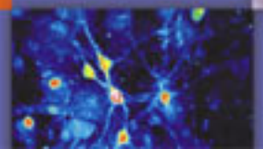
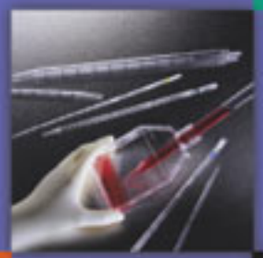
BD

For your local office's contact information, please see page 8 or visit bdbiosciences.com/offices.





BD Biosciences

BD Falcon™, BD BioCoat™, and BD™ brand products

BD

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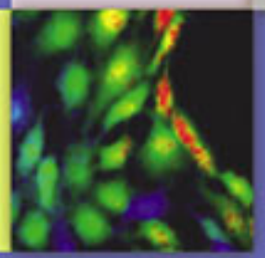
BD Biosciences



BD

Helping all people live healthy lives

Cell Biology & Drug Discovery
Product Catalog

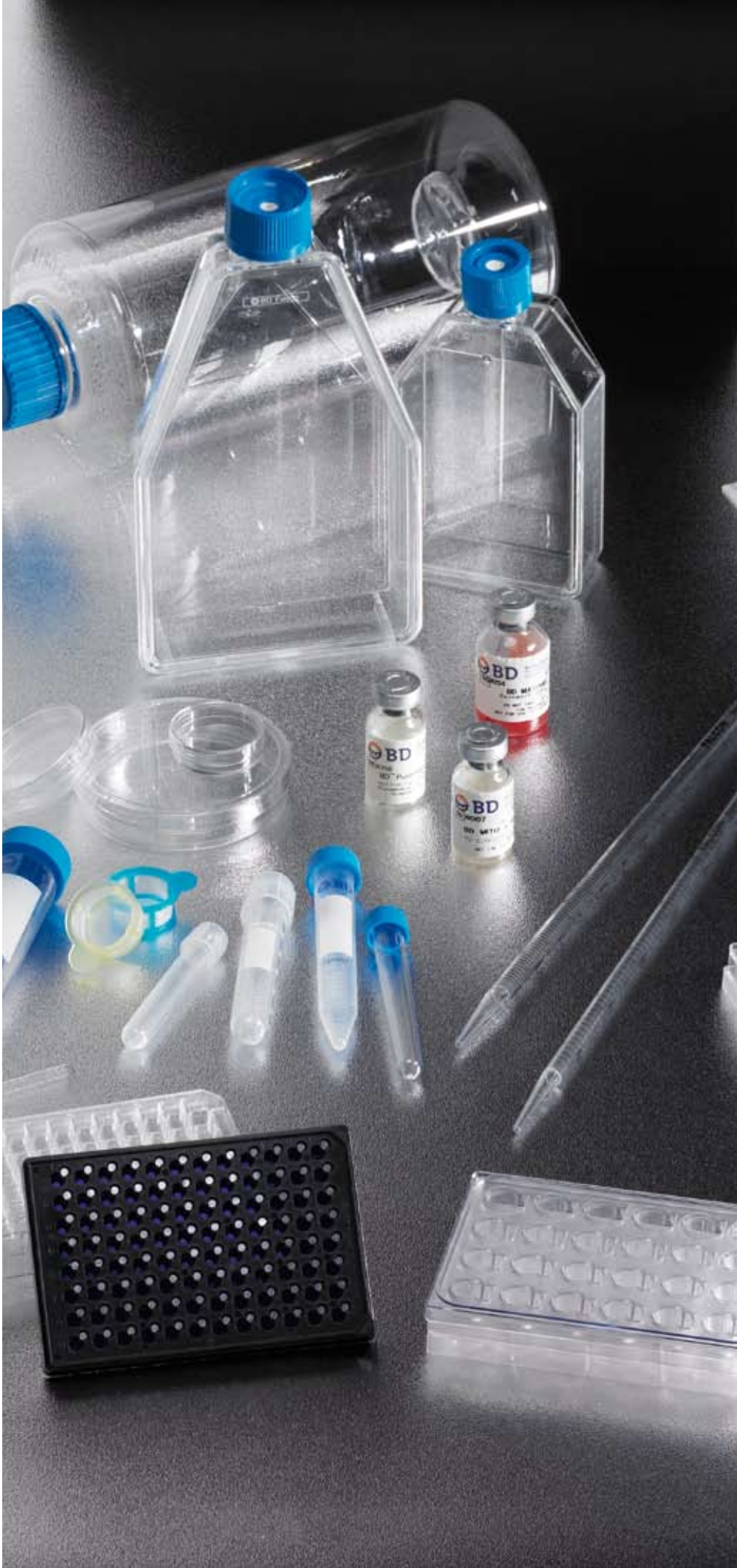
Featuring the BD Falcon™, BD BioCoat™, and BD™ brand products

BD Biosciences - Discovery Labware

We are dedicated to advancing cell biology research worldwide through excellence and innovation in product development, manufacturing, and customer service.

BD Biosciences

BD Biosciences, a leading provider of products and services for researchers and laboratory scientists around the world, offers integrated solutions for supporting the life sciences and accelerating the pace of discovery, development, and diagnosis. BD Biosciences is a business segment of BD (Becton, Dickinson and Company) and is built on BD's 100-year foundation of quality, reliability, and commitment to customers and business partners around the world. The four business units of BD Biosciences–Bioimaging Systems, Discovery Labware, Immunocytometry Systems, and Pharmingen–provide customers with the brands they have known and trusted for years. From genes to proteins to cells, BD Biosciences provides a comprehensive portfolio of consumables, reagents, systems, and technical expertise to support the life sciences industry.



BD Biosciences - Discovery Labware

BD Biosciences - Discovery Labware develops, manufactures, and markets innovative products for cell biology, fluid handling, drug discovery, and ADME/Tox. BD Falcon™ Cultureware was the first developed tissue culture-treated plasticware that enabled scientists to grow cells *in vitro*. BD BioCoat™ was the first commercial, pre-coated cell cultureware, combining plastics with extracellular matrix proteins and attachment factors. These technological breakthroughs marked a new era in cell culture research by making the process more efficient and convenient for researchers. Recognized for its outstanding quality, consistency, and value for more than 50 years, BD Biosciences - Discovery Labware is committed to advancing cell biology research worldwide through excellence and innovation.

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Our Sales Representatives work in close partnerships with our distributors to ensure the availability of all of our products and to keep you up-to-date on new products and technologies. They stay in touch with you and the changing requirements of your research.

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Worldwide

Two Oak Park
Bedford, MA 01730
USA
Tel.: (1) 877.232.8995
Fax: (1) 800.325.9637
bdbiosciences.com

BD Biosciences
in Europe

POB 13, Erembodegem-Dorp 86
B-9320 Erembodegem
Belgium
Tel.(32) 53 720.211
Fax: (32) 53 720.450
contact_bdb@europe.bd.com

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AUSTRIA
Am Concorde Park E1/7
2320 Schwechat
Tel.: 43.1.706.36.60.20
Fax: 43.1.706.36.60.11
customerservice.bdb.at@europe.bd.com

BELGIUM
POB 13, Erembodegem-Dorp 86
B-9320 Erembodegem
Tel.: 32.53.720.550
Fax: 32.53.720.549
customer_service_bdbelgium@europe.bd.com

DENMARK
Park Allé 290
2605 Brøndby
Tel.: 45.43.43.45.66
Fax: 45.43.43.41.66
bdcs_dk@europe.bd.com

EAST AFRICA
BD East Africa Ltd
Africa Re Centre, Hospital Rd, Upper Hill
P.O. Box 76613 - 00508, Nairobi, Kenya
Tel.: 254.20.2738339/40
Fax: 254.20.2738342
bd@africaonline.co,ke

EASTERN EUROPE
Tullastrasse 8-12
69126 Heidelberg
Tel.: 49.6221.305.161
Fax: 49.6221.305.418
bdb.ema@europe.bd.com

EGYPT
203 Airport Road,
11361, Apt 2,
Heliopolis,
Cairo-Egypt
Tel.: 20.2.268.0181
Fax: 20.2.266.7562
bddxb@emirates.net.ae

FINLAND
Pronssitie 1
00440 Helsinki
Tel.: 358.9.8870.7832
Fax: 358.9.8870.7817
bdorder_finland@europe.bd.com

FRANCE
11, Rue Aristide Bergès
38800 Le Pont de Claix
Tel.: 33.4.76.68.36.40
Fax: 33.4.76.68.35.06
customerservice.bdb.france@europe.bd.com

GERMANY
Tullastrasse 8 - 12
69126 Heidelberg
Tel.: 49.6221.305.551
Fax: 49.6221.303.609
customerservice.bdb.de@europe.bd.com

GREECE
5 Amfitheas Avenue
17122 Nea Smyrni
Athens Greece
Tel.: 30.210.940.77.41
Fax: 30.210.940.77.40

HUNGARY
Szerena u. 60/C
1025 Budapest
Tel.: 36.1.345.7090
Fax: 36.1.345.7093
bdb.ema@europe.bd.com

ITALY
Via Delle Azalee 19
20090 Buccinasco (MI)
Tel.: 39.02.48.240.1
Fax: 39.02.48.203.336
ordini_diagnostico@europe.bd.com

MIDDLE EAST
P.O.Box 52279
Dubai
U.A.E.
Tel.: 971.4.337.95.25
Fax: 971.4.337.95.51
bddxb@emirates.net.ae

NORWAY
Medisinsk Tekninsk Senter
7489 Trondheim
Tel.: 47.73.59.12.00
Fax: 47.73.59.12.01
norge@europe.bd.com

POLAND
Królowej Marysieńki 90
02-954 Warszawa
Poland
Tel.: 48.22.651.75.88
Fax: 48.22.651.75.89
bdb.ema@europe.bd.com

PORTUGAL
Enzifarma
Diagnóstica e Farmacêutica, Lda
Taguspark
Parque de Ciência e Tecnologia
Núcleo Central 184
2780 - 920 Oeiras
Tel.: 351.21.421.93.30
Fax: 351.21.421.93.39

SAUDI ARABIA
Technical Scientific Office
PO BOX 270222
Riyadh -11352
Kingdom of Saudi Arabia
Tel.: 966.1.2789581/ 2789582
Fax: 966.1.278
bdb.ema@europe.bd.com

SOUTH AFRICA
The Woodlands Office Park
20 Woodlands Drive, Building 12, 2nd Floor
Woodmead
2199
South Africa
Tel.: 27.11.603.2620
Fax: 27.11.804.0544/804.0546
bdb.ema@europe.bd.com

SPAIN
Camino de Valdeoliva, s/n
San Agustín de Guadalix
28750 Madrid
Tel.: 34.90.227.17.27
Fax: 34.91.848.81.04
servicio_de_clientes@europe.bd.com

SWEDEN AND BALTIC COUNTRIES
Box 32054
126 11 Stockholm
Tel.: 46.8.77.55.110
Fax. 46.8.77.55.111
bdbdnordic@europe.bd.com

SWITZERLAND
Becton Dickinson AG
Postfach
4002 Basel
Tel.: 41.61.485.22.22
Fax: 41.61.485.22.02
customerservice.bdb.ch@europe.bd.com

THE NETHERLANDS
Postbus 757
2400 AT Alphen aan den Rijn
Tel.: 31.20.582.94.20
Fax: 31.20.582.94.21
customer_service_bdholland@europe.bd.com

TURKEY
Büyükdere Cad. Üçyol Mevkii Noramin Is
Merkezi No:55 Kat:1/105 Maslak, Istanbul,
34398 Turkey
Tel.: 90.212.328.27.20 Ext.117
Fax: 90.212.328.27.30
bdb.ema@europe.bd.com

UK
21 Between Towns Road
Cowley
Oxford OX4 3LY
Tel.: 44.1865.781688
Fax: 44.1865.781578
BDUK_CustomerService@europe.bd.com

UNITED STATES
Two Oak Park
Bedford, MA 01730
1er étage, Appt.102
USA
Tel.: 877.232.8995
Fax: 800.325.9637
bdbiosciences.com

WEST AFRICA
Tel.: 33.4.76.68.94.43
Fax: 33.4.76.68.55.96
bdbiosciences_france@europe.bd.com

Visit bdbiosciences.com/offices for complete contact information for all our offices worldwide.

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AUSTRIA
Tel.: 43.1.928.04.65
Fax: 43.1.928.04.66
help.biosciences@europe.bd.com

BELGIUM
Tel.: 32.2.401.7093
Fax: 32.2.401.7094
help.biosciences@europe.bd.com

DENMARK
Tel.: 45.80.882.193
Fax: 45.80.882.198
help.biosciences@europe.bd.com

EMA
Tel.: 44.207.075.3226
Fax: 44.207.075.3227
help.biosciences@europe.bd.com

FINLAND
Tel.: 358.800.11.63.17
Fax: 358.800.11.63.16
help.biosciences@europe.bd.com

FRANCE
Tel.: 33.1.707.081.93
Fax: 33.1.707.081.94
help.biosciences@europe.bd.com

GERMANY
Tel.: 49.69.222.22.560
Fax: 49.69.222.22.561
help.biosciences@europe.bd.com

GREECE
Tel.: 44.207.075.3226
Fax: 44.207.075.3227
help.biosciences@europe.bd.com

IRELAND
Tel.: 44.207.075.3226
Fax: 44.207.075.3227
help.biosciences@europe.bd.com

ITALY
Tel.: 39.02.360.036.85
Fax: 39.02.360.036.86
help.biosciences@europe.bd.com

NORWAY
Tel.: 47.800.18530
Fax: 47.800.18532
help.biosciences@europe.bd.com

PORTUGAL
Tel.: 351.8008.15176
Fax: 351.8008.15183
help.biosciences@europe.bd.com

SPAIN
Tel.: 34.91.414.6250
Fax: 34.91.414.6251
help.biosciences@europe.bd.com

SWEDEN
Tel.: 46.8.5069.2154
Fax: 46.8.5069.2155
help.biosciences@europe.bd.com

SWITZERLAND
Tel.: 41.44.580.43.73
Fax: 41.44.580.43.74
help.biosciences@europe.bd.com

THE NETHERLANDS
Tel.: 31.10.711.4800
Fax: 31.10.711.4801
help.biosciences@europe.bd.com

UK
Tel.: 44.207.075.3226
Fax: 44.207.075.3227
help.biosciences@europe.bd.com

US
Tel.: 877.232.8995
Fax: 800.743.6200
Fax: 978.901.7493


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Our Commitment to Quality

All BD Falcon™, BD BioCoat™ and BD™ Brand Reagent manufacturing sites are ISO 9000 registered. This certification verifies that our facilities meet international quality system standards. The quality system is routinely audited by a notified body to ensure a work environment that consistently maintains the highest standards. ISO compliance gives our customers an added level of assurance that BD Biosciences - Discovery Labware is totally committed to superior quality and continuous product improvement.

Copies of our certificates can be obtained by calling your local BD office.

BD Facilities and the Products they Manufacture

Bedford, Massachusetts
ISO 9001:2000 registered

- BD BioCoat™ Plates
- BD BioCoat™ Dishes
- BD BioCoat™ Flasks
- BD BioCoat™ Cell Culture Inserts
- BD BioCoat™ Coverslips
- BD BioCoat™ CultureSlides
- Extracellular matrix products
- Lymphokine products
- Growth factor products
- Media additive products

Plymouth, England
ISO 9001:2000 and ISO 13485 registered

- BD BioCoat™ Plates
- BD BioCoat™ Dishes
- BD BioCoat™ Flasks
- BD Falcon™ Flasks
- BD Falcon™ Vented Caps
- BD Primaria™ Flasks

Canaan, Connecticut
ISO 9001:2000 and ISO 13485 registered

- BD Falcon™ 15 ml Conical Tubes
- BD Falcon™ 50 ml Conical Tubes
- BD Falcon™ Round-Bottom Tubes
- Snap Caps for BD Falcon™ Round-Bottom Tubes
- Specimen containers
- Cell strainers

Durham, North Carolina
ISO 9001:2000 and ISO 13485 registered

- BD Falcon™ Serological Pipets
- BD Falcon™ Aspirating Pipets
- BD Falcon™ Bacteriological Pipets
- BD Falcon™ Cell Culture Inserts
- BD Falcon™ Cell Culture Dishes
- BD Falcon™ Multiwell Plates
- BD Falcon™ Roller Bottles
- BD Falcon™ 300 cm^2 flask
- BD Falcon™ Assay Plates
- BD Falcon™ Bacteriological Petri Dishes
- BD Falcon™ *In Vitro* Fertilization Plasticware
- BD Primaria™ Dishes
- BD Primaria™ Plates

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FALCON
FALCON Milk
FALCON Serological
EXPRESS

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BD Falcon™ Pipets and Pipetters

The perfect pipet in a perfect package

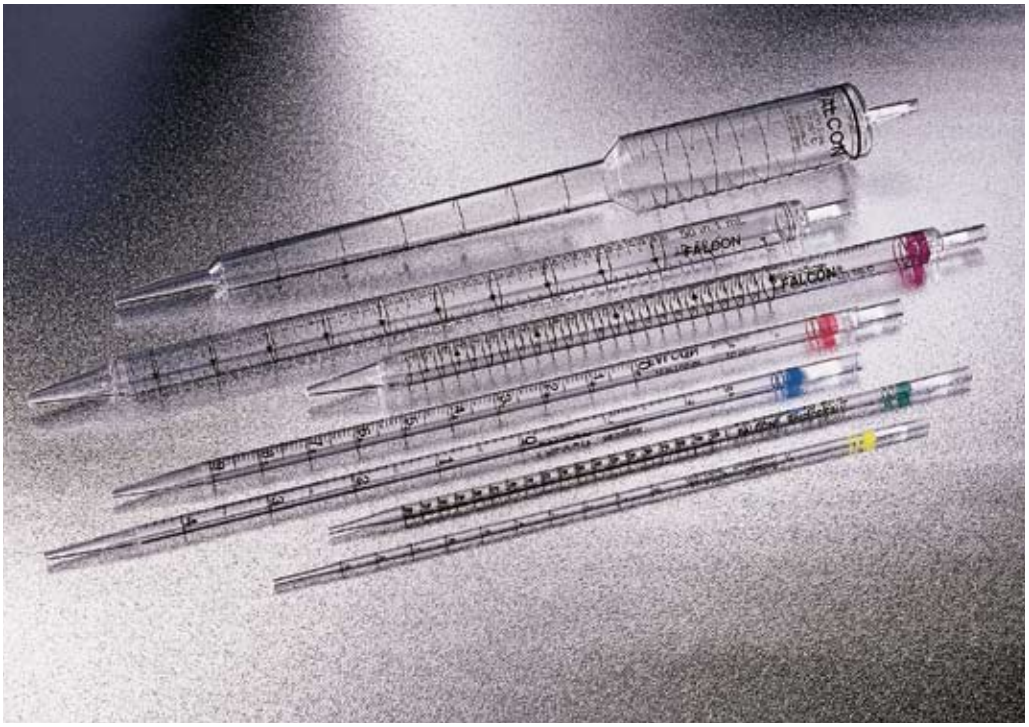
No company makes a pipet like BD Biosciences. BD Falcon™ Pipets, first in quality and first in innovation, are manufactured at our ISO 9001-certified facility in a state-of-the-art, high-performance work environment. Dedicated product teams use advanced technologies and techniques, combined with rigorous quality control procedures, to ensure the integrity of every pipet.

Each pipet component is made of the highest quality polystyrene resin. Process control and attention to detail guarantee the finest quality product. A critical volumetrics test verifies the accuracy of each pipet by measuring the delivered volume.

The final result is consistently high-quality pipets that provide precise and accurate liquid handling.

BD Falcon™ Serological Pipets

- Individually wrapped polystyrene pipets available in paper-plastic or all-plastic thermoform packaging
- Exceptionally crisp, dark, easy-to-read printed graduations
- A novel graduation alignment system brings graduations to view quickly *(See page 16)*
- Available in bulk packaging



BD Falcon™ Serological Pipets range in size from 1 ml to 100 ml.

BD Falcon 100 ml pipet
The BD Falcon 100 ml pipet has up to a 115 ml graduated capacity, with total holding capacity of 125 ml - the highest currently available. Its innovative, stepped design allows it to fit easily into most media bottles and tissue culture vessels.

Sterile pipet packaging

Customer demand for a sterile product has shaped the design of all BD Falcon brand products, especially serological pipets and pipet packaging. BD Biosciences pioneered the use of the thermoform process to package individual pipets. In this process, heavy-gauge plastic material is heated and drawn to form a pouch. The pipet is placed in the pouch, and the pouch is sealed. Depending on user preference, the top web may be either paper or our BD Advantage™ all-plastic material. This packaging assures that BD Falcon Pipets are delivered to you contamination-free.

BD Falcon individually wrapped pipets
BD Falcon individually wrapped pipets are available in two thermoformed package styles: the popular paper-plastic wrap and the BD Advantage all-plastic wrap. BD Falcon 1 ml and 2 ml size individually wrapped pipets are provided in convenient canister boxes to make transfer and storage easier. BD Falcon bulk packaged pipets come in sturdy polyethylene bags with an easy-opening strip.

