup> of surface area will support up to 5X10<sup>10</sup> cells and produce 5-20 mg of recombinant protein every day in an ECS volume of 60 mL.



**Cat # C2018** - High MWCO (20 kD @ 50%) hydrophilic polysulfone fiber for larger recombinant proteins (100 kD or larger). Can support up to  $5 \times 10^{10}$  cells and produce 5-20 mg of protein every day in a volume of 60 mL. Appropriate for adherent or suspension cell lines including CHO, HeLa, BHK and 293 cells.

## RESERVOIR CAPS

**33 mm (Cat # A1005)** - Reservoir Cap Assembly fits standard glass bottles. The assembly includes one medical grade polysulfone cap with molded-in silicone plug, two 516 stainless steel delivery tubes one .062" thick white silicone gasket. Withstands repeated autoclaving.

**38 mm (Cat # A1006)** - Reservoir Cap Assembly fits standard plastic media bottles. The assembly includes one medical grade polysulfone cap with molded-in silicone plug, two 516 stainless steel delivery tubes and one .062" thick white silicone gasket. Withstands repeated autoclaving.



**45 mm (Cat # A1008)** - Reservoir Cap Assembly fits Gibco® media bottles. The assembly includes a 516 stainless steel cap assembly with two angled tubes, a 45 mm threaded sealing ring and one white silicone gasket to seal the bottle firmly against the cap for leak proof operation.



## PK/PD Reservoir Cap (Cat # A1007)

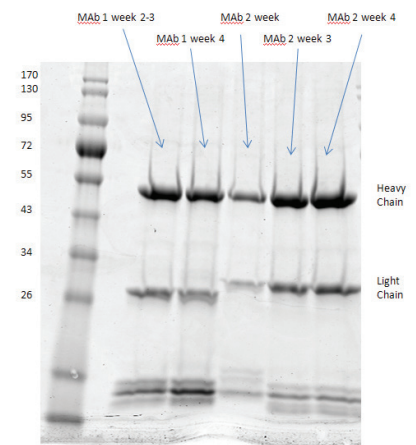
- The 5 port in vitro toxicology reservoir cap is intended to allow the introduction of drugs and diluent to the central reservoir while maintaining a constant volume.



## CDM-HD

**CDM-HD (Cat # CDM-1)** is designed specifically for the culture of cells at high density and optimized for use in our hollow fiber bioreactor systems.

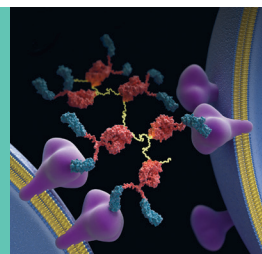
CDM-HD provides lot-to-lot consistency and is an economical replacement for serum. It is available as a dry powder to make up one liter and is used at a concentration of 10%.



## Cartridge/Flowpath Specifications

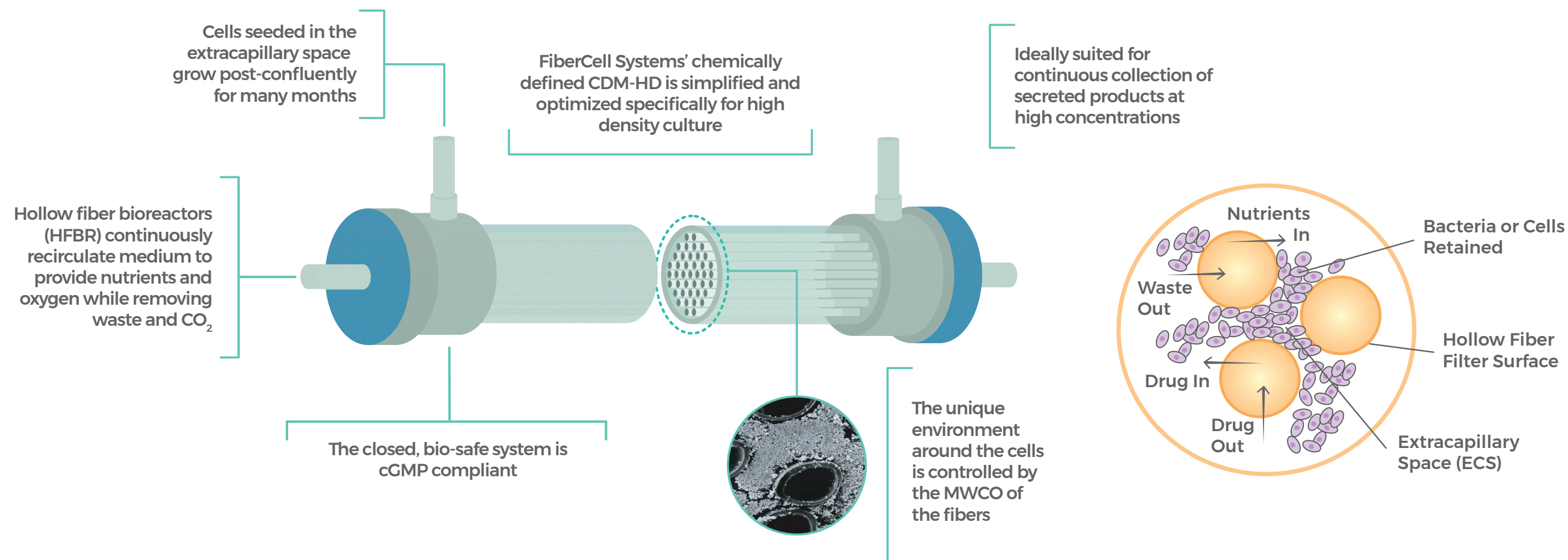
Catalog No.	Size	Surface Area	Fiber Type	Packing Density	ECS Volume	MWCO 50%	Maximum Cell#	Oxygenator
C2025	Small	80 cm <sup>2</sup>	PVDF	39%	3.9 mL	0.1 μm	10 <sup>8</sup>	1.5 m
C2025D	Small	450 cm <sup>2</sup>	high flux PS	50%	3.2 mL	20 kD	10 <sup>8</sup>	.65 m
C2025E	Small	360 cm <sup>2</sup>	cellulosic	39%	4.4 mL	5 kD	10 <sup>8</sup>	.65 m
C2025F	Small	450 cm <sup>2</sup>	polysulfone	50%	4.4 mL	5 kD	10 <sup>8</sup>	.65 m
C2008	Medium	3000 cm <sup>2</sup>	low flux PS	50%	20 mL	5 kD	10 <sup>9</sup>	4 m
C2011	Medium	3000 cm <sup>2</sup>	high flux PS	50%	20 mL	20 kD	10 <sup>9</sup>	4 m
C3008	Medium	2000 cm <sup>2</sup>	cellulosic	38%	12 mL	5 kD	10 <sup>9</sup>	3 m
C5011	Medium	3000 cm <sup>2</sup>	high flux PS	50%	20 mL	20 kD	2 x 10 <sup>9</sup>	6.1 m
C2003	Large	1.2 m <sup>2</sup>	low flux PS	50%	70 mL	5 kD	5 x 10 <sup>10</sup>	6.1 m
C2018	Large	1.2 m <sup>2</sup>	high flux PS	50%	70 mL	20 kD	5 x 10 <sup>10</sup>	6.1 m