BD Advantage™ Pipet packaging for customers who prefer an all-plastic pipet wrapper

The BD Advantage all-plastic individual pipet package offers:

- Reduced static cling
- Easy opening options: peel-open and pop-through
- Low particulates
- Complete recyclability

Individually Wrapped Serological Pipets

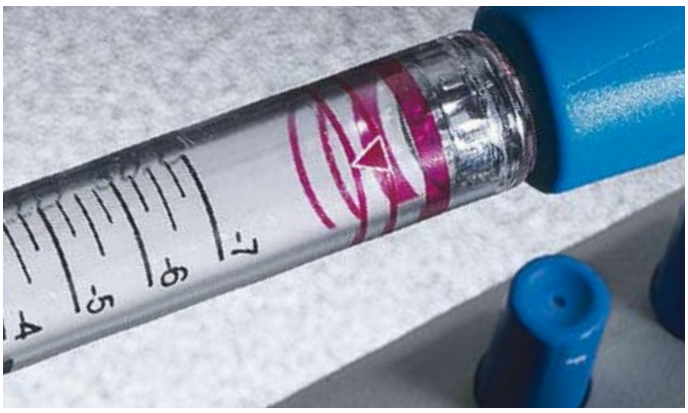
- Polystyrene, disposable pipets for tissue culture, bacteriological, and clinical research applications
- Sterilized by gamma irradiation
- Non-pyrogenic
- Negative graduations for extra capacity
- Reverse graduations (except 1 ml)
- Color-coded package and markings for ease of identification
- Polyester plug to help prevent overfill

Pipet Size	Increments	Overfill Capacity	Qty./Pack	Qty./Case	Cat. No. Paper/Plastic Thermoform	Cat. No. BD Advantage™ All-Plastic
1 ml YELLOW						
	1/10	0.4 ml	100/box	1000	**357520**	**356520**
	1/100	0.4 ml	100/box	200	**357522**	—
	1/100	0.4 ml	100/box	1000	**357521**	**356521**
2 ml GREEN						
	1/100	0.8 ml	100/box	1000	**357507**	**356507**
5 ml BLUE						
	1/10	2.5 ml	50/bag	200	**357543**	**356543**
10 ml RED						
	1/10	3.0 ml	50/bag	200	**357551**	**356551**
Wide Tip	1/10	3.0 ml	50/bag	200	**357504**	—
25 ml PURPLE						
Space Saver	0.25	7.0 ml	50/bag	200	**357525**	**356525**
Extended	0.50	11.0 ml	50/bag	200	**357535**	**356535**
50 ml BLACK						
	1.0	10.0 ml	25/bag	100	**357550**	**356550**
100 ml BLACK						
	1.0	15.0 ml	5/bag	50	**357600**	—

Bulk-Packaged Serological Pipets

- Polystyrene, disposable pipets for tissue culture, bacteriological, and clinical research applications
- Sterilized by gamma irradiation
- Non-pyrogenic
- Negative graduations for extra capacity
- Reverse graduations (except 1 ml)
- Color-coded markings for ease of identification
- Polyester plug to help prevent overfill

Pipet Size	Increments	Overfill Capacity	Qty./Pack	Qty./Case	Cat. No. Paper/Plastic Thermoform
1 ml YELLOW					
	1/10	0.4 ml	25/bag	1000	**357503**
	1/100	0.4 ml	25/bag	1000	**357506**
2 ml GREEN					
	1/100	0.8 ml	25/bag	1000	**357508**
5 ml BLUE					
	1/10	2.5 ml	25/bag	500	**357529**
	1/10	2.5 ml	500/bag	500	**357552**
10 ml RED					
	1/10	3.0 ml	25/bag	500	**357530**
	1/10	3.0 ml	500/bag	500	**357534**
Wide Tip	1/10	3.0 ml	25/bag	500	**357536**
25 ml PURPLE					
Space Saver	0.25	7.0 ml	20/bag	200	**357515**
Extended	0.50	11.0 ml	20/bag	200	**357585**
50 ml BLACK					
	1.0	10.0 ml	10/bag	100	**357540**



Convenient pipet graduation alignment system' exclusive from BD Biosciences.

Graduation Alignment System

The pipet graduation alignment system is a fast and simple way to bring graduations to your line of sight. Simply pop open or peel back the top of the pipet package and line up the pipetter before completely removing the pipet from its wrapping. When you remove the pipet from its package, the graduations should face you every time.

Aspirating Pipets

- Sterile, polystyrene, non-plugged, non-graduated pipets
- Safer alternative to glass Pasteur pipets
- Can be used for all vacuum-aspirating procedures
- Non-pyrogenic
- Individually packaged in thermoformed paper/plastic wrap to ensure sterile presentation

Size	Qty./Pack	Qty./Case	Cat. No.
1 ml	50	200	**357528**
2 ml	50	200	**357558**
5 ml	50	200	**357501**
10 ml	50	200	**357554**
25 ml	50	200	**357556**

Bacteriological Pipets

- Clear, easy-to-read printed graduations
- Plugged, polystyrene
- Sterilized by gamma irradiation
- Non-pyrogenic

Size	Graduations	Qty./Pack	Qty./Case	Cat. No.
1.1 ml	0.5, 1.0, 1.1	25	1000	**357502**
2.2 ml	1.0, 2.0, 2.1, 2.2	25	1000	**357555**

Transfer Pipets

- Highly durable, one-piece polyethylene design
- One squeeze draws 3 ml into this 6-inch transfer pipet
- Small tip ensures consistent reproduction of drop size
- Graduated at 1 ml and 2 ml marks

Description	Qty./Pack	Qty./Case	Cat. No.
Sterile	1	500	**357575**
Non-sterile	500	1000	**357524**

BD Falcon™ Express™ Pipet-Aid®

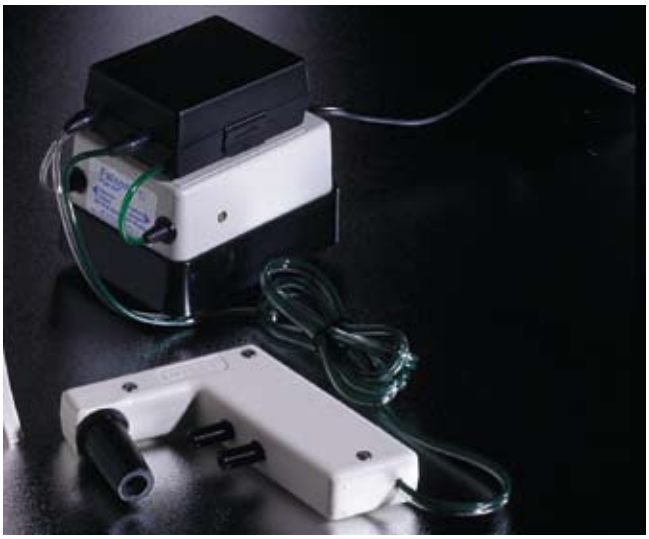
- Lightweight, with comfortable grip
- Specially designed filter prevents moisture contamination
- Interchangeable speeds
- Detachable stand

The lightweight, compact design of the BD Falcon™ Express™ Pipet Aid®, with three independent and interchangeable speed options, put flexibility right at your fingertips. You'll have rapid dispensing in all speed ranges by simply depressing the dispensing button past the built-in point of resistance. The BD Falcon Express Pipet-Aid features a portable, rechargeable 8.4-volt battery. Additional convenience features include a detachable stand, a textured finish for a better grip, a nosepiece lock to help prevent accidental detachment, and a unique filter that acts as a shutdown system if overfill occurs, thus extending the life of the product.

Description	Qty.	Cat. No.
BD Falcon Express Pipet-Aid with stand and charging adapter (115 V, 60 Hz for NA)	1	**357590**
BD Falcon Express Pipet-Aid with stand and charging adapter (220 V, 50 Hz for EU)	1	**357591**
BD Falcon Express Pipet-Aid with stand and charging adapter (220 V, 50 Hz for UK)	1	**357589**
Replacement Parts		
Detachable stand	1	**357592**
Tissue culture nosepiece with alignment feature	1	**357593**
Disc filters	5	**357564**
Filter gasket	2	**357560**
Rubber insert	2	**357569**
Rechargeable battery	1	**357578**
Recharger (115 V, 60 Hz for NA)	1	**357579**
Recharger (220 V, 50 Hz for EU)	1	**357582**

BD Falcon™ Bench-Top Pipet-Aid®

- Available with or without 0.2 µm filtration unit



The BD Falcon Bench-Top Pipet Aid has an autoclavable filtration unit handle and hoses. A positive check valve prevents accidental fluid intake into the handle. The product is available in a 115 V, 60 Hz (North America) or 220 V, 50 Hz (Europe) pump assembly. The handle assembly has a pipet-accommodating nosepiece and the assemblies are interconnected by separate pressure and vacuum hoses.

Description	Qty.	Cat. No.
BD Falcon Bench-Top Pipet-Aid with pump, with filtration unit (220 V, 50 Hz for EU)	1	**357574**
BD Falcon Bench-Top Pipet-Aid with pump, no filtration unit (115 V, 60 Hz for NA)	1	**357565**
BD Falcon Bench-Top Pipet-Aid with pump, with filtration unit (115 V, 60 Hz for NA)	1	**357566**
Replacement Parts		
Filtration unit for pump	1	**357568**
Check valve	1	**357572**
Rubber inserts	2	**357569**
Nosepiece housing	1	**357567**

NA = North America
EU = Europe
UK = United Kingdom

BD Falcon™ Labware

An array of products for your general laboratory use.


BD
Falcon

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BD Falcon™ Tubes

Test the sample, not the tube

Your life sciences research demands the most stable and controlled environment possible for the analysis of biological and chemical samples. At BD Biosciences, we manufacture our BD Falcon Conical and Round-Bottom Tubes from advanced bioanalytical-grade resins. Our polymer selection process includes extensive testing to ensure that the polymer does not leach unwanted substances and provides for low protein binding. BD Falcon Tubes and our unique medical-style packaging provide unsurpassed convenience and consistency.

BD Falcon™ Round-Bottom Tubes

- Widely used and referenced in laboratory protocols
- Heavyweight, durable snap-cap makes handling easy
- Specialized tube for flow cytometry applications

Sterile tube (12 x 75 mm) with cell-strainer cap
Designed for flow cytometry applications, the 12 x 75 mm tube with cell strainer cap (Cat. No. 352235) offers a convenient way to prepare laboratory samples. A 35 µm nylon mesh is incorporated into the tube cap, which can be used to collect the dissociated sample for downstream processing in instruments such as the BD FACS™ System.

Blue graduations on 14 ml polypropylene tubes
BD Falcon™ brand 14 ml polypropylene tubes feature blue printed graduations rather than traditional molded-in graduations. Easy-to-read markings and a solvent-resistant writing patch provide further convenience in use.

The Foundation for Consistent Research Results

- Provide reliable containment of laboratory fluid samples
- Widely referenced in published procedures and protocols
- Polypropylene tubes are best suited for applications requiring greater thermal and chemical stability
- Polystyrene tubes are best suited for procedures requiring high optical clarity
- Dual-position snap caps, heavier gauge walls and unique construction provide a secure, positive seal
- Medical-style packaging materials

Polystyrene

FEATURES

- 1400 RCF rating*
- Tube dimensions and volumes are approximate

Description	Cap	Qty./Pack	Qty./Case	Cat. No.
12 x 75 mm, 5 ml				
	snap	1	500	**352003**
	snap	25	500	**352058**
	snap	125	1000	**352054**
	none	125	1000	**352052**
	none (non-sterile)	1000	1000	**352008**
	cell strainer sterile	25	500	**352235**
13 x 100 mm, 8 ml				
	screw	125	1000	**352027**
17 x 100 mm, 14 ml				
	snap	1	500	**352001**
	snap	25	500	**352057**
	snap	125	1000	**352051**
	none	125	1000	**352017**
16 x 125 mm, 16 ml				
	screw	1	500	**352037**
	screw	125	1000	**352025**
16 x 150 mm, 19 ml				
	screw	1	500	**352045**

** RCF claims refer to Relative Centrifugal Force measured in g-force for materials with a specific gravity of 1.0, used in an appropriate rotor with correct cushion and safety precautions. Tubes used with organic solvents at temperatures below 0°C may have lower RCF ratings.*

Polypropylene

FEATURES

- 3000 RCF rating*
- High-clarity polypropylene
- 17 x 100 mm tubes have printed graduations and white writing patch
- Tube dimensions and volumes are approximate

Description	Cap	Qty./Pack	Qty./Case	Cat. No.
12 x 75 mm, 5 ml				
	snap	1	500	**352005**
	snap	25	500	**352063**
	none	125	1000	**352053**
	none (non-sterile)	1000	1000	**352002**
17 x 100 mm, printed 14 ml				
	snap	1	500	**352006**
	snap	25	500	**352059**
	none	125	1000	**352018**

Snap Caps

FEATURES

- Dual-position snap cap, offering vented as well as fully closed options
- Sterilized by gamma irradiation
- Polyethylene
- For use with both polystyrene and polypropylene tubes

Description	Qty./Pack	Qty./Case	Cat. No.
For 12 x 75 mm tubes	500	2000	**352032**
For 17 x 100 mm tubes	500	2000	**352030**

TIPS

- Racks for 15 ml BD Falcon™ Conical Tubes are also ideal for upright storage of BD Falcon 17 x 100 mm Round-Bottom Tubes.
- Expanded polystyrene racks are not recommended for storage below 0°C.

RELATED PRODUCTS

BD Falcon Conical Tubes..... 24
BD Falcon Tissue Culture-Treated Tubes..... 48

BD Falcon™ Conical Tubes

- Meet bioanalytical-grade requirements and provide unsurpassed performance in critical research applications
- Exceptionally strong
- Easy on/off caps
- Easy-to-read graduations
- Consistent biological and physical properties

BD Falcon™ high-clarity conical tubes feature blue printing: dark blue graduations to help avoid eye strain, and a white writing patch that allows sample identification. For large fluid samples, use convenient 175 ml and 225 ml sizes. Made of durable polypropylene, these tubes allow for efficient large-scale laboratory centrifugation.

The 15 ml and 50 ml conical tubes are available in either bulk- or rack-packaged configurations. For the convenience of oriented, sterile product presentation, choose the recyclable, expanded polystyrene foam rack option. For applications that do not require the convenience of tubes in racks, choose the bulk-package option with 40% less packaging material.

The Workhorse of the Life Sciences Lab

Conical centrifuge tubes often assume a workhorse role; that is, they are continually in use and are subjected to high-stress laboratory conditions. Many scientists have come to rely exclusively on BD Falcon Tubes to meet the demands of today's busy laboratories. To meet this intense challenge, our tubes are designed for:

- **High strength:** State-of-the-art mold design, coupled with advanced resin selection, create tube walls that are engineered to perform under high-stress situations
- **Non-toxicity:** Resins are selected *via* an intense array of U.S. Pharmacopoeia (USP) toxicity tests
- **Low protein binding:** Our engineers and scientists are continually searching for materials and processes that minimize labware-induced interference, such as protein binding
- **Quality packaging:** BD Falcon Tubes, in addition to offering bioanalytical-grade performance, use medical-style packaging to better assure sterile presentation

15 ml capacity tubes

- Approximate dimensions: 17 mm O.D.; 120 mm length
- Sterilized by gamma irradiation and non-pyrogenic
- Dark blue printed graduations and white writing patch
- Polyethylene dome-seal screw cap offers positive seal over full circumference
- Rack can be separated into two sections

Description	RCF Rating*	Qty./Pack	Qty./Case	Cat. No.
15 ml/High Clarity Polypropylene	6000	50/bag**	500	**352196**
	6000	125/bag	500	**352096**
	6000	50/rack	500	**352097**
15 ml/Polystyrene	1800	125/bag	500	**352095**
	1800	50/rack	500	**352099**

50 ml capacity tubes

- Approximate dimensions: 30 mm O.D.; 115 mm length
- Sterilized by gamma irradiation and non-pyrogenic
- Dark blue printed graduations and white writing patch
- Polyethylene flat-top screw cap allows one hand manipulation and provides a level writing area
- Modified polystyrene offers improved stress resistance

Description	RCF Rating*	Qty./Pack	Qty./Case	Cat. No.
50 ml/High Clarity Polypropylene	9400	25/bag	500	**352070**
	9400	25/rack	500	**352098**
50 ml/Modified Polystyrene	2000	25/bag	500	**352073**
	2000	25/rack	500	**352074**
Screw caps for 50 ml tubes	-	50	1000	**358206**

175 ml and 225 ml capacity tubes

- 175 ml capacity: approximate dimensions are 61 mm O.D.; 118 mm length
- 225 ml capacity: approximate dimensions are 61 mm O.D.; 137 mm length
- Sterilized by gamma irradiation
- Molded graduations
- Polyethylene plug-seal screw cap

Description	RCF Rating*	Qty./Pack	Qty./Case	Cat. No.
175 ml/Polypropylene	7500	8/bag	48	**352076**
225 ml/Polypropylene	7500	8/bag	48	**352075**

Accessories for 175 ml and 225 ml capacity tubes

Description	Qty./Case	Cat. No.
Cushions for Cat. Nos. 352076, 352075 (with extractor), non-sterile	8	**352090**

* *RCF claims refer to Relative Centrifugal Force measured in g-force for materials with a specific gravity of 1.0, used in an appropriate rotor with correct cushion and safety precautions. Tubes used with organic solvents at temperatures below 0°C may have lower RCF ratings.*

** *Includes one free empty rack*

TIPS

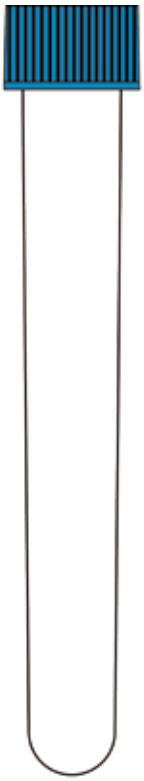
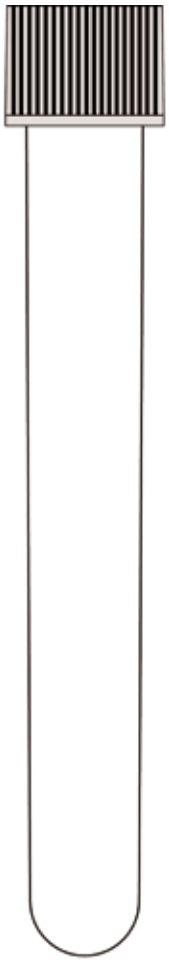
- When marking tubes, black ink Sharpie® pens are the most resistant to alcohol. Other colors tend to smudge.
- Racks for 15 and 50 ml BD Falcon™ Conical Tubes are ideal for upright storage.
- Expanded polystyrene racks are not recommended for storage below 0°C.

RELATED PRODUCTS

BD Falcon Cell Strainers 63
BD Falcon Round-Bottom Tubes 22

BD Falcon™ Tube Size Identification Chart

For accurate reordering, compare your tube to these actual size drawings.

5 ml 12 mm x 75 mm	14 ml 17 mm x 100 mm	8 ml 13 mm x 100 mm	16 ml 16 mm x 125 mm	19 ml 16 mm x 150 mm
Snap Cap	Snap Cap	Screw Cap	Screw Cap	Screw Cap
				
Polystyrene **Cat. No.** 352003 352008 352052 352054 352058 352235 **Polypropylene** **Cat. No.** 352002 352005 352053 352063	**Polystyrene** **Cat. No.** 352001 352017 352051 352057 **Polypropylene** **Cat. No.** 352006 352018 352059	**Polystyrene** **Cat. No.** 352027	**Polystyrene** **Cat. No.** 352025 352037	**Polystyrene** **Cat. No.** 352045

BD Falcon™ Tube Chemical Resistance Chart

	Polypropylene		Polystyrene	
	Room Temp.	50-60°C	Room Temp.	50-60°C
Acetaldehyde	■■	X	X	X
Acetic Acid, 5%	■■■	■■■	■■■	■■
Acetic Acid, 50%	■■■	■■■	■■	■■
Acetone	■■■	■■■	X	X
Acetonitrile	■	X	X	X
Ammonium Acetate, Saturated	■■■	■■■	■■■	■■■
Ammonium Hydroxide, 5%	■■■	■■■	■■■	■
Ammonium Hydroxide, 30%	■■■	■■	■■	■
n-Butyl Alcohol	■■■	■■■	■■■	■■
Chloroform	X	X	X	X
Chromic Acid, 50%	■■	■	■	■
Cyclohexane	■	X	X	X
Dimethylsulfoxide	■■■	■■■	■■■	■■
Ether	X	X	X	X
Ethyl Alcohol, 50%	■■■	■■	■■	■
Ethyl Alcohol, Absolute	■■■	■■	■	X
Ethylene Glycol	■■■	■■■	■■■	■■■
Formaldehyde, 10%	■■■	■■■	■	X
Formaldehyde, 40%	■■■	■■	X	X
Formic Acid, 5%	■■■	■■	■■■	■■
Formic Acid, 50%	■■■	■■	■	■
Glutaraldehyde	■■■	■■■	■■■	■
Glycerine	■■■	■■■	■■■	■■■
Glycerol	■■■	■■■	■■■	■■■
Hydrochloric Acid, 1-5%	■■■	■■■	■■■	■■■
Hydrochloric Acid, 35%	■■■	■■	■	■
Hydrogen Peroxide, 5%	■■■	■■■	■■■	■■
Hydrogen Peroxide, 30%	■■■	■■	■■■	■■
Isobutanol	■■■	■■■	■■	■■
Isopropanol	■■■	■■■	■■■	■■
Methyl Alcohol Methanol	■■■	■■■	■	X
Methyl Ethyl Ketone	■■■	■■	X	X
Nitric Acid, 1-10%	■■■	■■■	■■	X
Nitric Acid, 70%	X	X	X	X
Phenol, Liquid	X	X	X	X
Phosphoric Acid, 1-5%	■■■	■■■	■■■	■■■
Phosphoric Acid, 85%	■■■	■■	■■■	■■
Picric Acid	X	X	■■	■
Pine Oil	■■■	■■	X	X
Potassium Hydroxide, 1%	■■■	■■■	■■	■■
Potassium Hydroxide, Concentrated	■■■	■■■	■■	■■
Sodium Hydroxide, 50% to Saturated	■■■	■■■	■■■	■■■
Sulfuric Acid, 10%	■■■	■■	■■■	■■
Sulfuric Acid, 98% Concentrated	■	X	X	X
Trichloroacetic Acid	■	X	■	X
Tris Buffer, Solution	■■■	■■	■■	X

Compatibility with chemical:

■■■ Excellent

■■ Good

■ Fair

X Not recommended for continual use

Thermoplastics Properties Chart

Material	Properties Re: Lab Use	Clarity	Autoclave Results	Heat Distortion Point	Burning Rate	Weak Acids
Polystyrene (Styrene)	Biologically inert, hard, excellent optical qualities	Clear	Melts	147-175°F 64-80°C	Slow	None
High-Impact Polystyrene	Rubber content gives improved strength to styrene	Opaque	Melts	147-195°F 64-90°C	Slow	None
Styrene Acrylonitrile	Improved strength over polystyrene	Clear	Melts	195-200°F 90-93°C	Slow	None
Polyethylene (High-Density)	Biologically inert, high chemical resistance	Opaque	Withstands several cycles	250°F 121°C	Slow	None
Polyethylene (Low-Density)	Biologically inert, high chemical resistance	Opaque	Melts	105-120°F 40-49°C	Slow	None
Polypropylene	Biologically inert, high chemical resistance, exceptional toughness	Translucent	Withstands several cycles	250°F 121°C	Slow	None
Polycarbonate	Clear, very tough, inert, high temperature resistance	Clear	OK	280-290°F 138-143°C	Self Extinguishing	None
Methyl, Methacrylate (Plexiglass, Lucite)	Finest optical qualities, easily fabricated	Clear	Melts	160-190°F 71-88°C	Slow	Slight
Cellulose Acetate (Acetate)	Clear, tough, somewhat flexible	Clear	Melts	110-194°F 43-90°C	Slow	Slight
Nylon	Tough, heat resistant, machineable, high moisture vapor transmission	Opaque	OK	300-356°F 150-180°C	Self Extinguishing	None
P.T.E. (Teflon)	Biologically and chemically inert, high heat resistant, slippery surface	Opaque	OK	250°F 121°C	None	None
P.V.C. (Plasticised)	Inert, tough, clear, high chemical resistance	Clear	Melts	110-175°F 43-80°C	Self Extinguishing	None
Vinyl-Chloride (Goen, Saran)	Clear, popular as film material	Clear	Melts	130-150°F 54-66°C	Self Extinguishing	None
Cellulose Nitrate (Celluloid)	Tough, fairly clear	Clear	Melts	140-160°F 60-71°C	Fast (explosive)	Slight
Polypropylene Film	Clear film material	Clear	OK	260°F 126°C	Slow	None
Thermosetting Polyester Films (Mylar)	Clear film material	Clear	OK	258°F 121°C	Self Extinguishing	None

*Portions of this table courtesy of Modern Plastics Encyclopedia. Most data are from tests by ASTM methods. Tables show averages or ranges. Many properties vary with manufacturer, formulation, and testing laboratory. *Obtained from a table that lists gas permeability in cc/100 sq. in. per 24 hrs/mil.*

Thermoplastics Properties Chart

Effect of Laboratory Reagents (Routine Storage or Contact Periods)				**Gas Permeability of Thin-Wall Products***		
Strong Acids	**Weak Alkalies**	**Strong Alkalies**	**Organic Solvents**	**O_2**	**N_2**	**CO_2**
Oxidizing acids attack	None	None	Soluble in aromatic chlorinated hydrocarbons	Low	Very low	High
Oxidizing acids attack	None	None	Soluble in aromatic chlorinated hydrocarbons			
Oxidizing acids attack	None	None	Soluble-ketones, esters, and chlorinated hydrocarbons	Very low	Very low	Low
Oxidizing acids attack	None	None	Resistant below 80°C	High	Low	Very high
Oxidizing acids attack	None	None	Resistant below 60°C	High	Low	Very high
Oxidizing acids attack	None	None	Resistant below 175°F	High	Low	Very high
None	None	Slowly attacked	Soluble in chlorinated hydrocarbons—Part soluble in aromatics	Very low	Very low	Low
Oxidizing acids attack	Slight	Slight	Soluble in ketones, esters, aromatic hydrocarbons	Very high	Very low	
Decomposes	Slight	Decomposes	Softens in alcohol, soluble in ketones, esters	Very low	Very low	High
Attacked	None	None	Resistant	Very low	Very low	
None	None	None	Resistant			
None	None	None	Soluble in ketones, esters	Low		High
None	None	None	Slightly resistant to hydrocarbons, ketones, etc.	Low		High
Decomposes	Slight	Decomposes	Soluble in ketones and esters, softens in alcohol, slightly affected by hydrocarbons			
Oxidizing acids attack	None	None	Resistant below 175°F	High	Low	Very high
None	None	None	Good to excellent	Very low	Very low	Very low

Rotor/Adapter Selection Guide

Centrifuge	Rotor Name	Rotor Type*	Adapter for BD Falcon™ 15 ml Conical Tube	Adapter for BD Falcon™ 50 ml Conical Tube
Beckman Coulter, Inc.				
GS-15/R	S4180	SW	361230	361234
	C0650	FA	—	Dedicated 50 ml rotor
	C1015	FA	Dedicated 15 ml rotor	—
TJ-6/R	TH-4	SW	339276	339273
			359487, aerosol, set of 2	359488, aerosol, set of 2
			358991, aerosol, set of 4	358992, aerosol, set of 4
GS-6/R/K/KR	GH-3.8	SW	359151, set of 4	359154, set of 4
			359472, set of 2	359475, set of 2
			359487, aerosol, set of 2	359488, aerosol, set of 2
			358991, aerosol, set of 4	358992, aerosol, set of 4
Avanti 30	C0650	FA	—	Dedicated 50 ml rotor
	C1015	FA	Dedicated 15 ml rotor	—
Allegra X-12	SX4750	SW	359472, standard bucket, set of 2	393266, standard bucket, set of 2
Allegra X-15/R			359151, standard bucket, set of 4	393267, standard bucket, set of 4
		SW	359487, Aerosolve®, set of 2	359488, Aerosolve, set of 2
			358991, Aerosolve, set of 4	358992, Aerosolve, set of 4
	SX4750A	SW	359472, standard bucket, set of 2	393266, standard bucket, set of 2
			359151, standard bucket, set of 4	393267, standard bucket, set of 4
		SW	359487, Aerosolve, set of 2	359488, Aerosolve, set of 2
			358991, Aerosolve, set of 4	358992, Aerosolve, set of 4
	FX6100	FA	392270	392268
Allegra 6/R	GH-3.8	SW	359472, standard bucket, set of 2	393266, standard bucket, set of 2
Spinchron DLX			359151, standard bucket, set of 4	393267, standard bucket, set of 4
		SW	359487, Aerosolve®, set of 2	359488, Aerosolve, set of 2
			358991, Aerosolve, set of 4	358992, Aerosolve, set of 4
	GH-3.8A	SW	359472, standard bucket, set of 2	393266, standard bucket, set of 2
			359151, standard bucket, set of 4	393267, standard bucket, set of 4
		SW	359487, Aerosolve, set of 2	359488, Aerosolve, set of 2
			358991, Aerosolve, set of 4	358992, Aerosolve, set of 4
Allegra 21/R	F0685	FA	392270	392268
Spinchron 15/R	C0650	FA	—	Dedicated 50 ml rotor
	C1015	FA	Dedicated 15 ml rotor	—
	S4180	SW	361230	361234
Allegra X-22/R	SX4250	SW	392257	392258
	F0685	FA	392270	392268
	C0650	FA	—	Dedicated 50 ml rotor
	C1015	FA	Dedicated 15 ml rotor	—
Allegra 25R	TS 5.1-500	SW	368464	368461
	TA 10-250	FA	356964	356966
Allegra 64R	F0485	FA	392270	392268
	F0685	FA	392270	392268
	C0650	FA	—	Dedicated 50 ml rotor
	C1015	FA	Dedicated 15 ml rotor	—
J6 Large Cap.	JS-3.0, JS-4.0, JS-4.2,	SW	359151, set of 4	345386
	JS-5.2		359472, set of 2	
J2 Series or	JS-7.5	SW	356964, 4-place adapter	356966, 1-place adapter
Avanti J-25				362213 (set of buckets), 3-place
	JS-4.3	SW	359151, set of 4	359154, set of 4
			359472, set of 2	359475, set of 2
			359487, aerosol, set of 2	359488, aerosol, set of 2
			358991, aerosol, set of 4	358992, aerosol, set of 4
	JA-10, JLA-10.500	FA	356960, 4-place adapter	356965, 1-place adapter
	JA-12	FA	—	Dedicated 50 ml rotor
	JA-14	FA	356964, 4-place adapter	356966, 1-place adapter
	JA-18	FA	356962, 1 tube per adapter	356963, 1 tube per adapter
	F15B-8x50C**	FA	—	—
	F13B-14x50CY**	FA	—	—

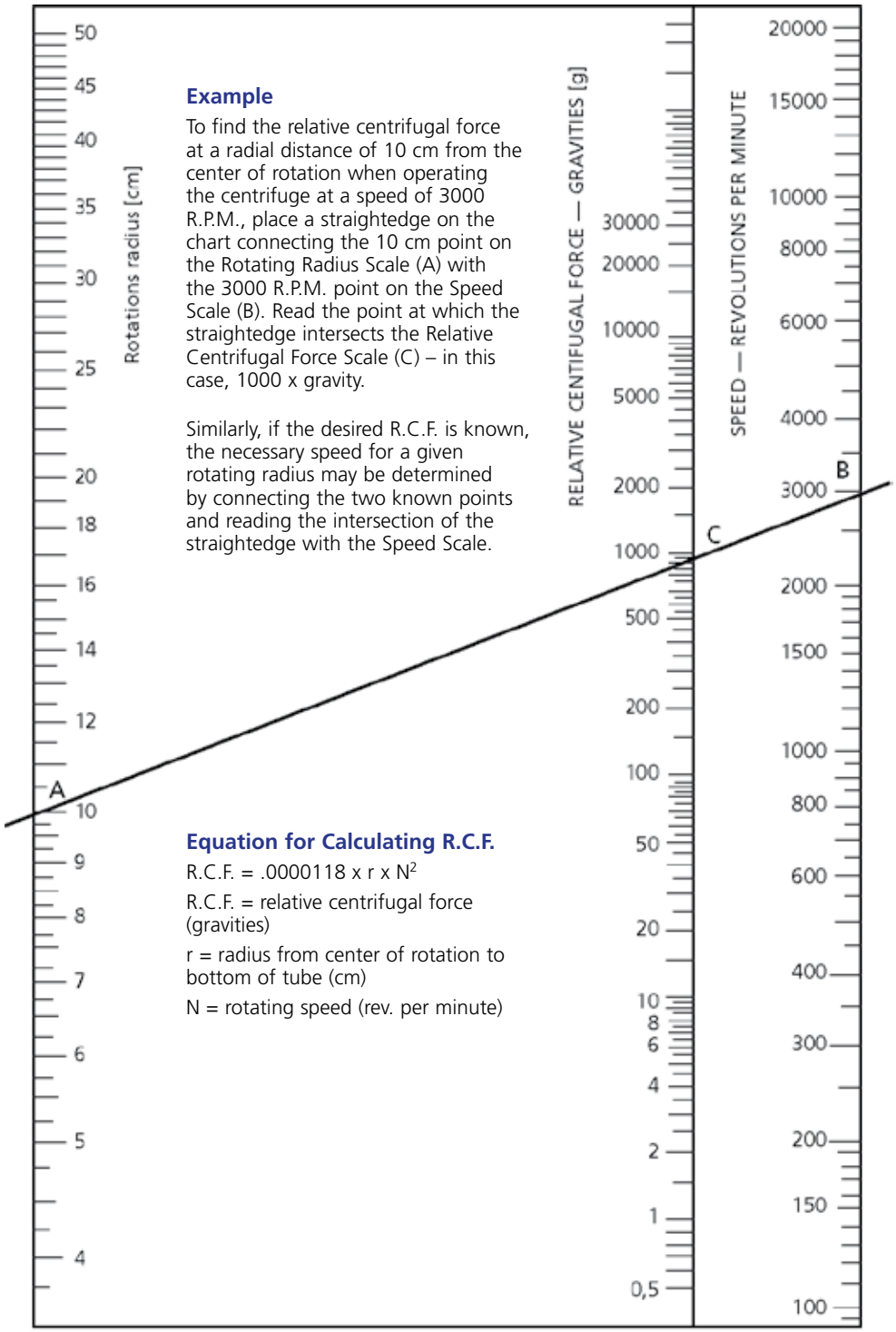
** SW: Swinging bucket; FA: Fixed angle*
*** Manufactured by Piramoon Technology Inc.*

Rotor/Adapter Selection Guide

Centrifuge	Rotor Name	Rotor Type*	Adapter for BD Falcon™ 15 ml Conical Tube	Adapter for BD Falcon™ 50 ml Conical Tube
Thermo Electron Corporation				
IEC	PR-7000M	FA	—	825, 8x50 ml
	3 Liter GP8F	SW	52165, 48x15 ml	52165, 20x50 ml
	3 Liter GP8F	SW	52285, 48x15 ml	52285, 20x50 ml
	3 Liter GP8	FA	—	825S, 8x50 ml
	1 Liter Multi	FA	—	8850, 8x50 ml
	1 Liter CL3R	SW	52437, TC 20x15 ml	52437, TC 8x50 ml
	1 Liter CL3	SW	—	52151, 4x50 ml***
	1 Liter CL3	FA	—	804S, 4x50 ml***
	1 Liter CL3	FA	58092, 12x15 ml, Centricon	—
	400ML CL2	SW	—	236, 4x50 ml
	400ML CL2	SW	—	52152, 8x50 ml
	400ML CL2	FA	—	58012, 6x50 ml
	400ML CL2	SW	—	52151, 4x50 ml
	400ML CL2	SW	52212, 6x15 ml	—
	400ML CL2	SW	52367, 8x15 ml	52367, 4x50 ml
Sorvall, Inc.				
TC-6	H-400	SW	78033	78035
GLC-2B/3 or	M	FA	03667	—
RC-3	SP/X	FA	00363	None required
	HL-4 w/omnicarrier	SW	00565	00648
	HL-4 w/carrier 00624	SW	—	00630
	HL-4 w/carrier 00634	SW	00363	—
RT-6000B/D or	A-384	FA	None required	—
T-6000B/D	A-500	FA	00363	None required
	A/S-400	FA	11148	None required
	H-1000B	SW	00884 or 11018 with 11152	00438 or 11148 with 11152
RT-7	RTH-250	SW	00884 or 11018 with 11152	00438 or 11148 with 11152
	RTH-750	SW	00447	00436-3 places or 00445-5 places
	SL-50T	FA	00402	—
RC-3B/C or	LA/S-400	FA	11148	None required
RC-3B/C Plus	H-2000B	SW	00884 or 11018 with 11152	00438 or 11148 with 11152
	HG-4L, H-4000, H-6000A	SW	00892	00436-3 places or 00445-5 places
Super T-21	SL-50T, SL-50RT	FA	00402	—
	SL-250T	FA	00456	03072
	STH-750	SW	00447	00436-3 places or 00445-5 places
RC-5B/C or	GSA, SLA-1000, SLA-1500	FA	00456	03072
RC-5BC/Plus or	SLA-600TC	FA	74232	None required
RC-24 or	GS-3, SLA-3000	FA	00456 and 00614	00614 and 03072
RC-26	SH-3000	SW	00447	00436-3 places or 00445-5 places
	HS-4 w/carrier 00479	SW	00456	03072
	HS-4 w/carrier 00481	SW	None required	None required
	HS-4 w/carrier 00480	SW	—	00363
	F15S-8x50C**	FA	—	—
	F13S-14x50CY**	FA	—	—
RC-28S	SL-250T	FA	00456	03072
	F-16/250	FA	00456	03072

** SW: Swinging bucket; FA: Fixed angle*
*** Manufactured by Piramoon Technology Inc.*
**** Requires 50968 Quick Release Shaft Adapter*

Nomograph for R.C.F. Determination



Example

To find the relative centrifugal force at a radial distance of 10 cm from the center of rotation when operating the centrifuge at a speed of 3000 R.P.M., place a straightedge on the chart connecting the 10 cm point on the Rotating Radius Scale (A) with the 3000 R.P.M. point on the Speed Scale (B). Read the point at which the straightedge intersects the Relative Centrifugal Force Scale (C) – in this case, 1000 x gravity.

Similarly, if the desired R.C.F. is known, the necessary speed for a given rotating radius may be determined by connecting the two known points and reading the intersection of the straightedge with the Speed Scale.

Equation for Calculating R.C.F.

R.C.F. = .0000118 x r x N^2

R.C.F. = relative centrifugal force (gravities)

r = radius from center of rotation to bottom of tube (cm)

N = rotating speed (rev. per minute)

BD FACSAria™ Flow Cytometer

BD Falcon™ Sterile Tubes (12 x 75 mm) with Cell Strainer Cap

BD Falcon™ Tubes

For optimal operation of BD FACS™ Cytometer Instruments, we especially recommend the use of BD Falcon™ 5ml Round-Bottom, Polystyrene Tubes.

Table of Contents

BD Falcon™ Cell Cultureware

Trust BD Falcon™, the first name in cell culture

As the first company to produce sterile, disposable labware more than 50 years ago, BD Biosciences is a worldwide leader in top-quality cell culture products. If you're looking for reliability, consistency, and convenience, trust the company with a reputation for delivering quality.

BD Falcon™ Cell Culture Flasks

- Vacuum-gas plasma tissue culture-treatment provides consistent cell attachment, spreading, and growth
- Choose standard tissue culture, BD Primaria,™ or non-treated polystyrene growth surfaces to meet your individual cell culture requirements

Tissue culture-friendly packaging

- Convenient reseal tab on the bag
- Innovative bag materials that will not scuff or scratch the flask's optical surface
- Double-wall bags provide increased sterility assurance
- Medical-style, peel-open bags guarantee that flask sterility is maintained
- Recyclable bag material (Low Density Polyethylene)
- Knife not required for case opening

225 cm² Flasks

- Innovative shape permits access to all corners with a pipet or scraper
- Patented Locking Incubation Position prevents caps from falling off or closing while in the open position
- Plug-seal or vented cap available
- Precision engineered cap spins on quickly
- Skirted, canted neck adds stability to neck area of flask
- Large frosted writing area
- Vertical graduations up to 400 ml
- 100 ml maximum horizontal working volume line

Low profile 150 cm² Flasks

- Low profile for efficient stacking and incubator utilization
- Patented Locking Incubation Position prevents caps from falling off or closing while in the open position
- Precision engineered cap spins on quickly
- Innovative shape permits access to all corners with a pipet or cell scraper

BD Falcon™ Cell Culture Flasks

- Sterilized by gamma irradiation
- Non-pyrogenic
- Volumetric graduations and writing patch
- Vented caps incorporate a 0.2 µm hydrophobic membrane
- Phenolic caps contain non-toxic liners
- Manufactured under a registered ISO 9001 Quality System
- Growth area and volume are nominal

Description	Cap Style	Qty./Case	Cat. No.
12.5 cm² Canted Neck **Total Volume: 25 ml** **Qty.: 10/bag**			
Standard TC*	Plug-seal	100	**353018**
Standard TC	Vented	100	**353107**
25 cm² Canted Neck **Total Volume: 50 ml** **Qty.: 20/bag**			
Standard TC	Plug-seal	200	**353014**
Standard TC	Vented	100	**353108**
BD Primaria™ TC	Plug-seal	200	**353813**
BD Primaria TC	Vented	100	**353808**
25 cm² Canted Neck **Total Volume: 70 ml** **Qty.: 20/bag**			
Standard TC	Plug-seal	200	**353082**
Standard TC	Vented	100	**353109**
Standard TC	Phenolic	200	**353081**
Non-treated	Plug-seal	200	**353009**
75 cm² Straight Neck **Total Volume: 250 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	100	**353024**
Standard TC	Vented	100	**353110**
Standard TC	Phenolic	100	**353023**
BD Primaria TC	Plug-seal	100	**353824**
BD Primaria TC	Vented	100	**353810**

**TC = Tissue Culture*

Description	Cap Style	Qty./Case	Cat. No.
75 cm² Canted Neck **Total Volume: 250 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	60	**353135**
Standard TC	Vented	60	**353136**
Standard TC	Phenolic	60	**353134**
Non-treated	Plug-seal	60	**353133**
150 cm² Canted Neck **Total Volume: 600 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	40	**355000**
Standard TC	Vented	40	**355001**
175 cm² Straight Neck **Total Volume: 750 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	40	**353028**
Standard TC	Vented	40	**353112**
Standard TC	Phenolic	40	**353045**
Bar-Coded 175 cm² Straight Neck - Compatible with robotic cultivation systems, e.g. The Automation Partnership's SelecT™ **Total Volume: 750 ml** **Qty.: 5/bag**			
Standard TC	Vented	40	**353118**
225 cm² Canted Neck **Total Volume: 800 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	30	**353139**
Standard TC	Vented	30	**353138**
300 cm² Straight Neck **Total Volume: 1900 ml** **Qty.: 1/bag**			
Standard TC	Plug-seal	12	**353099**
Standard TC	Vented	12	**353113**

TIPS

- Use BD Falcon™ non-treated cell culture flasks for suspension cultures.
- For enhanced cell performance, BD BioCoat™ Flasks are available with pre-applied matrix proteins. *(See Chapter 6)*

BD Falcon™ Flask Caps

- A variety of caps to suit your cell culture requirements

Plug-seal, vented, and phenolic caps.

Plug-Seal Caps

BD Falcon™ polyethylene plug-seal caps provide a liquid-tight seal when closed and an open-incubation position for reliable gas exchange when partially opened. A reference bar on the outside of the cap is aligned with the "BD Falcon" on the flask for precise open-incubation conditions.

Convenient Vented Caps

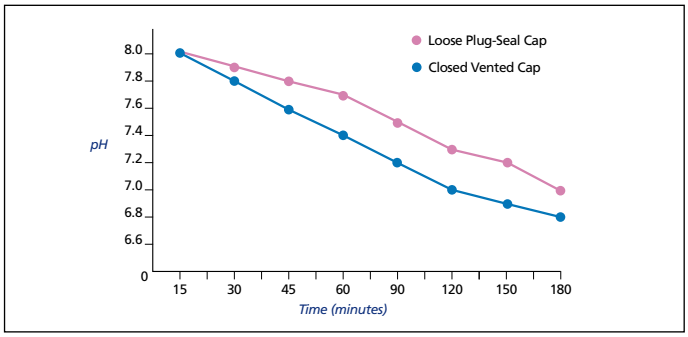
Ensure Consistent Gas Exchange and Minimize Contamination

Polyethylene caps with an integral, hydrophobic 0.2 µm microporous membrane filter vent allow consistent gas exchange when the caps are in the closed position ***(Graph 1)***. Gases required for cell growth and metabolism pass freely through the vent while microorganisms cannot. BD Falcon vented caps will not wet out.

Vented caps minimize contamination associated with standard open incubation. The vented caps prevent media that can become trapped in a partially opened cap from blocking gas exchange. The caps will not fall off in the incubator because of vibration.

Phenolic Caps

The rigid cap material allows the cap to be easily spun onto the neck during repetitive manipulations. The special non-cytotoxic liner in BD Falcon phenolic caps makes a tight seal with the top rim of the flask neck to provide a reliable liquid or gas-tight seal.



Graph 1
pH equilibration using vented caps after flasks are placed in an incubator (175 cm² Flasks, 5% CO_2 incubator)

Vented Caps for BD Falcon™ Flasks

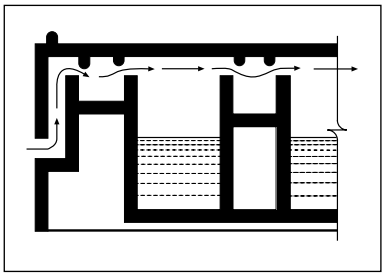
Description	Qty./Case	Cat. No.
For use on 25 cm² Flasks	100	**354637**
For use on 75 cm² Flasks	100	**354638**
For use on 175 cm² Flasks	50	**354639**

TIPS

Corrugated cardboard boxes are a source of particulates and associated microbial contamination and should not be kept in the tissue culture area. BD Biosciences has eliminated corrugated trays from most cases to reduce package waste. You can further reduce contamination due to corrugate by wiping the outside of any package or bag with alcohol or an appropriate disinfectant before putting it under the hood.

BD Falcon™ Multiwell Cell Culture Plates

- Patented labyrinth lid, condensation rings, and deep-well design control contamination, reduce evaporation, and minimize edge effects
- Reliable vacuum-gas plasma tissue culture treatment provides well-to-well and plate-to-plate consistency



Low-Evaporation Lid
An innovative labyrinth air-passage system provides a tortuous path for gas exchange across BD Falcon plates. This patented feature reduces evaporation and minimizes contamination.

Reliable growth surfaces assure consistent cell performance

All tissue culture treatments render polystyrene hydrophilic and result in the incorporation of a variety of anionic functional groups that support cell culture. To ensure reproducible results and conditions, all BD Falcon™ tissue culture treatment is performed in a vacuum chamber.