[www.FiberCellSystems.com](http://www.FiberCellSystems.com) To order call 301-471-1269 or 435-512-8658  
 FiberCell® Systems Inc. 168 West Main Street, #922, New Market, Md. 21774  
 FAX: 301-865-6375, EMAIL: [info@FiberCellSystems.com](mailto:info@FiberCellSystems.com)



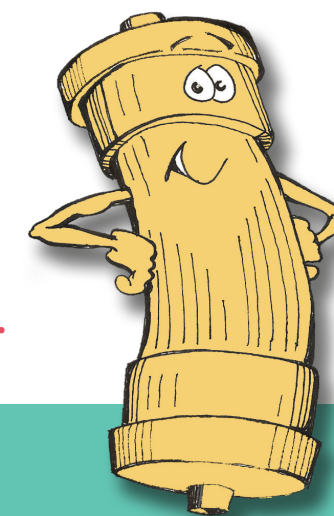
# Take Advantage of our Advances Hollow Fiber Bioreactors: A Better Way to Grow Cells

A closer look  
at the  
FiberCell  
Systems  
cartridge



## Discover

what so many researchers and biotech companies already know.



### Why Use Hollow Fiber

- Models the mammalian circulatory system for *in vivo*-like conditions
- Eliminates the need to split cells
- Enables high density cell growth as in the human body
- Stabilizes pH of cell culture system
- Reduces serum requirements and allows for use of protein-free media like CDM-HD
- Increases concentration of secreted product by 10 to 100 times
- Provides for many months of continuous production

### Why Choose FiberCell Systems

- Concentrates secreted product in small volume area within cartridge shell
- Eliminates dead spots by using fibers that are wavy and uniformly spaced
- Provides for easy cell culture scale up
- Handles large cell numbers (up to  $10^{11}$ )
- Enhances bio-safety with closed system
- CDM-HD, a protein-free serum replacement, is optimized for the unique cell culture environment within a hollow fiber bioreactor
- Facilitates nutrient and waste exchange with our unique Duet Pump
- Fits easily into standard CO<sub>2</sub> incubator
- Proprietary high gross filtration fibers for improved viability and cell growth
- Over 15 years of experience with hollow fiber application development and support

## APPLICATIONS



**3-D Cell Culture**  
The medium-sized cartridge offers 3,000 cm<sup>2</sup> of surface area, equivalent to 40 T-75 flasks, but can support up to  $2 \times 10^9$  cells



**Monoclonal Antibody Production**  
In the HFBR, hybridomas can yield up to 100 mg of antibody every two days, for months of culture



**Recombinant Protein Production**  
Typical protein harvests from FiberCell Systems' cartridges contain 100 µg/mL/day or higher. Daily harvests are 2 mg to 10 mg a day.



**Exosome Production**  
Gram quantities of exosomes can be produced in HFBRs



**Cell Co-culture**  
The PVDF fiber allows various matrix proteins to be bound to its surface



**PK/PD**  
Mimic human bioavailability of antibiotics

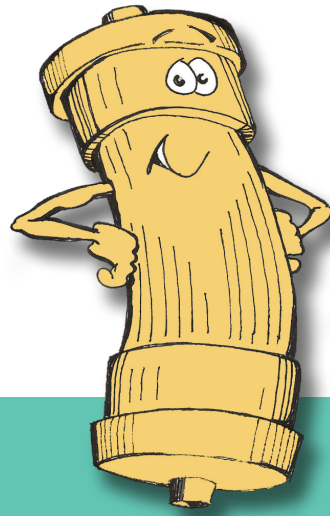


Learn more at [www.fibercellsystems.com](http://www.fibercellsystems.com)



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