BD Primaria™ tissue culture treatment additionally incorporates nitrogen-containing functional groups that have been shown to improve attachment and spreading of some cell types.

BD Falcon non-treated plates have a more hydrophobic surface and show reduced cell attachment.

Cell tests ensure consistent results

A sensitive clonogenic assay[1] using MRC-5 cells, a diploid human fibroblast line, is used to validate the manufacturing process for each BD Falcon and Tissue Culture (TC) product. Routine testing of standard TC products is performed by testing growth to confluency at 72 hours with MRC-5 cells. The surface chemistry of each lot of BD Primaria products is confirmed by Electron Scanning for Chemical Analysis (ESCA).

1. Alphanumeric well identification
2. One-way lid
3. Condensation rings
4. Low-evaporation labyrinth lid
5. Deep wells
6. Serrated gripping panels
7. Writing patch

REFERENCE:
1. Freshney, R.I., Culture of animal cells: a manual of basic technique, 2d ed., Wiley-Liss, London, p. 83 (1987).

BD Falcon™ Multiwell Cell Culture Plates

- Crystal-grade virgin polystyrene
- Sterilized by gamma irradiation
- Non-pyrogenic
- Non-treated polystyrene, standard tissue culture (TC), and BD Primaria™ surface treatments available
- Convenient, peel-open medical-style packaging for sterile product presentation
- Individual and Ready-Stack (RS) trays are PET (Code 1) and recyclable

Description	Qty./Pkg.	Qty./Case	Cat. No.
6-well flat-bottom with lid **Growth Area: 9.6 cm²** **Well Volume: 15.5 ml**			
Standard TC*	1/tray	50	**353046**
Standard TC	6/bag	36	**353224**
Standard TC	10/RS tray	60	**353934**
BD Primaria TC	1/tray	50	**353846**
Non-treated	1/tray	50	**351146**
12-well flat-bottom with lid **Growth Area: 3.8 cm²** **Well Volume: 6.0 ml**			
Standard TC	1/tray	50	**353043**
Standard TC	6/bag	36	**353225**
Non-treated	1/tray	50	**351143**
24-well flat-bottom with lid **Growth Area: 2.0 cm²** **Well Volume: 3.5 ml**			
Standard TC	1/tray	50	**353047**
Standard TC	6/bag	36	**353226**
Standard TC	10/RS tray	60	**353935**
BD Primaria TC	1/tray	50	**353847**
Non-treated	1/tray	50	**351147**
48-well flat-bottom with lid **Growth Area: 0.75 cm²** **Well Volume: 1.4 ml**			
Standard TC	1/tray	50	**353078**
Standard TC	6/bag	36	**353230**
Non-treated	1/tray	50	**351178**

Description	Qty./Pkg.	Qty./Case	Cat. No.
96-well flat-bottom with lid **Growth Area: 0.32 cm²** **Well Volume: 0.37 ml**			
Standard TC	1/tray	50	**353072**
Standard TC	5/bag	50	**353075**
Standard TC	14/RS tray	84	**353936**
Standard TC	25/bag	100	**353916**
BD Primaria TC	1/tray	50	**353872**
Non-treated	1/tray	50	**351172**
96-well flat-bottom without lid **Growth Area: 0.32 cm²** **Well Volume: 0.37 ml**			
Standard TC	1/tray	50	353070
96-well U-bottom with lid **Growth Area: 0.36 cm²** **Well Volume: 0.32 ml**			
Standard TC	1/tray	50	**353077**
Standard TC	5/bag	50	**353227**
Standard TC	25/bag	100	**353917**
Non-treated	1/tray	50	**351177**
96-well U-bottom without lid **Growth Area: 0.36 cm²** **Well Volume: 0.32 ml**			
Standard TC	1/tray	50	**353076**
96-well lid and film			
Lid, sterile	1/bag	50	**353071**
Acetate Sealing Film, non-sterile	200	200	**353073**

*TC = Tissue Culture

TIPS

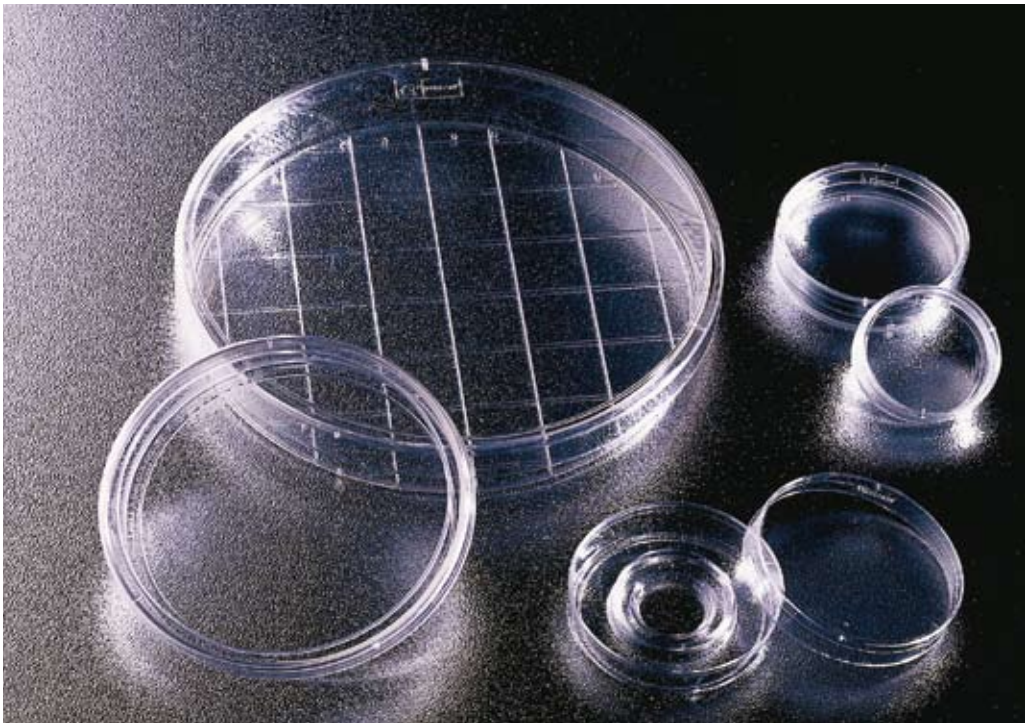
- Contact your local BD office for information on special packaging, labeling (e.g., bar coding) or for additional BD Primaria configurations.
- Contact your materials management department to find out about PET recycling in your community.
- For enhanced cell performance, BD BioCoat™ Plates are available with pre-applied matrix proteins. *(See Chapter 6)*

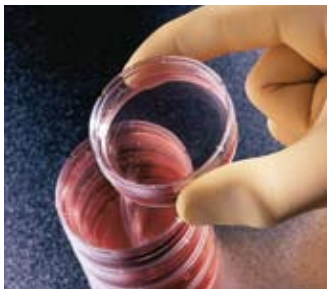
RELATED PRODUCTS

BD BioCoat™ Multiwell Plates..... chapter 6
BD BioCoat™ Assay Plates 104
BD Falcon™ HTS Microplates..... 170

BD Falcon™ Cell Culture Dishes

- Flat, optically clear polystyrene surfaces for distortion-free microscopic visualization of cells
- Uniform surface chemistry created by vacuum-gas plasma treatment promotes cell attachment





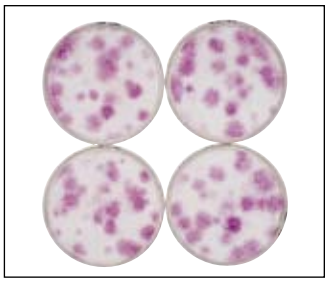
BD Falcon™ Easy-Grip Dishes
The unique design and frosted rim (above) improve the handling of small dishes. The ability to pick up a small dish conveniently without accidentally removing the lid allows you to work faster and improves aseptic manipulation.

Designed for cell culture

- Flat, distortion-free optics
- Lids designed for optimal gas exchange
- Stacking rings allow for easier stacking and handling
- Vacuum-gas plasma treatment permanently and consistently modifies the cell growth surface
- Standard tissue culture surface is hydrophilic and contains a variety of negatively charged functional groups that support cell attachment and spreading
- BD Primaria™ tissue culture surface additionally incorporates nitrogen-containing functional groups and has been shown to support improved attachment, spreading, and differentiation of some cell types

Cell performance tests ensure consistent results

A sensitive clonogenic assay[1] using MRC-5 cells, a diploid human fibroblast line, is used to validate the manufacturing process for each BD Falcon tissue culture product. Routine testing of standard tissue culture products is performed by testing growth to confluency at 72 hours with MRC-5 cells. The surface chemistry of each lot of BD Primaria™ products is confirmed by ESCA.



Tissue Culture Process Validation
Each BD Falcon tissue culture product is developed using a sensitive clonogenic assay[1]. Shown here is a 35 mm dish with MRC-5 cells stained with crystal violet.

REFERENCE:
1. Freshney, R.I., Culture of animal cells: a manual of basic technique, 2d ed., Wiley-Liss, London, p. 83 (1987).

BD Falcon™ Cell Culture Dishes

- Non-pyrogenic
- Sterilized by gamma irradiation
- Packaged in peel-open, medical-style bags
- Crystal-grade virgin polystyrene
- Non-treated polystyrene, standard Tissue Culture (TC), and BD Primaria™ surface treatment available

35 x 10 mm Easy-Grip Dishes

Actual Dimensions: 40.28 mm O.D. x 6.17 mm
Actual Growth Area: 11.78 cm²
Working Volume: 2.5-3.0 ml

Description	Qty./Sleeve	Qty./Case	Cat. No.
Standard TC*	20	500	**353001**
BD Primaria TC	20	200	**353801**

60 x 15 mm Standard Dishes

Actual Dimensions: 54.81 mm O.D. x 13.26 mm
Actual Growth Area: 21.29 cm²
Working Volume: 6.0-7.0 ml

Description	Qty./Sleeve	Qty./Case	Cat. No.
Standard TC	20	500	**353002**
BD Primaria TC	20	200	**353802**
IVF TC**	20	500	**353652**

60 x 15 mm Easy-Grip Dishes

Actual Dimensions: 52.10 mm O.D. x 13.13 mm
Actual Growth Area: 19.5 cm²
Working Volume: 6.0-7.0 ml

Description	Qty./Sleeve	Qty./Case	Cat. No.
Standard TC	20	500	**353004**

100 x 20 mm Standard Dishes

Actual Dimensions: 89.43 mm O.D. x 19.18 mm
Actual Growth Area: 58.95 cm²
Working Volume: 16.0-17.5 ml

Description	Qty./Sleeve	Qty./Case	Cat. No.
Standard TC	20	200	**353003**
BD Primaria TC	20	200	**353803**

150 x 25 mm Gridded Dish

(20 mm grid molded in base)
Actual Dimensions: 142.57 mm x 24.77 mm
Actual Growth Area: 156.36 cm²
Working Volume: 45.0-50.0 ml

Description	Qty./Sleeve	Qty./Case	Cat. No.
Standard TC	10	100	**353025**

60 x 15 mm Center-Well Organ Culture Dish

Actual Dimensions: 54.84 mm O.D. x 13.56 mm
Growth Area in Well: 2.89 cm²

Description	Qty./Sleeve	Qty./Case	Cat. No.
Standard TC	20	500	**353037**
IVF TC**	20	500	**353653**

**TC = Tissue Culture*
***IVF TC* = In Vitro *Fertilization Certified Tissue Culture*

TIPS

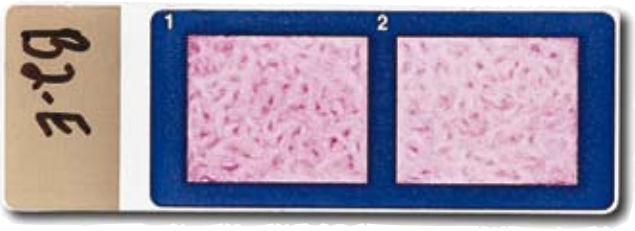
- If you work with 35 mm or 60 mm dishes, try our BD Falcon™ Easy-Grip Dishes. For more information or to receive a sample, call your local BD office.
- Non-treated polystyrene products are equivalent to bacteriological-grade polystyrene products. BD Biosciences offers dishes for *in vitro* fertilization that are certified non-embryotoxic.
- Certification is based on a statistically relevant sample taken from each lot that is tested for embryotoxicity. See page 49 for additional information.
- For enhanced cell performance, BD BioCoat™ Dishes are available with pre-applied matrix proteins. *(See Chapter 6)*

RELATED PRODUCTS

BD Falcon™ CultureSlides

- Safe and easy chamber removal for microscopic analysis
- Innovative sealing design

Simple Vessel Removal for Microscopic Analysis
A simple Safety Removal Tool lifts the plastic vessel off the glass slide. The adhesive gasket remains with the vessel, not on the slide, facilitating further processing or placement of coverslips.



Photograph of primary bovine aortic endothelial cells grown on BD Falcon™ CultureSlides and stained with crystal violet. The blue hydrophobic grid defines the cell culture area. A white writing patch provides clear sample identification. Well location numbers etched in the grid are clearly visible.

Partial list of cells cultured on BD Falcon™ CultureSlides

- Glioblastoma
- NLBT-2 line
- HEp-2 cells
- MRC-5 cells
- Fibroblasts: human foreskin
- E6 cells infected with HSV, CMV
- FS cells infected with HSV, CMV
- Primary rat skeletal muscle (with BD Matrigel™ Matrix)
- Primary ventral spinal cord (with PDL/Laminin)
- Primary neurons (with Fibronectin, Laminin, Polyornithine, ECM Fragments)
- Primary bovine aortic endothelium (Fibronectin)
- PC-12 cells (Polyornithine/Laminin; PDL/Laminin)
- Primary SC6 rat cells (Collagen)
- Glial cells (Tenascin)

BD Falcon™ CultureSlides for *in situ* analysis

BD Falcon CultureSlides allow you to culture cells and then analyze them on a glass microscope slide. Cells are grown in a plastic chamber affixed to a specially prepared glass microscope slide. Cells can be fixed and stained in place without disruption of the cell monolayer. The chamber is easily and safely removed with an easy-to-use, disposable Safety Removal Tool.

Designed for consistent cell culture results

- Specially cleaned and triple-rinsed glass slides
- Performance validated with HEp-2 and BAE cells
- Tested for 72-hour confluency with MRC-5 and BAE cells

Features

- 1.2 mm beveled-edge slide, 25 mm x 75 mm, soda-lime glass
- Pressure-sensitive, biocompatible, non-migrating, acrylic-adhesive gasket
- Blue hydrophobic border defines cell culture areas
- Polystyrene vessel, lid, and tool
- Supplied with disposable Safety Removal Tool
- Wells numbered for easy identification
- Sterile
- Trays designed for use in incubator
- Shelf life specified on each package

Description	Qty./Pkg.	Qty./Case	Cat. No.
1-well			
Total Volume per Well: 6.0-7.0 ml			
Working Volume per Well: 3.0-5.0 ml			
8.6 cm^2	12	96	**354101**
8.6 cm^2	12	24	**354111**
2-well			
Total Volume per Well: 3.5-4.0 ml			
Working Volume per Well: 1.5-2.5 ml			
4.0 cm^2	12	96	**354102**
4.0 cm^2	12	24	**354112**
4-well			
Total Volume per Well: 1.5-1.7 ml			
Working Volume per Well: 0.7-1.25 ml			
1.7 cm^2	12	96	**354104**
1.7 cm^2	12	24	**354114**
8-well			
Total Volume per Well: 0.7-0.75 ml			
Working Volume per Well: 0.3-0.5 ml			
0.7 cm^2	12	96	**354108**
0.7 cm^2	12	24	**354118**

TIPS

- For enhanced cell performance, BD BioCoat™ CultureSlides are available with pre-applied matrix proteins. *(See Chapter 6)*

RELATED PRODUCTS

BD BioCoat CultureSlides..... 83,87,97,99,103

BD Falcon™ Roller Bottles

- Manufactured in a Class 100,000 clean room
- One-piece design compatible with manual or automated filling systems
- Proprietary bottle manufacturing process provides greater impact resistance
- Available with smooth, or pleated surface, standard or vented cap
- Custom packaging, labeling, and lot control available on request

BD Falcon™ TufRol™ Roller Bottles

The BD Falcon™ TufRol™ Roller Bottle has a one-piece design. While polystyrene does not normally offer high-impact resistance, the BD Falcon TufRol Roller Bottle is manufactured using a proprietary manufacturing process that provides good impact resistance. This inherent high-strength feature reduces the risk of messy spills and loss of precious contents during accidental mishandling.

Roller bottles are used in both research and manufacturing applications involving the scale-up of mammalian cells for purposes of virus propagation and bioproduct production. BD Falcon Roller Bottles are tissue culture-treated, non-pyrogenic and sterilized by gamma irradiation. Our roller bottles are manufactured under a registered ISO 9001 Quality System.

BD Falcon™ TufRol™ EZ Roller Bottles

Design enhancements to the neck, cap, shoulders, and bottom of the BD Falcon TufRol EZ Roller Bottle optimizes yields while ensuring ease of use. Recommended for manual operations.

Multiple Cap Styles and Surface Types

BD Falcon Roller Bottles are available with a smooth surface with a growth area of 850 cm^2 or a pleated surface with a growth area of 1450 cm^2.
Easy on/off or vented cap styles are available. The vented cap has an integral hydrophobic 0.2 µm microporous membrane filter vent, allowing consistent gas exchange when the cap is in the closed position.

Automation-Friendly

BD Falcon Roller Bottles are compatible with manual or automated filling systems. Our Roller Bottles are supplied with easy on/off, polyethylene caps that are designed to prevent misthreading and to provide a secure seal.

Custom Products

Since many industrial customers have special requirements relative to labeling, lot control, packaging configurations and delivery schedules, we are able to develop custom services and products to suit individual needs. As with all BD Biosciences products, certification is available upon request.

BD Falcon™ TufRol™ Roller Bottles

Description	Qty./Bag	Qty./Case	Cat. No.
Smooth Surface **Growth Area: 850 cm^2**			
Easy on/off Caps	2	20	**353007**
Easy on/off Caps	20	20	**353008**
Easy on/off Caps	20 (double bagged)	20	**353088**
Vented Caps	2	20	**353068**
Pleated Surface **Growth Area: 1450 cm^2**			
Easy on/off Caps	20	20	**353079**
Vented Caps	20 (double bagged)	20	**353069**
Caps			
Easy on/off	250	500	**358027**
Vented	250	500	**353101**

BD Falcon™ TufRol™ EZ Roller Bottles

Description	Qty./Bag	Qty./Case	Cat. No.
Smooth Surface **Growth Area: 850 cm^2**			
Deep Indent			
EZ Twist Caps	2	20	**353151**
EZ Twist Caps	20	20	**353152**
EZ Twist Caps	20 (double bagged)	20	**353153**
EZ Twist Vented Caps	2	20	**353154**
Shallow Indent			
EZ Twist Caps	2	20	**353160**
EZ Twist Caps	20 (double bagged)	20	**353161**
EZ Twist Vented Caps	2	20	**353162**

Separate caps for BD Falcon TufRol EZ Roller Bottles are available on request.

TIPS

- Expanded-surface roller bottles should be used on roller racks with the speed set below that used for smooth surface bottles for the same cell type (typically below 1 R.P.M., often as low as 0.1 RPM).
- For enhanced cell performance, BD Falcon Roller Bottles are available with pre-applied matrix proteins (as custom products). *(See Chapter 6)*

BD Cell™ MAb Medium

- Medium formulated to provide high-yield monoclonal antibody (MAb)

Three formulations of BD Cell™ MAb medium have been developed to maximize antibody production in highly aerated culture systems. The CELLine™ flask, with aeration occurring through a silicon membrane in the flask base, is a compact and easy-to-use device that will help optimize antibody production in BD Cell MAb media.

BD Cell media will support a wide variety of myeloma fusion partners and hydromas, including Sp2/0, NS-1, P3X63Ag9, and FOX-NY. In addition, BD Cell Media have been used successfully for secreted protein production using CHO cell lines. BD Cell MAb media have been found to produce as much as ten times more antibody when compared with conventional media. Due to the unique formulation of these media, cells can retain viability for longer periods of time and require much less handling than conventional media.

BD Cell MAb media have been found to work well in cell fusions, thus eliminating the adaptation process for new clones. Normal fusion procedures can be followed with the substitution of BD Cell media.

The three formulations of BD Cell MAb media are offered to suit either research or production requirements. Serum-Free and Animal Component-Free formulations can be used in production situations where the variability due to serum or the presence of serum proteins are undesirable.

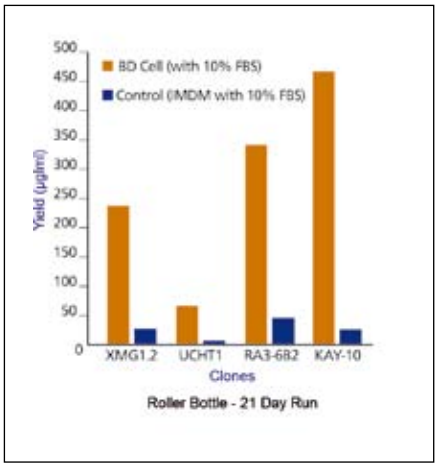
BD Cell™ Basal MAb Medium is a basal medium that requires serum supplementation.* The serum concentration in the cultivation compartment should be roughly double your standard serum concentration. This medium contains L-glutamine and phenol red. It does not contain animal components, pluronic acid, or other surfactants.

The BD Cell™ Serum-Free MAb Medium is a complete medium that does not require serum supplementation. This medium contains L-glutamine and phenol red and has a total protein concentration of 1.1 mg/ml. The majority of the protein is bovine serum albumin. It does not contain pluronic acid or other surfactants.

The BD Cell™ Animal-Free Medium is a complete medium that does not require serum supplementation. This medium contains no animal components. BD Cell Animal-Free Medium contains L-glutamine and is supplemented with 0.3% Select Soytone. It does not contain phenol red, pluronic acid, other surfactants, or attachment factors.

** The serum supplemented media should only be placed in the cell cultivation chamber of a CELLine™ flask.*

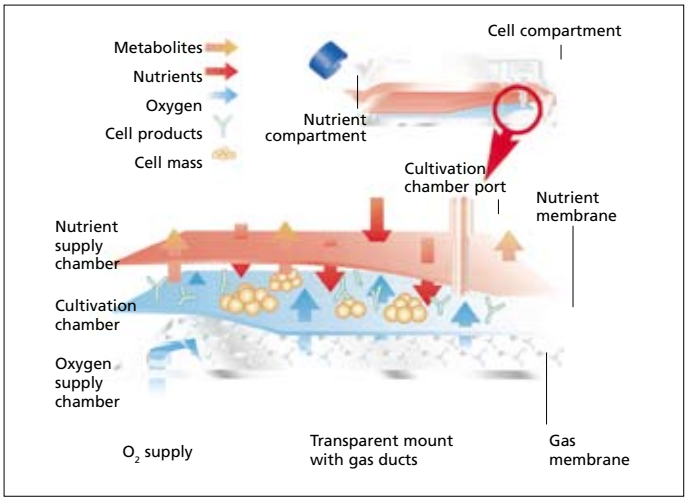
Description	Qty.	Cat. No.
BD Cell MAb Basal Medium	1000 ml	**220511**
BD Cell Serum-Free MAb Medium	1000 ml	**220509**
BD Cell Animal-Free Medium	1000 ml	**220513**



Yield analysis of BD Cell using Protein-G purification

CELLine™ 1000 System

- Cultivation flask for secreted product



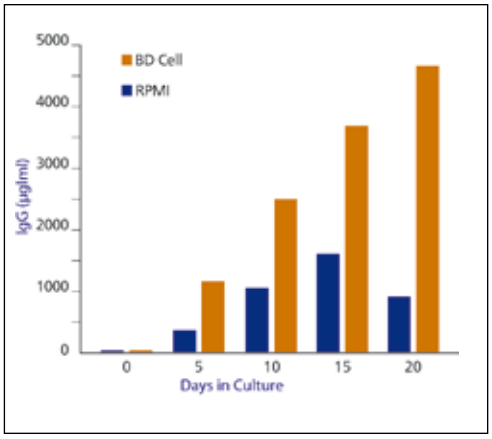
CELLine Membrane Technology
Cells are maintained in a 15 ml cultivation chamber that is separated from a one liter nutrient supply compartment by a semi-permeable membrane. Nutrients and other small molecules pass across the semi-permeable, cellulose acetate membrane into the cell cultivation chamber. Cell-secreted product with a molecular weight greater than 10,000 Dalton are retained in the cell growth chamber of the device. A molded silicone membrane on the bottom of the device allows oxygen to reach the cells from underneath. The cells settle upon the silicone membrane at the bottom of the cell compartment, which provides direct access to oxygen and carbon dioxide gases that rapidly diffuse across the membrane. This approach leads to high cell concentrations within the small volume of medium in the cell cultivation chamber.
Separate ports provide selective access to the nutrient supply chamber and the cultivation chamber. The solid white cap identifies the cultivation chamber port while a blue vent cap identifies the nutrient supply chamber. The cell chamber is accessed via the cultivation chamber port using a serological pipet. The total system is transparent to allow for visibility.

CELLine™ System: Cultivation Flask for Secreted Product

The CELLine™ 1000 System is a novel, multi-chamber cell cultivation system based on membrane technology. This system is easy to use and supports high cell densities, making it ideal for high-yield monoclonal antibody production and recombinant protein expression.

Monoclonal antibodies (MAbs) have become increasingly important as research tools. The primary methods available to generate research quantities of MAbs (10-500 mg) are static tissue culture, spinner or roller systems, and ascites fluid from mice. As the demand for MAbs has increased, there has been an emerging need for alternative *in vitro* production methods that will reduce animal use, simplify downstream processing, and reduce variability in production runs. The effort to identify a production method that meets these requirements culminated in the development of the CELLine 1000 System.

When used in conjunction with BD Cell™ MAb Medium, the CELLine 1000 System generates antibody concentrations comparable to those derived from ascites fluid. Moreover, the amount of antibody produced in one CELLine flask is equivalent to that derived from 12 mice. The harvest volumes result in antibody concentrations that are 50-100 times higher than roller bottles and tissue culture flasks. Using the enclosed protocols for BD Cell MAb media, the CELLine flask can generate an average yield of 30-150 mg of antibody every two weeks. A typical preparation of monoclonal antibody will range in concentration from 1-5 mg/ml.

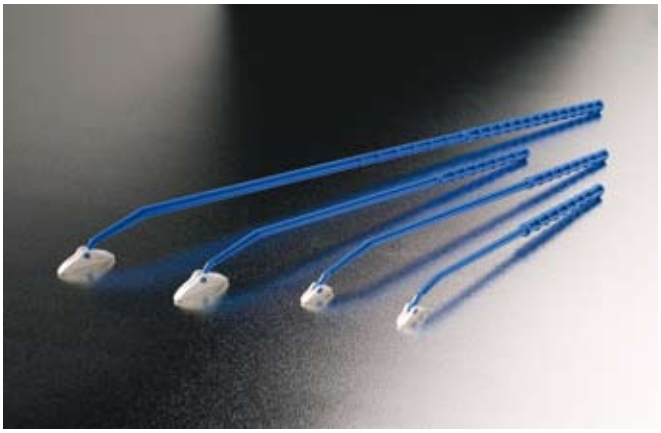


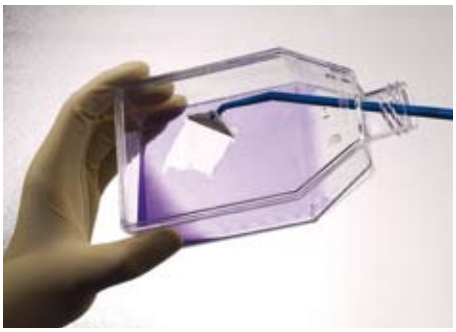
Antibody production comparing BD Cell Basal medium with serum in a CELLine Device to RPMI with serum.

Description	Qty./Case	Cat. No.
CELLine CL-1000	3 flasks	**353137**

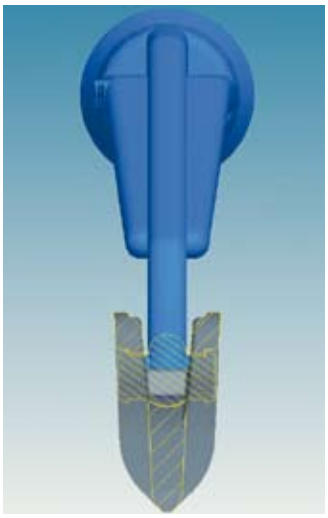
BD Falcon™ Cell Scrapers

- The new and improved BD Falcon™ Cell Scrapers have been thoughtfully designed to provide maximum accessibility to the growth surfaces in a variety of culture vessels
- Cross-ribbed polystyrene handle provides greater rigidity to ensure better control while scraping cells
- Highly compliant thermoplastic elastomer (TPE) blade pivots to provide multiple angles to remove cells from the entire growth surface
- Flexibility of the joint between the blade and handle improves ease of access into the neck of a flask or roller bottle
- Available in four sizes – choose the blade and handle length to best accommodate your needs
- Supplied individually in peel-open, medical-style packaging for sterile presentation

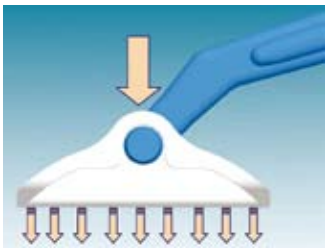




The new BD Falcon Cell Scraper (Cat. No. 353089) has a larger blade to increase cell scraping efficiency in both BD Falcon Dishes and 75 cm² Flasks.



Larger handle diameter for better gripping. Sharper scraping edge and more compliant blade material.

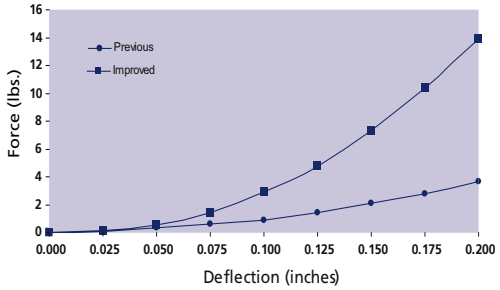


Unique blade design transfers scraping force to the blade edge, allowing it to conform to the scraping surface.

"Barbs" to ensure blade remains attached to handle.

Description	Qty./Pack	Qty./Case	Cat. No.
1.8 cm Highly Compliant TPE Blade			
18 cm polystyrene handle	1	100	**353085**
Recommended for use with BD Falcon 25 cm² Flasks			
25 cm polystyrene handle	1	100	**353086**
Recommended for use with BD Falcon 75 cm² Flasks			
3.0 cm Highly Compliant TPE Blade			
25 cm polystyrene handle	1	100	**353089**
Recommended for use with BD Falcon Dishes and 75 cm² Flasks			
40 cm polystyrene handle	1	100	**353087**
Recommended for use with large BD Falcon Flasks			

*Resultant Bending Force**
Previous vs. Improved BD Falcon Cell Scrapers



* Force required to deflect a simply supported 5" portion of the handle 2.5" distal to the handle section: resultant = ('X' force) ('Y' force)

BD Falcon™ Cell Culture Tubes

- BD Falcon™ Cell Culture Tubes are tissue culture-treated for cell attachment and spreading
- Compatible with most tube-rolling equipment
- Convenient cross-hatched index mark assists in positioning tubes
- White screw caps distinguish the tissue culture-treated tubes from general purpose tubes and provide capability for both open and closed incubation

Features

- Tissue culture-treated by vacuum-gas plasma
- Sterilized by gamma irradiation
- White polyethylene screw caps
- Peel-open, medical-style packaging

Description	Qty./Bag	Qty./Case	Cat. No.
16 x 125 mm Tube	25	500	**353033**

TIPS

- To receive copies of BD Biosciences monographs, contact your local BD office.

RELATED PRODUCTS

Non-tissue culture-treated Tubes 20
BD™ Dispase 126
Cell Strainers 63

BD Falcon™ *In Vitro* Fertilization Plasticware

- Pre-tested and certified plasticware for *in vitro* fertilization (IVF)
- CE marked to the Medical Device Directive 93/42/EC

Features

- Non-embryotoxic
- Non-pyrogenic
- Non-cytotoxic
- Tissue culture-treated for a consistent hydrophilic surface
- Sterilized by gamma irradiation
- Packaged in peel-open, medical-style packaging
- Multi-unit bags have reseal tabs

Description	Qty./Pack	Qty./Case	Cat. No.
60 mm Diameter Dish **Well Area: 21.29 cm²** **Well Volume: 23.0 ml**	20	500	**353652**
Center-well, 60 mm Diameter Dish **Well Area: 2.89 cm²** **Well Volume: 2.5 ml** **Total Volume: 20 ml**	20	500	**353653**
4-well Plate **Well Area: 1.39 cm²** **Well Volume: 1.8 ml**	1	100	**353654**

Note: The lids of the BD Falcon™ IVF Products are not certified non-embryotoxic.

Pretested BD Falcon™ IVF products

BD Falcon™ *In Vitro* Fertilization (IVF) products are the first plasticware available that is certified sterile, non-pyrogenic and non-embryotoxic. These pre-tested products save you time and expense in complying with the College of American Pathologists (CAP) and American Fertility Society (AFS) recommended standards for IVF labs.

Mouse embryo testing

Products are manufactured in compliance with cGMP standards. Each lot of BD Falcon IVF product is tested for embryotoxicity using the 1-cell mouse embryo assay. Mouse embryos are isolated at the 1-cell stage from B6C3F1 females following super ovulation with gonadotropin and mating with B6D2F1 males. BD Falcon IVF products are tested using both a direct and indirect test method. In the direct assay, the embryos are cultured directly in the IVF labware. For the indirect assay, culture media is incubated in the IVF labware for 24 hours at 37°C. The incubated media is then transferred to a culture plate and the 1-cell mouse embryo assay is performed. Products are deemed non-embryotoxic if they support the growth of more than 75 percent of the embryos to the expanded and/or hatched blastocyst stage.

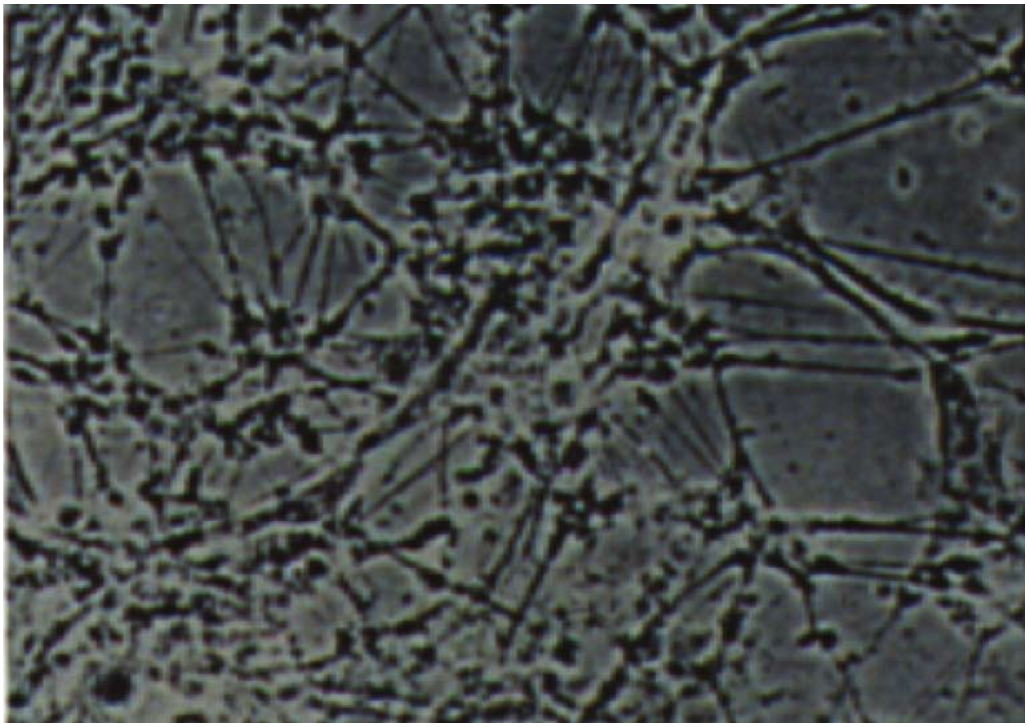
To improve manipulation of ova and embryos, BD Biosciences designed, in conjunction with embryologists, an innovative 4-well plate. A unique lid reduces the risk of contamination and minimizes evaporation by providing access to two wells at a time, while two remain covered. The wells are numbered and a large writing patch allows clear sample identification. Plates are packaged in individual peel-open trays for sterile presentation.

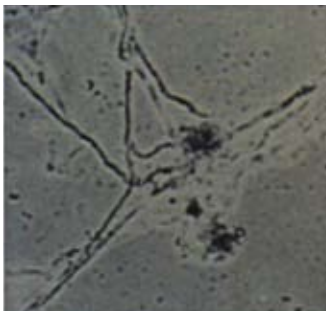
BD Falcon IVF dishes and 4-well plates are manufactured from virgin crystalline polystyrene tested for USP Class VI cytotoxicity. They have flat, optically clear surfaces for optimum manipulation and observation of ova and embryos. Lids were designed for aseptic manipulation and consistent venting to maintain humidification.

Individual certificates, containing actual test results, are available for each lot by calling your local BD office after you receive your order.

BD Primaria™ Cultureware

- Unique nitrogen-containing tissue culture surface chemistry
- Improves attachment, spreading, and growth for many primary cells or cell lines





When chick embryo spinal cord neurons are cultured on BD Primaria (left), growth is enhanced and extensive neurite development occurs. In this experiment, cells clumped and detached from traditional TC plates (above) after 20 days in culture, but remained viable and differentiated on BD Primaria.

Unique surface chemistry for enhanced cell culture

Consistent cell culture conditions are required for reproducible research results. In the manufacture of all cell cultureware surfaces, hydrophobic polystyrene is permanently rendered hydrophilic to support cell attachment and spreading[1,2,3]. The consistency of this surface depends on the treatment method used.

Many manufacturers have long used atmospheric plasma treatments (i.e., corona) to create hydrophilic surfaces. In corona treatment, a high-voltage discharge creates a reactive gas plasma above the growth surface of the vessel. In this process, the highly interactive gasplasma mixture is created from ambient air. The consistency of the treatment surface can therefore be compromised by day-to-day environmental changes.

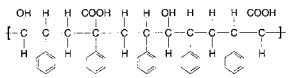
At BD Biosciences, molded polystyrene vessels are placed in a chamber where a partial vacuum is created. A vacuum-gas plasma treatment is fed into the chamber to create a number of negatively charged functional groups on the surface of the polystyrene vessels. The enclosed, highly controlled environment prevents contamination from the ambient air, ensuring a pure and consistent treatment surface.

A major research investment by BD Biosciences resulted in the development of this unique vacuum-gas plasma process used to produce both BD Primaria™ and traditional tissue culture (TC) surfaces on BD Falcon™ Dishes, Plates, Flasks and Roller Bottles. The gases used to manufacture BD Primaria contain both oxygen and ammonia, resulting in the incorporation in the surface of a variety of nitrogen-containing functional groups in addition to the negatively charged oxygen-containing groups found on traditional TC surfaces.

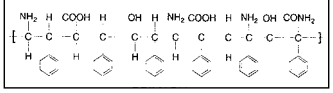
The incorporation of nitrogen-containing cations has been correlated to attachment and spreading of primary endothelial cells in a clonal cell-growth assay[4]. The complex surface on BD Primaria Cultureware is homogeneous and stable and has been in use by researchers for over a decade to improve attachment and differentiation of a variety of cell types. For example, cell biologists have used BD Primaria for cultivating hepatocytes[5,6], neuronal cells[7], and other endothelial cells[8].

The surface chemistry of BD Primaria products is confirmed by Electron Scanning for Chemical Analysis (ESCA).

Traditional Tissue-Culture Surface Chemistry



BD Primaria™ Surface Chemistry



Note: At pH 7, carboxy groups may be slightly dissociated and assume a negative (anionic) charge. Amine groups may protonate and assume a positive charge (cationic).

The following is a partial list of cell types cultured on BD Primaria™ Cellware

- Hepatocytes[5,6,9,18]
- Transfected COS-7[10]
- Transfected HEK-293[12]
- CHO[13]
- Primary SMC[14] and Skeletal Muscle Cells[16]
- Primary Cardiac Myocytes[15]
- Osteoblasts[17]
- Neuronal Cells[7]
- Endothelial Cells[8]

BD Primaria™ Cultureware

- Crystal-grade polystyrene modified by proprietary vacuum-gas plasma treatment process
- Stable, permanent surface modification
- Optically clear
- No special storage required
- Samples from each lot of BD Primaria™ products are analyzed by Electron Scanning for Chemical Analysis (ESCA)
- Packaged in red color-coded, peel-open, medical-style packages
- Sterilized by gamma irradiation
- Non-pyrogenic

Description	Qty./Sleeve	Qty./Case	Cat. No.
35 x 10 mm Easy-Grip Dish **Actual Dimensions: 40.28 mm O.D. x 6.17 mm** **Actual Growth Area: 11.78 cm²** **Working Volume: 2.5-3.0 ml**	20	200	**353801**
60 x 15 mm Standard Dish **Actual Dimensions: 54.81 mm O.D. x 13.26 mm** **Actual Growth Area: 21.29 cm²** **Working Volume: 6.0-7.0 ml**	20	200	**353802**
100 x 20 mm Standard Dish **Actual Dimensions: 89.43 mm O.D. x 19.18 mm** **Actual Growth Area: 58.95 cm²** **Working Volume: 16.0-17.5 ml**	20	200	**353803**

Description	Qty./Bag	Qty./Case	Cat. No.
25 cm² Flask with Canted Neck **Nominal Growth Area: 25 cm²** **Total Volume: 50 ml**			
Plug-Seal Caps	20	200	**353813**
Vented, 0.2 µm Caps	20	100	**353808**
75 cm² Flask with Straight Neck **Nominal Growth Area: 75 cm²** **Total Volume: 250 ml**			
Plug-Seal Caps	5	100	**353824**
Vented, 0.2 µm Caps	5	100	**353810**

Description	Qty./Pkg.	Qty./Case	Cat. No.
6-well Multiwell Plate with Lid **Growth Area: 9.6 cm²** **Working Volume: 15.5 ml**	1	50	**353846**
24-well Multiwell Plate with Lid **Growth Area: 2.0 cm²** **Working Volume: 3.5 ml**	1	50	**353847**
96-well Multiwell Plate with Lid – Flat-bottom **Growth Area: 0.32 cm²** **Working Volume: 0.37 ml**	1	50	**353872**

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RELATED PRODUCTS

BD BioCoat™ Cellware..... 78

BD Falcon™ Cell Culture Inserts

- BD Falcon™ Cell Culture Inserts permit the diffusion of media components to both apical and basolateral cell surfaces, mimiking the *in vivo* process

BD Falcon Cell Culture Inserts are available in convenient 6-, 12-, and 24-well sizes. Packed in individual blisterpacks, BD Falcon Cell Culture Inserts give you the flexiblity to run from 1 to 48 samples.

Cell culture on microporous membranes

Cell culture systems containing microporous, permeable membranes have been shown to promote differentiation of a variety of epithelial and mesenchymal cells *in vitro*. Because of the bilateral access to nutrients, cytokines, hormones and other media supplements, cells cultured on permeable supports show a higher degree of morphological and functional differentiation when compared to cells cultured on non-permeable plastic surfaces. BD Falcon Cell Culture Inserts have been successfully used for a variety of applications, including transport, diffusion, secretion, permeability, and drug uptake studies of natural and synthetic compounds; analysis of cellular uptake of pathogens; *in vitro* toxicology studies using a variety of cells; analysis of cellular migration and invasion of normal and malignant cells; co-culture studies and air-liquid interface models. Independent access to the apical and basolateral domains of polarized cells permits the study of protein sorting, receptor localization and microbid pathogenesis.

Typical applications for BD Falcon™ Cell Culture Inserts

- Endothelial models for studies of cell-cell interaction, adhesion, angiogenesis, matrix formation, cell-ECM interaction, metastasis, inflammation, and invasion
- Respiratory epithelium culture for pharmacology, toxicology, cystic fibrosis research, and microbial pathogenesis
- Renal tubule cell culture for *in vitro* toxicology and pharmacology
- Normal Human Epidermal Keratinocyte *in vitro* toxicology models
- Epithelial polarity studies on MDCK, LLPCK, and other cell types
- Hepatocyte culture for drug toxicity and biotransformation studies
- Culture of intestinal epithelial cells for drug bioavailability studies

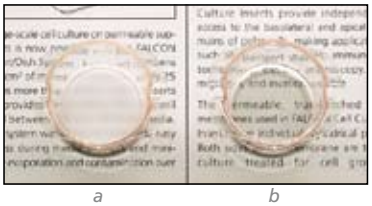
BD Falcon™ Cell Culture Inserts and Companion Plates

BD Falcon™ Cell Culture Inserts contain polyethylene terephthalate (PET) membranes, which are available in a wide variety of pore sizes and densities. The insert housing, also made from PET, is not tissue culture (TC)-treated in order to minimize cell growth on insert side walls. For best results, BD Falcon Cell Culture Inserts should be used together with BD Falcon Cell Culture Insert Companion Plates. These Companion Plates are TC-treated and feature a patented, labyrinth lid design and condensation rings, which reduce evaporation and contamination.

Due to the low protein binding property of PET membranes, BD Falcon Cell Culture Inserts are especially suited for immunohistochemistry[1], co-culture to study intercellular communication[2], transport studies[3], and drug screening[4,5]. Compatibility with fixatives and the durability of PET membranes makes them ideal for both light and electron microscopy[1]. Membranes will not tear or curl and remain easy to handle when removed from the insert housing.

Select the best membrane for your application

- Larger pore-size membranes for investigating chemotaxis, invasion, and migration
- Transparent membranes for visualization of cells by light microscopy *(See Figure b below, 0.4 µm)*
- High pore-density membranes for maximal diffusion when studying transport, secretion, or drug uptake *(See Figure a below, 0.4 µm HD)*



a *b*

Physical Specifications: BD Falcon™ Cell Culture Inserts

	6-well	12-well	24-well
Effective Diameter of Membrane (mm)	23.1	10.5	6.4
Effective Growth Area of Membrane (cm^2)	4.2	0.9	0.3
Insert Height (mm)	17.2	17.2	17.5
Distance from Membrane to the Bottom of the Well (mm)	0.9	0.9	0.8
Suggested Media in Insert (ml)	1.5-2.5	0.4-1.0	0.2-0.35
Suggested Media in Well (ml)	2.7-3.2	1.4-2.3	0.7-0.9
Growth Area in Plate Well (cm^2)	9.6	3.8	2.0

BD Falcon™ Cell Culture Inserts

- Track-etched PET membranes have a smooth surface and defined cylindrical pores that traverse the membrane
- Low protein binding PET membrane
- Sterilized by gamma irradiation
- A wide variety of configurations including 6-, 12-, and 24-well
- A broad selection of membrane pore sizes, 0.4, 1.0, 3.0, and 8.0 µm diameter
- Packed in individual blister packs, 48 inserts/case
- Non-tissue culture-treated insert housings prevent promiscuous growth of cells on the insert walls
- Innovative hanging design facilitates pipeting and allows for co-culture

Description	Qty./Pack	Qty./Case	Cat. No.
Transparent PET Membrane **0.4 µm pore size, 1.6 x 10^6 pores/cm^2**			
Inserts for 6-well plates	1	48	**353090**
Inserts for 12-well plates	1	48	**353180**
Inserts for 24-well plates	1	48	**353095**

Applications:

- Scanning and transmission electron microscopy
- Visualization of live cells by light microscopy
- Removal of membrane from housing
- Immunocytochemical staining

Description	Qty./Pack	Qty./Case	Cat. No.
High Density, Translucent PET Membrane **0.4 µm pore size, 1.0 x 10^8 pores/cm^2**			
Inserts for 6-well plates	1	48	**353493**
Inserts for 12-well plates	1	48	**353494**
Inserts for 24-well plates	1	48	**353495**

Applications:

- Transport, diffusion and secretion of small molecules into, out of, or through a cell monolayer
- Barrier function (Transepithelial Electrical resistance (TEER) measurements)
- Drug Bioavailability

Description	Qty./Pack	Qty./Case	Cat. No.
Transparent PET Membrane **1.0 µm pore size, 1.6 x 10^6 pores/cm^2**			
Inserts for 6-well plates	1	48	**353102**
Inserts for 12-well plates	1	48	**353103**
Inserts for 24-well plates	1	48	**353104**

Applications:

- General-purpose membrane
- Growth and visualization of live cells
- Transport, secretion, and diffusion of most molecules into, out of, and through cell monolayers
- Immunocytochemical staining
- Drug bioavailability assays
- In general, this is the maximum pore size available to prevent cell migration through pores

Description	Qty./Pack	Qty./Case	Cat. No.
High Density, Translucent PET Membrane **3.0 µm pore size, 2 x 10^6 pores/cm^2**			
Inserts for 6-well plates	1	48	**353092**
Inserts for 12-well plates	1	48	**353292**
Inserts for 24-well plates	1	48	**353492**

Applications:

- Transport, secretion and diffusion of large molecules or viruses
- Cell migration studies
- This pore size offers maximum diffusion of large molecules or viruses

Note: In long-term culture, epithelial cells grown in a monolayer may traverse a naked membrane and grow on the top and bottom of the membrane.

Description	Qty./Pack	Qty./Case	Cat. No.
Transparent PET Membrane **3.0 µm pore size, 8 x 10^5 pores/cm^2**			
Inserts for 6-well plates	1	48	**353091**
Inserts for 12-well plates	1	48	**353181**
Inserts for 24-well plates	1	48	**353096**

Applications:

- Visualization by light microscopy
- Transmission and scanning electron microscopy
- Useful for studying transport of larger molecules (lipoproteins) and viruses
- Transendothelial migration
- Smooth muscle migration
- Endothelial cell migration

Note: In long-term cultivation, epithelial cells grown in a monolayer may traverse a naked membrane and grow on the top and bottom of the membrane.

Description	Qty./Pack	Qty./Case	Cat. No.
Transparent PET Membrane **8.0 µm pore size, 1 x 10^5 pores/cm^2**			
Inserts for 6-well plates	1	48	**353093**
Inserts for 12-well plates	1	48	**353182**
Inserts for 24-well plates	1	48	**353097**

Applications:

- Tumor invasion
- Cell migration
- Chemotaxis
- Metastasis

Description	Qty./Pack	Qty./Case	Cat. No.
BD Falcon™ Cell Culture Insert Companion Plates Specifically designed for use with BD Falcon™ or BD BioCoat™ Cell Culture Inserts. Tissue culture-treated, polystyrene, sterile, non-pyrogenic, with lid. May be used with or without cell culture inserts.			
6-well plate (Deep-Well)	1	4	**355467**
6-well plate	1	50	**353502**
12-well plate	1	50	**353503**
24-well plate	1	50	**353504**

TIPS

- BD Falcon Cell Culture Inserts are also available in an automation friendly, one-piece Multiwell Insert plate format. Available in 1.0, 3.0 and 8.0 µm pore sizes for manual and robotic screening of cells. Please see pages 156 and 158 for more detailed information.
- BD Falcon Cell Culture Inserts are also available with consistently pre-applied extracellular matrix (ECM) proteins and ECM components for improved cell attachment, growth or differentiation. Please see chapter 6 for more detailed information.

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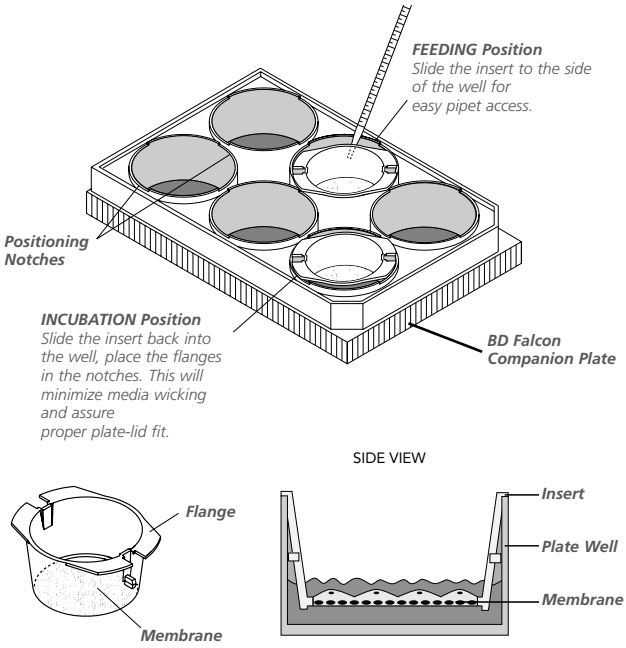
3. Halleux, C. and Schneider Y.-J., In Vitro Cell. Dev. Biol. **27A**:293 (1991).
4. Dehouck, M.P., et al., J. Neurochem. **58**:1790 (1992).
5. Dehouck, M.P., et al., J. Neurochem. **54**:1798 (1990).

BD Falcon™ Cell Culture Inserts are easy to use with BD Falcon Companion Plates



BD Falcon™ Cell Culture Insert Companion Plates

BD Falcon™ Cell Culture Insert Companion Plates have been specially designed for use with BD Falcon or BD BioCoat™ Cell Culture Inserts so that evaporation and contamination due to improper lid fit is eliminated.

In the Feeding Position, pipet access is improved for fluid handling on the basolateral side. Reagents can be added quickly and consistently for timed experiments. Aspiration of media from the well is easier, reducing the risk of contamination.

In the Incubation Position, BD Falcon Cell Culture Inserts remain locked in position in their BD Falcon Companion Plate wells. Media will not wick up between the insert and well wall. The patented BD Falcon low-evaporation lid provides a tortuous air-passage system that reduces evaporation and contamination.

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
401	K. Amsler, et al. *Maintenance and Functional Properties of Primary Turtle Bladder Epithelial Cells Cultured on BD Falcon™ Cell Culture Inserts*
402	E. J. Roemer and Simon, S. R. *BD Falcon™ Cell Culture Inserts as a Supportive Substrate for an In Vitro Extracellular Matrix System*
404	K. Amsler and Gray, H. *Gamma-Glutamyl Transpeptidase Assay: An Example of a Protocol for Determining the Sidedness or Asymmetrical Expression of a Membrane Protein, Enzyme, or Transport Activity in an Epithelial or Other Cell Type*
405	H. Gray and Fedun, O. *Preparation of BD Falcon™ Cell Culture Inserts for Scanning Electron Microscopy*
406	M. Gray and Morris, F. *Preparation of BD Falcon™ Cell Culture Inserts for Transmission Electron Microscopy*
407	E.J. Roemer *An In Vitro Assay for Study of Neutrophil Migration Through Interstitial Matrix Using BD Falcon™ Cell Culture Inserts*
408	B. J. Johnson *Induction of Lymphoproliferation by Antigen-primed Macrophage Across BD Falcon™ Cell Culture Inserts*
409	J. Font, et al. *Use of BD Falcon™ Cell Culture Inserts to Reconstruct a Differentiated Human Epidermis In Vitro: Expression of Cell Adhesion Molecules (Integrins)*
412	W.I. deBoer, et al. *A Physiological and Morphological In Vitro Model for Nomal Human Urothelium Cultured on BD Falcon™ Cell Culture Inserts*
413	X. Quan and H.P. Godfrey *In Vitro Study of Cytokine Mediated Activation of Endothelial Cell Permeability Using BD Falcon™ Cell Culture Inserts*

For additional references or for help with an application, please call your local BD office.

TIPS

- You may have to increase your seeding density (number of cells/cm²) when changing from non-permeable polystyrene to permeable cell culture surfaces. Start with seeding cell densities 25-50% higher. The time for initial attachment may also increase.
- To avoid air bubbles forming under the inserts, use pre-warmed media and follow the directions found in each case for placing inserts into plate wells.
- To improve cell attachment to uncoated inserts, incubate inserts for 20-30 minutes with media (containing serum if it will be used) before adding cells.

RELATED PRODUCTS

BD BioCoat™ Cell Culture Inserts..... 108
BD Falcon 24-Multiwell Insert Systems..... 156
BD Falcon 96-Multiwell Insert Systems..... 158

BD Falcon™ FluoroBlok™ Cell Culture Inserts

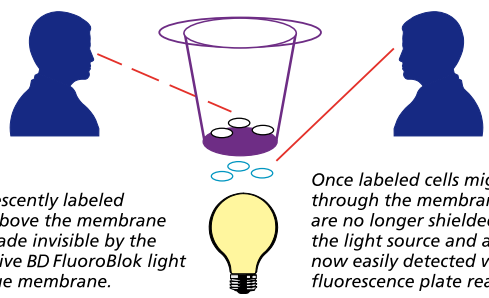
- Increase cell migration and invasion assay productivity with real-time fluorescence

BD Falcon™ FluoroBlok™ Cell Culture Inserts
Available as convenient 24-well individual inserts in three different pore sizes. Packed in individual blister packs, BD Falcon FluoroBlok Cell Culture Inserts give you the flexibility to run from 1 to 48 samples.

Detect Cell Migration and Invasion in a Homogeneous Fluorescent Assay System

BD Falcon FluoroBlok Cell Culture Inserts are designed with a patented light-tight PET membrane that efficiently blocks the transmission of light within the range of 490-700 nm. Fluorescently labeled cells present in the top chamber of the insert are made invisible by the BD FluoroBlok membrane. Once labeled cells migrate through the membrane, they are no longer shielded from the light source and are easily detected with a fluorescence plate reader.

It is easy to detect fluorescent cells and molecules as they migrate through BD Falcon™ FluoroBlok™ Inserts.



Fluorescently labeled cells above the membrane are made invisible by the exclusive BD FluoroBlok light opaque membrane.

Once labeled cells migrate through the membrane, they are no longer shielded from the light source and are now easily detected with a fluorescence plate reader.

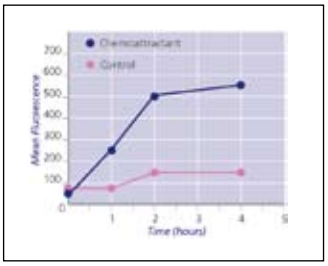
- **Simplify Insert-Based Assays**
  Unique, light-tight PET membrane makes it easy to specifically detect fluorescently labeled cells and molecules below the insert.
- **Increase Insert Assay Productivity**
  Save time and labor in chemotaxis, cell migration, and invasion assays by automating your assay detection with real-time fluorescence.
- **Eliminate Cell Culture Insert Manipulation**
  Get rapid data collection using a fluorescence microplate reader or microscope without the need for plate washing or tedious, manual cell scraping and counting. Chart migration of cells and molecules in real time without dismantling or destroying the insert.

Applications:

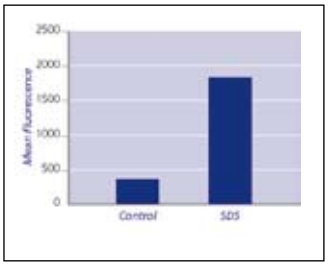
BD FluoroBlok effectively blocks >99.0% of the light transmission from 490-700 nm, allowing you the flexibility to choose from a variety of fluorophores for bioavailability, toxicity, chemotaxis, cell migration, and tumor invasion assays. As long as the fluorophores of choice are within the blocking range of the BD FluoroBlok membrane, multiplex detection is also possible.

Physical Specifications: BD Falcon™ FluoroBlok™ Cell Culture Inserts

Effective Diameter of Membrane (mm)	6.4
Effective Growth Area of Membrane (cm^2)	0.3
Insert Height (mm)	17.5
Distance from Membrane to the Bottom of Well (mm)	0.8
Suggested Media Volume in Insert (ml)	0.2-0.35
Suggested Media Volume in Well (ml)	0.7-0.9
Growth Area in Companion TC Plate Well (cm^2)	2.0
Pore Density: 1.0 µm Inserts (pores/cm^2)	1.6 x 10^6
Pore Density: 3.0 µm Inserts (pores/cm^2)	8.0 x 10^5
Pore Density: 8.0 µm Inserts (pores/cm^2)	1 x 10^5



Run Real-Time Chemotaxis and Cell Migration Assays Without Destroying Your Samples
HUVECs labeled with the fluorescent dye Calcein AM were placed in BD™ Falcon FluoroBlok™ Inserts (3.0 µm pore size) in either the presence (Control) or absence of chemoattractant (10% fetal bovine serum). Chemotaxis was measured by detecting the fluorescence of cells migrating through the pores to the lower chamber with an Applied Biosystems CytoFluor® 4000 plate reader at 485 nm excitation and 530 nm emission. Data represents the mean of n=6 inserts ± SD.



Simplify Fluorescence Leakage Testing with BD Falcon FluoroBlok Inserts
MDCK epithelial cell monolayers grown on BD Falcon FluoroBlok Inserts (1.0 µm pore size) were tested for the ability to block the passage of fluorescein without treatment (Control) or after treatment with 250 µg/ml SDS. Fluorescence was quantitated with an Applied Biosystems CytoFluor® 4000 plate reader at 485 nm excitation and 530 nm emission. Background values for the inserts alone were subtracted. Data represents the mean of n=3 inserts ± SD.

BD Falcon™ FluoroBlok™ Cell Culture Inserts, Sterile

Description	Qty./Pack	Qty./Case	Cat. No.
BD Falcon™ FluoroBlok™ Cell Culture Inserts			
1.0 µm inserts for 24-well plates	1	48	**351150**
3.0 µm inserts for 24-well plates	1	48	**351151**
8.0 µm inserts for 24-well plates	1	48	**351152**

Description	Qty./Pack	Qty./Case	Cat. No.
BD Falcon™ Cell Culture Insert Companion Plates			
Specifically designed for use with BD Falcon or BD BioCoat™ Cell Culture Inserts. Tissue culture-treated polystyrene, sterile, non-pyrogenic, with lid. May be used with or without cell culture inserts.			
6-well plate (Deep-Well)	1	4	**355467**
24-well plate	1	50	**353504**

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/techbulletins.html or by calling your local BD office.

Bulletin No.	Author/Title
428	A. Goldberger and M. Septak *A Fluorescence Blocking Membrane Insert Enhances Analysis of Cell Motility Assays*
429	A. Goldberger *A Fluorescence Blocking Membrane Insert Enhances Analysis of Cell Based Assays*
430	M. Septak *A Novel Fluorescence Blocking Microporous Membrane Material Useful in Efficient Information Rich Cell Based Assays*
	R. Tchao, (original developer of the FluoroBlok Insert: US Patent 5,601,997.) *Development of a Novel Fluorescence Blocking Membrane for Chemotaxis and Tumor Invasion Studies*

TIPS

- BD Falcon FluoroBlok Cell Culture Inserts are also available in an automation-friendly Multiwell Insert plate format. Available in 1.0, 3.0, and 8.0 µm pore sizes for manual and robotic screening of cells. Please see pages 142 and 144 for more detailed information.
- Cell labeling efficiencies will vary depending on fluorophore and cell type. For optimized conditions, titration of fluorophore is recommended.
- Visit bdbiosciences.com for information on compatible and incompatible fluorophores, frequently asked questions, and technical bulletins.

RELATED PRODUCTS

BD Falcon FluoroBlok 24-Multiwell Insert System 142
BD Falcon FluoroBlok 96-Multiwell Insert System 144
BD BioCoat™ FluoroBlok Fibronectin Cell Culture Inserts 112
BD BioCoat Tumor Invasion System 146

Working Volumes for Tissue Culture Vessels

	Volume of Media (per item)	Volume of Trypsin* (per item)	Actual Growth Area (per item)
Dishes			
35 mm x 10 mm Style	2.5-3 ml	0.2-0.3 ml	11.78 cm^2
60 mm x 15 mm Style	6-7 ml	0.5-0.6 ml	21.29 cm^2
100 mm x 20 mm Style	16-17.5 ml	1 ml	58.95 cm^2
150 mm x 25 mm Style	45-50 ml	1.5 ml	156.36 cm^2

	Volume of Media (per item)	Volume of Trypsin* (per item)	Actual Growth Area (per item)
Multiwell Plates			
6-well plate	2.5-3 ml	0.2-0.3 ml	9.6 cm^2
12-well plate	1.5-2.2 ml	0.1-0.2 ml	3.8 cm^2
24-well plate	0.8-1 ml	0.08-0.1 ml	2 cm^2
48-well plate	0.5-0.8 ml	0.05-0.08 ml	0.75 cm^2
96-well plate	0.1-0.2 ml	0.01-0.02 ml	0.32 cm^2

	Volume of Media (per item)	Volume of Trypsin* (per item)	Actual Growth Area (per item)
Flasks			
12.5 cm^2	4-5ml	0.25-0.40 ml	12.5 cm^2
25 cm^2	8-9 ml	0.50-0.80 ml	25 cm^2
75 cm^2	20-30 ml	1 ml	75 cm^2
150 cm^2	40-50 ml	2 ml	150 cm^2
175 cm^2	45-55 ml	2 ml	175 cm^2
225 cm^2	60-100 ml	4-5 ml	225 cm^2
300 cm^2	150-400 ml	4 ml	300 cm^2

	Volume of Media (per item)	Volume of Trypsin* (per item)	Actual Growth Area (per item)
Roller Bottles			
Smooth	125-400 ml	10-15 ml	850 cm^2
Pleated	200-400 ml	20 ml	1450 cm^2

**Your lab protocol may call for another proteolytic enzyme.*

Cell Record Worksheet

Copy this form and use it in your lab's documentation procedures.

Characterization:

Name _____ Abbreviation _____

Morphology _____

Origin _____

Source ☐ Primary Culture _____ Date _____

☐ ATCC _____ Passage _____ Date _____

☐ Other _____ Passage _____ Date _____

Biosafety Level ☐ Class I — no virus/no contamination; subprimate or normal primate origin

☐ Class II — virus/mycoplasma; clinical material, primate cells of tumor origin

☐ Class III — HIV preps/T-cell lines

Proliferation:

Population Doubling Time _____ hours

☐ Fast (requires handling every 1-2 days)

☐ Medium (requires handling every 3-4 days)

☐ Slow (requires handling once per week)

Split Ratio _____:_____

Routine Seeding Density _____

Handling:

Viability (Cells not used beyond passage) _____

Cell Removal ☐ Mechanical/Scraping

☐ Enzymatic

☐ Trypsin

☐ Other _____

Cell Culture Vessels (brand/size) _____

Culture vessel surface ☐ non-TC ☐ TC treated ☐ BD Primaria™

☐ Col. I ☐ FN ☐ Laminin

Lot # _____ ☐ BD Matrigel™ ☐ Other

Media:

	Storage Location: Refrigerator	Freezer
Type _____	☐ _____	☐ _____
Serum _____ % _____ ☐ FBS		
Lot # ☐ Other _____	☐ _____	☐ _____
Additives/Supplements (include lot #s) (Applicable vitamins, growth factors, antibiotics, etc.)		
_____	☐ _____	☐ _____
_____	☐ _____	☐ _____
_____	☐ _____	☐ _____
_____	☐ _____	☐ _____

Table of Contents

Additional BD Falcon™ Labware

An array of products for your general laboratory use

In addition to BD Falcon™ and BD BioCoat™ Cell Cultureware, BD Biosciences also manufactures:

- A variety of standard and specialty dishes with durable construction for stable dish manipulation
- Cell strainers available in three nylon mesh pore sizes for optimal performance
- Containers that are sterile and disposable to provide secure samples

These high-quality BD Falcon products deliver consistent, reliable results.

BD Falcon™ Bacteriological Petri Dishes, Compartment Dishes, and BioDish XL

- Durable construction for stable dish manipulation
- Variety of standard and specialty dishes
- Crystal-grade, virgin polystyrene for optical clarity
- Sterilized by gamma irradiation
- Dimensions listed (diameter x height)

BD Falcon™ Bacteriological Petri Dishes

- BD Biosciences, the first manufacturer of disposable Petri Dishes, continues to be the leading source of high-quality, research-grade petri dishes
- Variety of styles to satisfy specialized, as well as routine needs
- The Easy-Grip feature on the 35 mm dish provides convenient and secure handling
- Tight-fit lid dish minimizes sample dehydration

Description	Qty./Sleeve	Qty./Case	Cat. No.
Easy-Grip Style Dishes			
35 mm x 10 mm Actual Dimensions: 40.28 mm O.D. x 6.17 mm	20	500	**351008**
60 mm x 15 mm Actual Dimensions: 52.10 mm O.D. x 13.13 mm	20	500	**351016 ***
Standard Style Dishes			
60 mm x 15 mm Actual Dimensions: 54.81 mm O.D. x 13.26 mm	20	500	**351007**
100 mm x 15 mm Actual Dimensions: 87.91 mm O.D. x 13.72 mm	20	500	**351029**
100 mm x 20 mm Actual Dimensions: 89.43 mm O.D. x 19.18 mm	20	200	**351005**
150 mm x 15 mm Actual Dimensions: 142.37 mm O.D. x 17.15 mm	10	100	**351058**
Tight-fit Lid Dish			
50 mm x 9 mm Actual Dimensions: 50.25 mm O.D. x 8.26 mm	20	500	**351006**

**Contact your local BD office for product availability.*

BD Falcon™ Compartment Dishes

- Divided dishes with two or four compartments
- Allow differential studies of organisms or media in a common environment
- Enable minimal media use and conserve storage space

Description	Qty./Sleeve	Qty./Case	Cat. No.
Compartment Dishes 100 mm x 15 mm Actual Dimensions: 86.30 mm O.D. x 12.70 mm			
I-Plate (2 sections)	20	500	**351003**
X-Plate (4 sections)	20	500	**351009**

BD Falcon™ Integrid Dishes

- Available in the large 150 mm size and the space-saving, square 100 mm size
- Molded-in Grid patterns on the outside bottom of the dishes facilitate counting and locating colonies

Description	Qty./Sleeve	Qty./Case	Cat. No.
Integrid Dish with molded-in grid			
100 mm x 15 mm Square Actual Dimensions: 90.50 mm O.D. - x 15.24 mm Grid Size: 13 mm	10	300	**351112**
150 mm x 25 mm Round Actual Dimensions: 142.57 mm O.D. x 24.77 mm Grid Size: 20 mm	10	100	**351013**

BD Falcon™ BioDish XL

- 245 mm x 245 mm x 18 mm style square Petri dish
- Designed for use in automated colony picking robots
- Alphanumeric 5 x 7 gridded lid
- Horizontal lines at common fill volumes
- Stacking rings protect viewing surface and allow for easier handling

Description	Qty./Sleeve	Qty./Case	Cat. No.
BioDish XL			
245 mm x 245mm x 18 mm Square Actual Dimensions: Lid width and length : 242.1 mm Dish width and length at bottom : 229.7 mm	5	20	**351040**

TIPS

When using automated filling systems, a heavier-weight dish (e.g., BD Falcon™ Cat. No. 351029, 100 mm dish) prevents equipment from jamming.

BD Falcon™ Cell Strainers and Containers

- Cell strainers are available in three nylon mesh pore sizes for optimal performance in a variety of applications
- Containers are sterile and disposable to provide secure samples

BD Falcon™ Cell Strainers

- Consistently obtain a more uniform single-cell suspension
- Three nylon mesh pore sizes for optimal performance in a variety of applications; sterilized and conveniently accessible in individual packaging; extended lip on strainer enables aseptic handling with forceps; a faster and easier alternative to gauze filtration in procedures involving dissociation of cells from either clumps or primary tissues
- Strainers are made of a strong nylon mesh with 40-, 70-, or 100-micron pores that are evenly spaced for consistent results
- Molded color-coded polypropylene frame with tab enables easy handling
- Fits perfectly into a 50 ml BD Falcon™ Conical Tube and other similarly sized tubes

Features

- Sterilized by gamma irradiation
- Individually packaged

Description	Qty./Bag	Qty./Case	Cat. No.
BD Falcon™ Cell Strainers			
40 µm/Blue	1	50	**352340**
70 µm/White	1	50	**352350**
100 µm/Yellow	1	50	**352360**

BD Falcon™ Containers

- Sterile, disposable polypropylene containers provide secure sample containment
- Available in 4½ oz. (110 ml) and 8 oz. (220 ml) sizes both with and without matching lids
- Feature molded-in graduations for easy measurements
- Graduated in ounces and milliliters to provide convenient, single-use, timesaving containers for collection, transportation, and storage of a wide variety of specimens
- Inert and chemically resistant to commonly used laboratory reagents at room temperature

Features

- Sterilized by gamma irradiation
- 4½ oz. size graduated from ½ oz. to 4½ oz. in ¼ oz. increments and from 20 ml to 110 ml in 10 ml increments
- 8 oz. size graduated from ¼ oz. to 8 oz. in ¼ oz. increments and from 20 ml to 220 ml in 10 ml increments

Description	Qty./Bag	Qty./Case	Cat. No.
BD Falcon™ Containers			
4½ oz. (110 ml) with Lid	1	100	**354013**
4½ oz. (110 ml) without Lid	20	500	**354014**
8 oz. (220 ml) with Lid	1	100	**354015**
8 oz. (220 ml) without Lid	20	500	**354020**
Lid for both sizes	20	500	**354017**

TIP

A special sterile cell strainer assembly designed for cell sorting devices such as the BD FACS™ System is listed on page 23 of this catalog. It contains a 35-micron nylon mesh strainer that is an integral part of the cap to a 6 ml polystyrene tube *(picture on page 22 and 33).*

RELATED PRODUCTS

BD Falcon 50 ml Conical Tubes.... 25
BD Falcon Round-Bottom Tube with Cell Strainer Cap 23


Store at 4 to 30°C
354400
BD BioCoat™
CELL ENVIRONMENTS
Collagen Type I Cellware
6-well Plates
BD BioCoat™
CELL ENVIRONMENTS
BD™ Enterocyte
Differentiation Medium
250 ml

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BD BioCoat™ Cell Environments and Extracellular Matrices

Convenience… Variety… Quality

BD BioCoat™ Cell Environments and Extracellular Matrix products provide you with the ability to construct microenvironments to support cell growth, differentiation, and migration under physiologically relevant *in vitro* conditions.


354803
Storage Temp: 2 to 8°C
BD BioCoat
CELL ENVIRONMENTS
Fibrillar Collagen Type I Insert System
24-Multiwell Insert Plate 1.0 Micron
QTY 1
BD BioCoat
BD BioCoat
BD

BD BioCoat™ Cell Environments

The cellular microenvironment *in vivo* is characterized by specific interactions of a cell with other cells, extracellular matrix (ECM), and soluble factors, such as cytokines and hormones. In order to properly study cellular functions *in vitro,* culture systems must be designed to provide an environment appropriate for each specific cell type and application.

BD BioCoat™ Cell Environments are integrated culture systems that have been optimized for selected cell types and applications. In addition to the capability and convenience offered by these systems, they add reliability and consistency by providing standardized protocols for each application.

There are BD BioCoat Cell Environment systems for:

- Constructing *in vitro* models of hepatocytes, enterocytes, and smooth muscle cells
- Proliferation of endothelial and smooth muscle cells
- Tumor cell invasion

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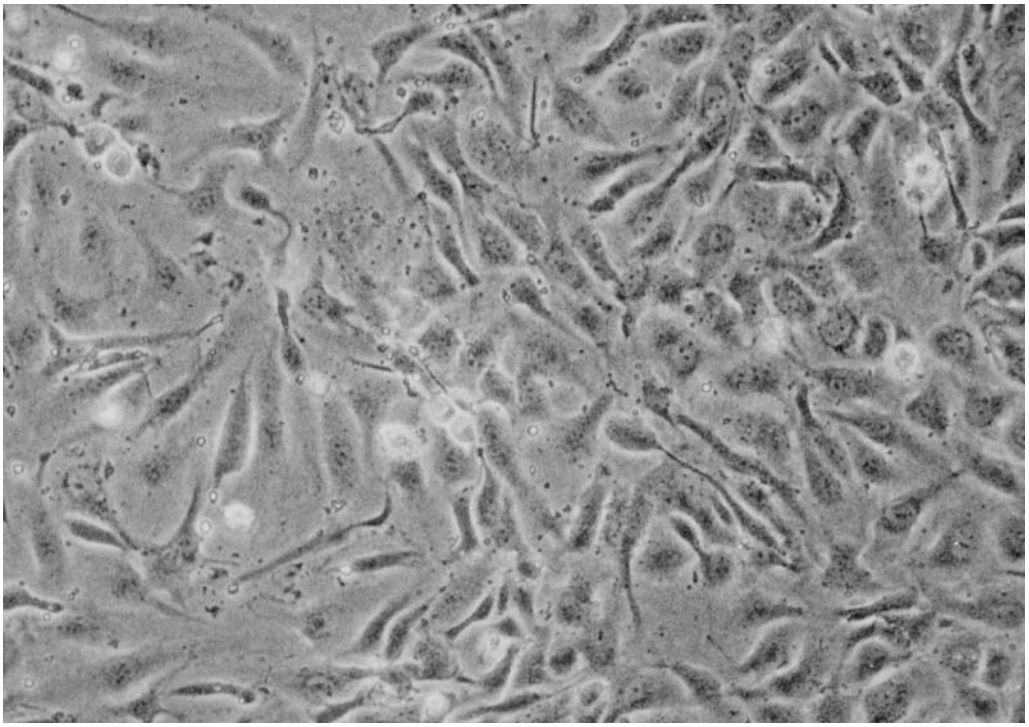
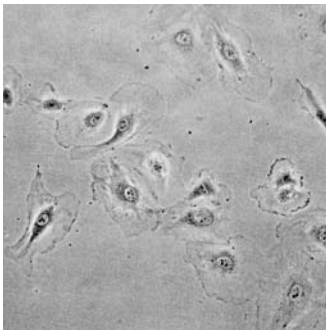
BD BioCoat™ Cell Environments

BD BioCoat™ Endothelial Cell Growth Environment

- Increases endothelial cell yield relative to standard method





Effects of BD BioCoat™ Endothelial Cell Growth Environment on HUVECs

Tissue Culture Plastic (above)
HUVECs grown for five days in basal medium containing 10% FBS on tissue culture plastic show sparse growth.

BD BioCoat Collagen I Cellware (left)
HUVECs grown for five days using the BD BioCoat Endothelial Cell Growth Environment form a confluent monolayer and show numerous mitotic cells.

Cell Culture system optimized for rapid growth:
- Yields a six-fold increase in cell number in only five days
- Increases cell number 20-30% above medium containing 20% FBS
- Saves labor time and media by eliminating two feedings
- Low serum environment maximizes control over experimental conditions

Complete protocol provides:
- Standardized procedures
- Capability for immediate start-up

Applications:

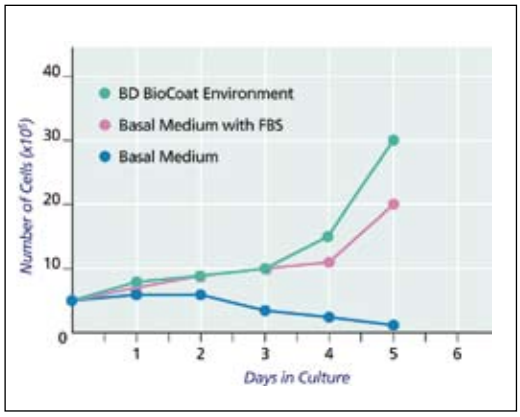
Promotes the growth of endothelial cells from a variety of sources, including:
- Human umbilical vein (HUVEC)
- Human pulmonary artery (HPAEC)
- Human aorta (HAEC)
- Fetal bovine heart (FBHEC)

Quality Control:

- Tested for ability to promote proliferation of fetal bovine heart endothelial cells
- All components tested and found negative for bacteria and fungi
- BD™ Endothelial Cell Culture Medium, EGF, and ECGS are tested for mycoplasma
- BD Endothelial Cell Culture Medium is tested for endotoxin (LAL assay)

Storage and Stability:

BD Endothelial Cell Culture Medium (unsupplemented), EGF, and ECGS are stable for at least three months at 2-8°C. Supplemented Medium is stable for one month under subdued lighting at 2-8°C. BD BioCoat™ Collagen I Cellware is stable for at least six months at 4-30°C.



Growth Curve for HUVECs
$5x10^5$ HUVECs were plated on 75 cm^2 tissue culture flasks in basal medium with and without 20% FBS and into the BD BioCoat Endothelial Cell Growth Environment.

BD BioCoat™ Endothelial Cell Growth Environment

Integrated system that contains low-serum medium, culture supplements, growth factors, and BD BioCoat Collagen I Cellware. Suitable for culturing endothelial cells from a variety of species and vessel types.

Description	Qty.	Cat. No.
BD BioCoat™ Endothelial Cell Growth Environment		
BD BioCoat Endothelial Cell Growth Environment contains:	1 kit	**355053**

- BD Endothelial Cell Culture Medium – 500 ml (MCDB 131 with hydrocortisone, heparin and 2% FBS)
- Epidermal Growth Factor (EGF) – 5 µg
- Endothelial Cell Growth Supplement (ECGS) – 100 mg
- Trypsin Inhibitor – 50 mg
- BD BioCoat Collagen I Cellware – five 75 cm^2 flasks (Cat. No. 354462)*
- Complete Protocol

BD™ Endothelial Cell Culture Medium (formerly E-STIM)		
BD Endothelial Cell Culture Medium Kit contains:	1 kit	**355054**

- BD Endothelial Cell Culture Medium – 500 ml
- EGF – 5 µg
- ECGS – 100 mg
- Trypsin Inhibitor – 50 mg

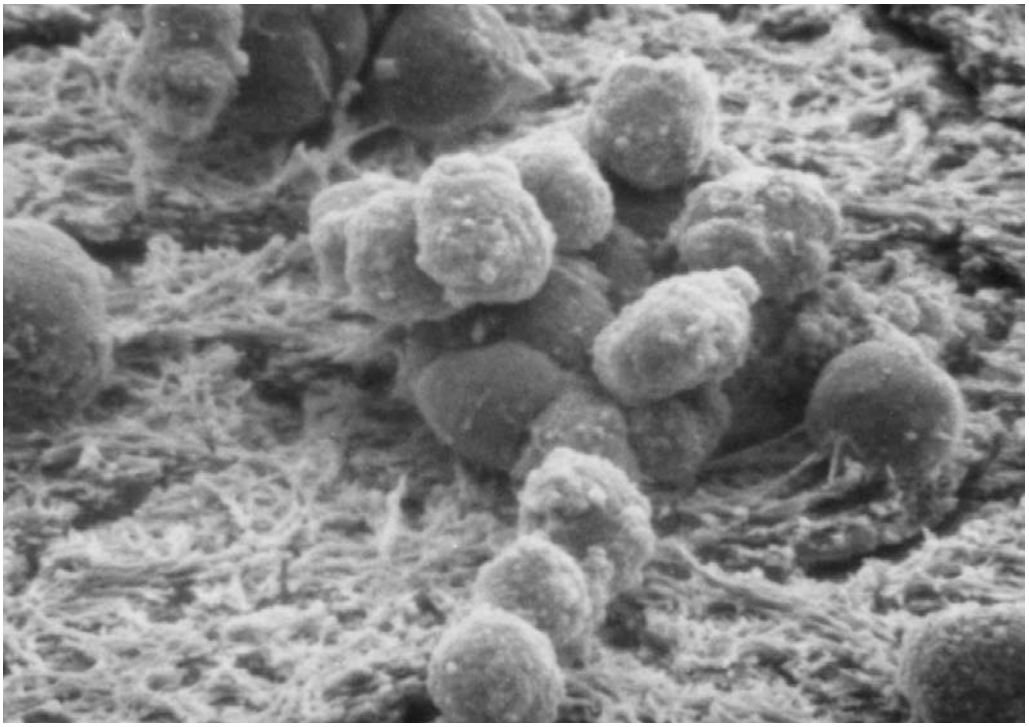
** For other BD BioCoat Collagen I configurations, see page 82*

RELATED PRODUCTS

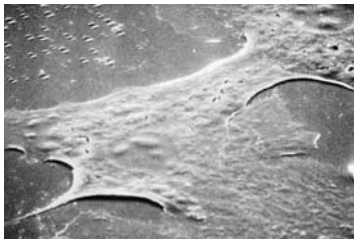
REFERENCE:
1. Woods, C.M., et al., Amer. J. Physiol. **278**:L1008 (2000).

BD BioCoat™ Hepatocyte Differentiation Environment

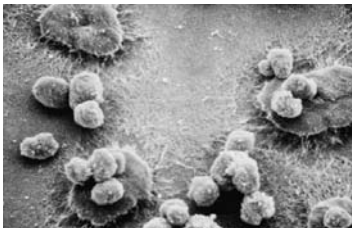
- A BD Matrigel™ Matrix system that maintains hepatocytes with liver-specific function in culture for at least three weeks



BD BioCoat™ Matrigel Matrix
Hepatocytes cultured for two days using the BD BioCoat Hepatocyte Differentiation Environment. Note the clusters of spherical cells.



Collagen Type I
Hepatocytes cultured for two days on Collagen I-treated plastic surfaces in supplemented medium. Note the flattened cell shape.



Collagen Type I Gel
Hepatocytes cultured for two days on Collagen I gels in supplemented medium. Note the presence of flattened cells and the absence of clustered cells.

BD BioCoat™ Hepatocyte Differentiation Environment: A system optimized for hepatocyte differentiation

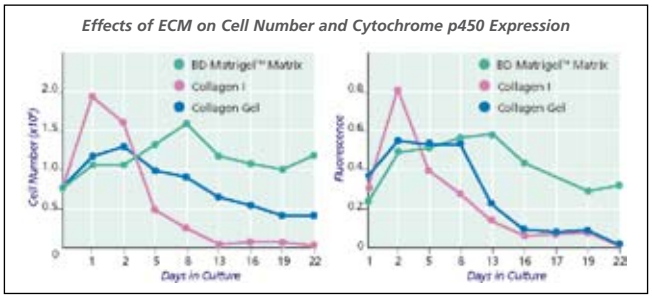
Applications:

BD BioCoat Hepatocyte Differentiation Environment enables:

- Culture of hepatocytes for extended periods under serum-free conditions without the loss of cellular functions
- Construction of *in vitro* models of liver cells for a number of applications
- Maintains *in vitro* expression of cytochrome p450 (CYP1A1) for at least three weeks[1]
- Restores expression of C/EBPα and immediate early growth response transcription factors[2]
- Promotes rounded, clustered morphology and polarization of hepatocytes[3]
- Maintains hepatocyte viability for at least three weeks[1]
- Allows studies of liver-specific function to be carried out twice as long as with Collagen I gels[1]

BD Matrigel™ Matrix has been successfully used with hepatocytes for studies of:

- Mechanisms controlling gene expression (e.g., cytochrome p450)[1,4-6]
- Albumin expression[7,8]
- Regulation of hepatic genes and liver transcription factors by ECM[7-9]
- Metabolic processes, including drug metabolism[10]
- Transport systems of natural compounds[11] and drugs[12]
- Drug toxicity of the liver[12]
- Altered or impaired liver function due to disease[13]



Changes in cell number (left) and cytochrome p450 activity as determined by a fluorometric assay (right). Note maintenance of cell number and p450 expression in long-term cultures using the BD BioCoat Hepatocyte Differentiation Environment.

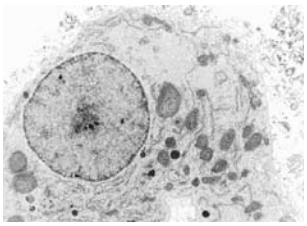
Complete protocol provides:
- Standardized procedures
- Capability for immediate start-up

Quality Control:
- Tested for ability to maintain a differentiated phenotype of rat primary hepatocytes
- BD™ Hepatocyte Culture Medium and EGF tested for mycoplasma
- BD Hepatocyte Culture Medium tested for endotoxin (LAL assay)
- All components tested and found negative for bacteria and fungi

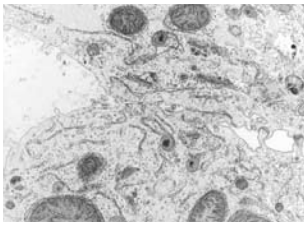
Storage and Stability:

BD Hepatocyte Culture Medium and EGF are stable for at least three months at 2-8°C. Upon supplementation with EGF, the BD Hepatocyte Culture Medium is stable for six weeks under subdued lighting at 2-8°C. BD Matrigel™ Matrix Cellware is stable for at least three months at -20°C.

Rat Hepatocytes Cultured in the BD BioCoat™ Hepatocyte Differentiation Environment
Transmission Electron Micrograph of thin sections shows similar intracellular and intercellular structures, indicative of healthy differentiated hepatocytes, in four-week-old cultures.



Intracellular structures active nucleus (5000x)
Numerous mitochondria with calcium deposits; rough ER stacks near cell surfaces and surrounding mitochondria; glycogen stores; golgi, ribosomal rosette, lipid droplets.



Intercellular structures (8600x)
Frequent interdigitation of apposing cells; gap and tight junctions; intercellular lumens with microvilli, characteristic of bile canaliculi.

BD BioCoat™ Hepatocyte Differentiation Environment

The BD BioCoat Hepatocyte Differentiation Environment is an integrated system optimized to support long-term cultures of differentiated hepatocytes. The system contains a specially formulated, serum-free medium supplemented with hormones, growth factors, defined nutrients, and BD BioCoat Matrigel Matrix Cellware.

Description	Qty.	Cat. No.
BD BioCoat™ Hepatocyte Differentiation Environment		
The Kit contains:	1 kit	**355055**
• BD Hepatocyte Culture Medium 500 ml (Williams E medium containing dexamethasone and BD ITS+ Universal Culture Supplement)		
• BD Epidermal Growth Factor receptor grade (rEGF)	5 µg	
• BD BioCoat Matrigel Matrix Cellware* five 6-well Plates (Cat. No. 354510)		
• Complete Protocol		
BD BioCoat™ Matrigel™ Matrix Cellware*		
6-well Plates	5 plates	**354510**
BD BioCoat™ Matrigel™ Matrix Cellware*		
100 mm Dishes	5 dishes	**354634**
BD™ Hepatocyte Culture Medium* (formerly Hepato-STIM)		
This Medium contains:	500 ml	**355056**
• BD Hepatocyte Culture Medium – 500 ml		
• EGF – 5 µg		

****Optimized for hepatocyte differentiation***

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TIPS

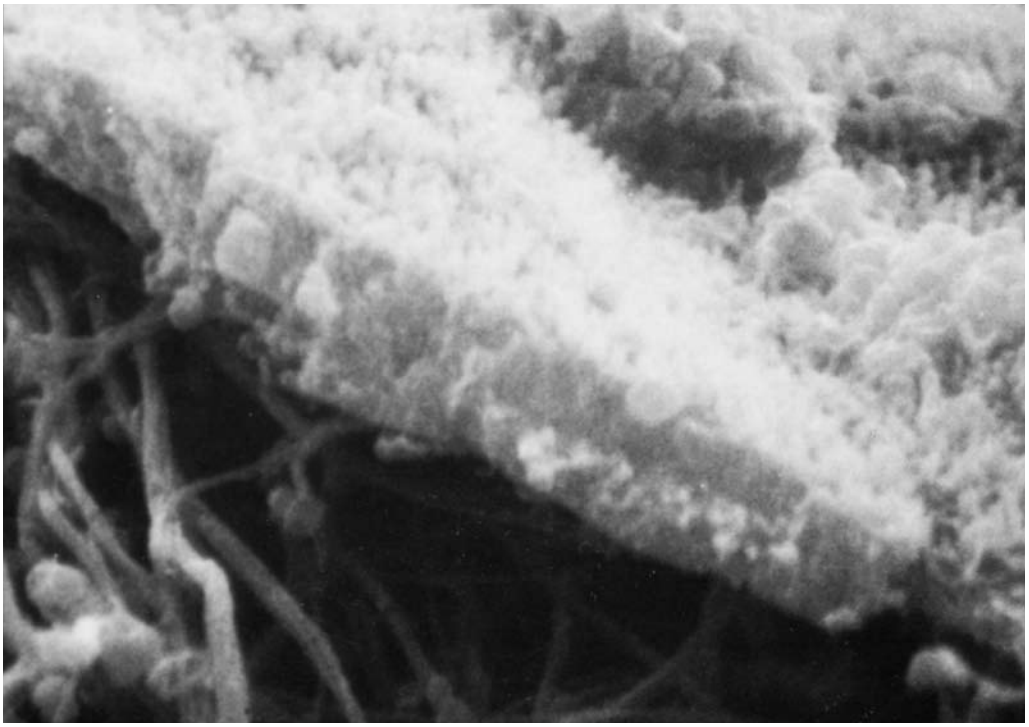
For biochemical analyses (mRNA or proteins), use BD Cell Recovery Solution (Cat. No. 354253) for recovering cells from BD Matrigel Matrix. Use BD Dispase (Cat. No. 354235) when single cell suspensions are required for cell counting/replating.

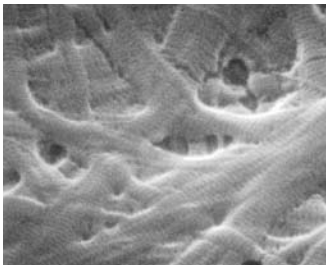
RELATED PRODUCTS

BD BioCoat Matrigel Matrix Cellware 92
BD Matrigel Matrix 124
BD Cell Recovery Solution 126
BD Dispase 126
BD Collagen I 128
BD EGF 190
BD HGF/SF 192
BD FGF 191
BD Gentest™ Hepatocytes .....see BD Gentest Catalog

BD BioCoat™ Intestinal Epithelium Differentiation Environment

- Permits testing for intestinal permeability, including bioavailability, with Caco-2 cells in three days instead of three weeks





Scanning Electron Micrograph of Fibrillar Collagen Matrix
Rat tail collagen is polymerized on a 1 µm membrane insert under conditions that allow formation of large collagen fibrils with a normal cross-striation pattern.

Caco-2 Cell Monolayer on Fibrillar Collagen Matrix
Caco-2 cells cultured for three days on a BD BioCoat™ Fibrillar Collagen I µm membrane insert. Note large fibrils (bottom left) and numerous apical enterocyte microvilli.

An *in vitro* system optimized for rapid differentiation of Caco-2 cells:

- Facilitates confluent enterocyte monolayer formation with barrier function within 72 hours
- Promotes barrier function with TEER >150 ohms cm^2 and mannitol permeability coefficient < $4x10^{-6}$ cm/sec
- Permits testing of both actively and passively transported compounds
- Allows for studies two to three days post-seeding, 17-18 days earlier than with commonly used procedures
- Serum-free environment maximizes control over experimental conditions
- Saves labor time and media by eliminating three to five feedings

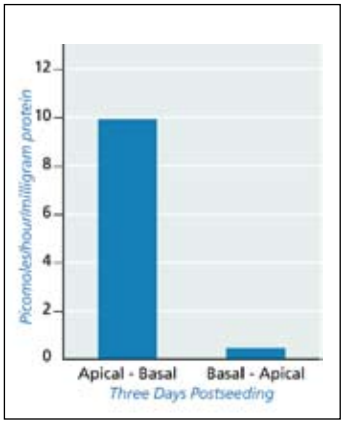
Complete protocol provides:

- Standardized procedures
- Capability for immediate start-up

Applications:

Caco-2 cells can be used as *in vitro* models of intestinal epithelial cells for the following:

- Examination of transepithelial passage of orally administered drugs to help predict bioavailability of new therapeutic agents in humans[1-3]
- Studies of intestinal transport mechanisms for various nutrients, metabolites and trace elements, and of compounds that interfere with this process[4]
- Investigation of the mechanisms involved in the entry, replication, and expression of infectious agents of the intestinal tract[5]
- Studies of structural and/or functional changes in the intestinal epithelium associated with diseases, such as Crohn's disease, rheumatoid arthritis, or drug-induced intestinal inflammation[6-8]



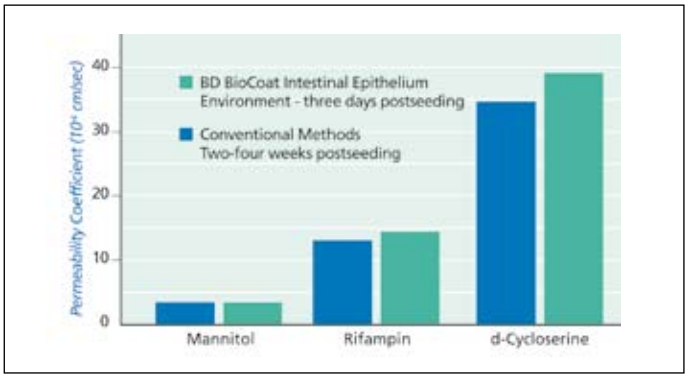
Taurocholic Acid Transport in Caco-2 Cells
Comparison of the active transport of taurocholic acid in the apical-basal versus basal-apical direction. Cells were grown three days in the BD BioCoat Intestinal Epithelium Differentiation Environment. Note the level of taurocholic acid transport in the apical-basal direction is comparable to cells grown 4-21 days. The difference in direction is indicative of active transport.

Quality Control:

- Tested for ability to promote formation of a differentiated monolayer of Caco-2 cells with barrier function within 72 hours of cell seeding (measured by TEER and mannitol permeability)
- BD™ Intestinal Epithelium Seeding, Basal and Differentiation Media, and BD MITO+ Serum Extender are tested for mycoplasma
- BD Intestinal Epithelium Differentiation Medium is tested for endotoxin (LAL assay)
- All components are tested and found negative for bacteria and fungi

Storage and Stability:

All components are stable for at least three months when stored at 2-8°C. Upon supplementation with BD™ MITO+ Serum Extender, both the BD Intestinal Seeding and Differentiation Media are stable for 21 days under subdued lighting at 2-8°C.



Permeability of Mannitol and Antibiotics through Caco-2 Monolayers
Barrier formation occurs three days post-seeding in the BD BioCoat™ Intestinal Epithelium Differentiation Environment and two to four weeks with conventional methods; however, the monolayers are equally permeable for each of the three compounds tested.

BD BioCoat™ Intestinal Epithelium Differentiation Environment

The BD BioCoat Intestinal Epithelium Differentiation Environment is an integrated system designed to create *in vitro* intestinal models[9]. Contains a specially formulated serum-free medium[10], culture supplements, sodium butyrate[11], and BD BioCoat Fibrillar Collagen Cell Culture Inserts[12-15].

Description	Qty.	Cat. No.
BD BioCoat™ Intestinal Epithelium Differentiation Environment		
The Kit contains:	1 kit	**355057**
• BD BioCoat Fibrillar Collagen Cell Culture Inserts – 24 inserts, 1 µm pore size in two 24-well plates		
• BD Intestinal Epithelium Seeding Basal Medium – 100 ml		
• BD Intestinal Epithelium Differentiation Medium – 400 ml		
• BD MITO+ Serum Extender – 0.5 ml		
• Complete Protocol		
BD™ Intestinal Epithelium Differentiation Media Pack		
The Media Pack contains:	1 kit	**355058**
• BD Seeding Basal Medium – 500 ml		
• BD Differentiation Medium – 500 ml		
• BD MITO+ Serum Extender – 2 x 0.5 ml		
BD™ Intestinal Epithelium Seeding Basal Medium		
	2 x 250 ml	**355257**
BD™ Intestinal Epithelium Differentiation Medium (formerly Entero-STIM)		
	2 x 250 ml	**355357**
BD™ MITO+ Serum Extender		
(5 liter equivalent)	5 ml	**355006**
BD BioCoat™ Fibrillar Collagen Cell Culture Inserts 1.0 µm pore size		
• Packed in four 6-well Plates	24	**354472**
• Packed in four 12-well Plates	24	**354473**
• Packed in two 24-well Plates	24	**354474**

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TIPS

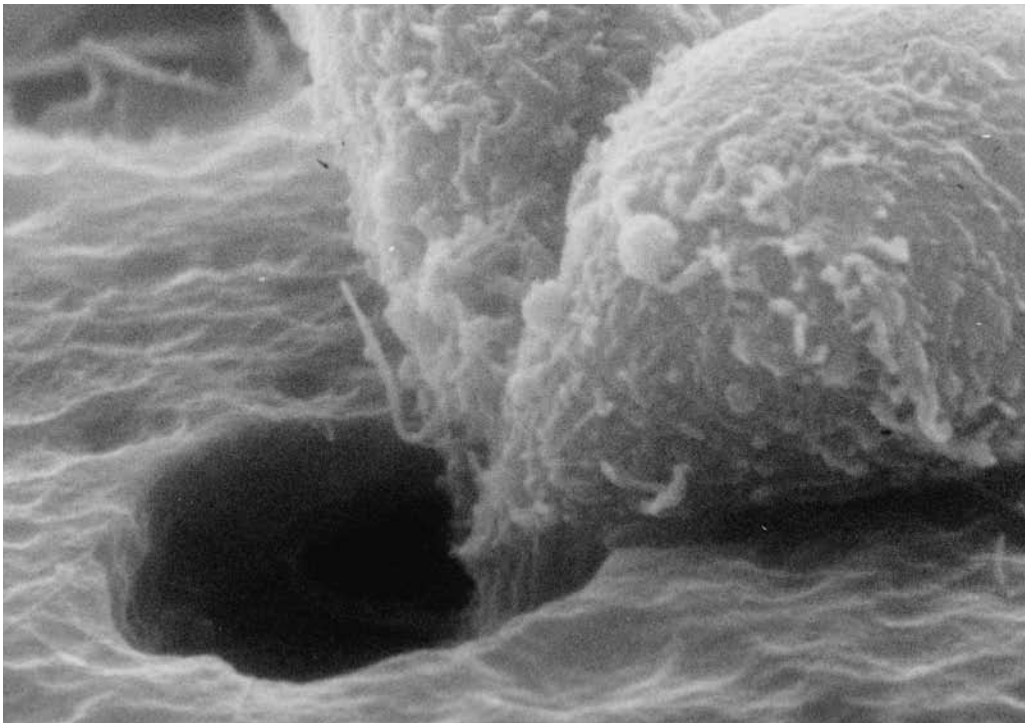
The BD BioCoat Intestinal Epithelium Differentiation Environment is also available in an automation-friendly, one-piece 24-multiwell insert plate format, BD BioCoat HTS Caco-2 Assay system, for robotic screening of cells. Please see page 160 for more detailed information.

RELATED PRODUCTS

BD BioCoat HTS Caco-2 Assay System 160
BD BioCoat Fibrillar Collagen 24-Multiwell Insert System 113

BD BioCoat™ Matrigel™ Invasion Chambers

- Allows for rapid and reproducible quantitation of tumor cell invasion *in vitro*



HT-1080 Cells
Scanning electron micrograph of two human fibrosarcoma cells, having digested the BD Matrigel™ Matrix occluding the membrane pore, and migrating through the 8 µm pore of the PET membrane.

An *in vitro* system for assessing the invasive potential of both malignant and normal cells:

- Discriminating, reproducible, and ready-to-use
- Invasivity of HT-1080 cells is at least five-fold greater than 3T3 cells
- Uniform layer of BD Matrigel Matrix occluding the 8 µm pores of PET microporous membrane
- Extensively used model of *in vivo* basement membrane
- Barrier to non-invasive cells
- Proprietary coating process*
- Only invasive cells digest the matrix and move through the insert membrane

Complete protocol provides:

- Standardized procedures
- Capability for immediate start-up
- Instructions for quantitating percent invasion

**** U.S. patent pending***

Applications:

BD BioCoat™ Matrigel™ Invasion Chambers enable studies of:

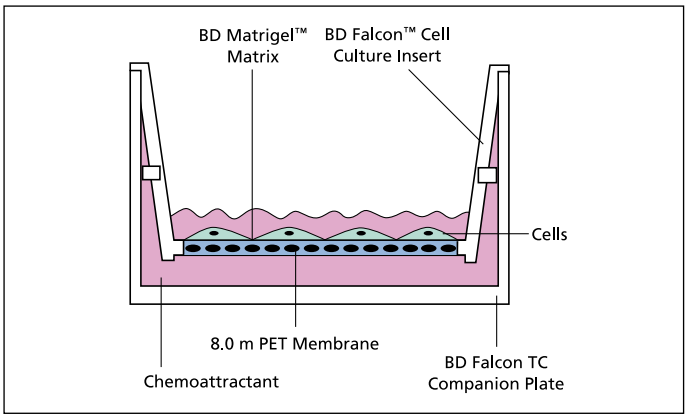
- Metastatic potential of tumor cells[1-3]
- Expression of matrix metalloproteinase on surface of invasive tumor cells[4]
- Inhibition of metastasis by ECM components[5] or antineoplastic drugs (i.e., Taxol®)[6]
- Altered expression of cell surface proteins in metastatic cells[7]
- Invasion of normal cells, such as embryonic stem cells[8], cytotrophoblasts[9], and fibroblasts[10]
- Effects of doxycycline on invasion and metalloproteinase activity of breast carcinoma cells[11]
- Metastatic potential of a newly isolated bladder cancer cell line[12]
- Suppression of lung metastasis of mouse melanoma by gene transfection[13]
- Invasion of multiple cell types, including endothelial cells, MCF-7, HT-1080, and MDA-MB-231[14-28]

Quality Control:

- Tested for ability to allow invasion of HT-1080 cells, an invasive human fibrosarcoma cell line, and to exclude invasion of 3T3 cells, a non-invasive mouse fibroblast cell line
- Tested and found negative for bacteria and fungi

Storage and Stability:

- Shipped on dry ice. Upon receipt, store immediately at -20°C in original packaging.
- Stable for at least three months at -20°C.



Schematic drawing of BD BioCoat™ Matrigel™ Invasion Chamber in use.

BD BioCoat™ Matrigel™ Invasion Chambers

The BD BioCoat Matrigel Invasion Chamber is an *in vitro* system for the study of cell invasion the through basement membrane. It consists of BD Falcon™ Cell Culture Inserts containing an 8.0 µm pore-size PET membrane coated with a uniform layer of BD Matrigel Matrix.

Description	Qty.	Cat. No.
BD BioCoat™ Matrigel™ Invasion Chambers		
• 8.0 µm inserts in four 6-well plates	24	**354481**
• 8.0 µm inserts in two 24-well plates	24	**354480**
BD BioCoat™ Growth Factor Reduced (GFR) Matrigel™ Invasion Chambers		
• 8.0 µm inserts in two 24-well plates	24	**354483**

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TIPS

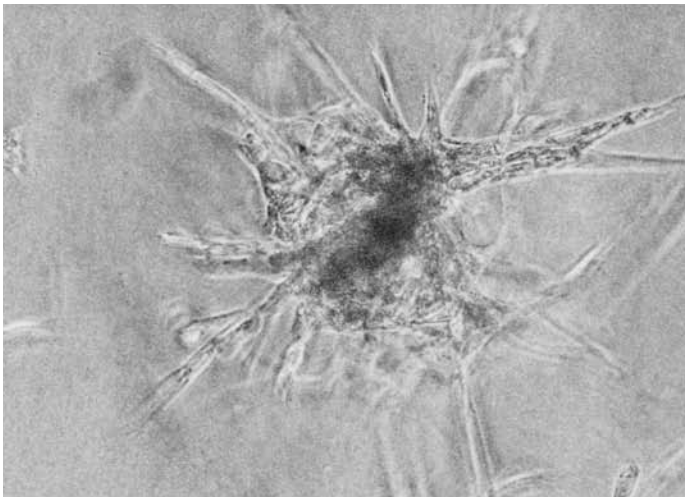
Remember to order BD BioCoat 8.0 µm Control Cell Culture Inserts when purchasing BD BioCoat Matrigel Invasion Chambers.

RELATED PRODUCTS

BD BioCoat Control Cell Culture Inserts 111
BD BioCoat™ FluoroBlok™ Invasion Systems 146
BD Falcon FluoroBlok Cell Culture Inserts 57

BD BioCoat™ Smooth Muscle Cell Differentiation Environment

- Permits studies of smooth muscle cell (SMC) specific function two weeks earlier than with Collagen I



Light Micrograph of SMC Cultured on BD BioCoat™ Growth Factor Reduced (GFR) Matrigel™ Matrix Plates
Human SMC cultured for five days in serum-free BD™ SMC Differentiation Medium. Note the formation of nodules, typical of differentiated SMC. Similar results were obtained with SMC from rats, when the medium was supplemented with 5% FBS.

BD BioCoat™ Smooth Muscle Cell Differentiation Environment

An *in vitro* system optimized for the differentiation of human and rat SMC. Includes specially formulated BD BioCoat Growth Factor Reduced (GFR) Matrigel Matrix Cellware and serum-free BD SMC Differentiation Medium.

Description	Qty.	Cat. No.
BD BioCoat™ GFR Matrigel™ Matrix Cellware		
24-well plates	5 plates	**354635**
BD™ Smooth Muscle Cell Differentiation Medium (formerly SMC D-STIM)		
(MCDB 131 Medium with BD ITS+ Universal Culture Supplement)	500 ml	**355061**

Applications:

BD Matrigel Matrix has been used to culture SMC for studies of:

- SMC differentiation[5]
- Modulation of SMC function[6]
- Molecular mechanisms of phenotypic transitions[7,8]
- Effects of various compounds on SMC behavior[9,10]
- Effects of ECM proteins on vascular SMC phenotype[11,12]

A culture system optimized for the differentiation of SMC:

- Three-dimensional matrix promotes differentiated (contractile) SMC phenotype, low proliferative index, nodular morphology and ultrastructure dominated by microtubules and microfilaments[1]
- Expression of cytoskeletal markers, α-smooth muscle actin, heavy chain myosin, and 150 kD h-caldesmon[2-4]
- Carry out studies of SMC specific function two weeks earlier than with Collagen I
- Reduced levels of growth factors for cytokine studies
- Serum-free environment maximizes control over experimental conditions

Complete protocol provides:

- Standardized procedures
- Capability for immediate startup

Quality Control:

- Tested for ability to induce aortic SMC to form a nodular morphology within 24 hours
- BD SMC Differentiation Medium is tested for mycoplasma and endotoxin (LAL assay)
- All components are tested and found negative for bacteria and fungi

Storage and Stability:

BD BioCoat Growth Factor Reduced Matrigel Matrix Cellware is stable for at least three months at -20°C. The BD SMC Differentiation Medium is stable for at least three months at 2-8°C under subdued lighting conditions.

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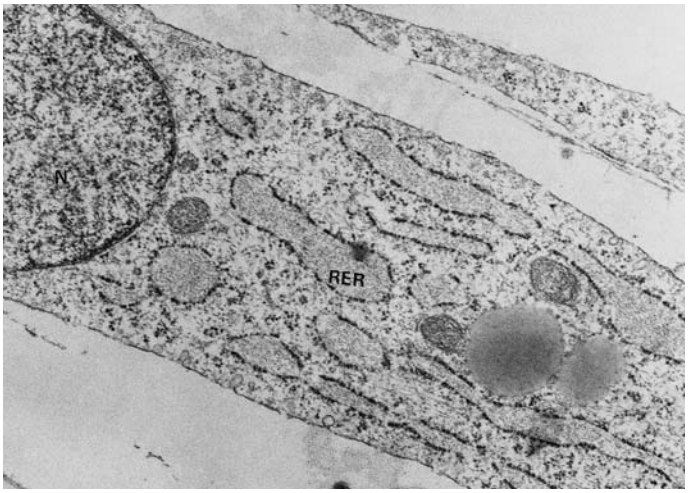
RELATED PRODUCTS

BD BioCoat Laminin Cellware 90
BD BioCoat Collagen IV Cellware 84
Vialed BD ECM Products 122
Transforming Growth Factor (TGF-ß1) 194

BD BioCoat™ Smooth Muscle Cell Proliferation Environment

- Promotes rapid proliferation of smooth muscle cells (SMC) *in vitro*



Transmission Electron Micrograph of Proliferative SMC Cultured on BD BioCoat Collagen I Cellware
Human SMC were cultured for five days in BD™ SMC Proliferation Medium supplemented with 5% FBS. Note the abundance of dilated rough ER containing flocculent material (proteins), typical of dedifferentiated, dividing SMC.

BD BioCoat™ Smooth Muscle Cell Proliferation Environment

The BD BioCoat Smooth Muscle Cell Proliferation Envrionment is an *in vitro* culture system for rapid proliferation of SMC from human and rat aorta. It includes BD SMC Proliferation Medium.

Description	Qty.	Cat. No.
BD™ Smooth Muscle Cell Proliferation Medium (formerly SMC P-STIM)	1 kit	**355160**

Kit contains:
- MCDB 131 Medium - 475 ml
- BD Human Recombinant Epidermal Growth Factor (EGF) - 5 µg
- BD Basic Fibroblast Growth Factor (bFGF) - 1 µg
- Human Recombinant Insulin - 2.5 mg

BD BioCoat™ 75 cm² Collagen I Flasks*

75 cm² Collagen I Plug-Seal Flasks	5	**354462**
	50	**356462**
75 cm² Collagen I Vented-Cap Flasks	5	**354485**
	50	**356485**

** For other BD BioCoat Collagen I configurations, see page 82.*

Applications:
- SMC proliferation[1]
- Study of molecular mechanisms of phenotypic transitions[2]
- Screening of antiproliferative compounds

A culture system optimized for proliferation of SMCs from human and rat aorta:
- Rapid monolayer formation with absence of heavy chain myosin and 150 kD h-caldesmon expression[1]
- 90% cell attachment within one to two hours
- 90% of attached cells spread within two to four hours
- Cell population doubles three to six times within five to six days
- Reduced feedings save labor time and media

Complete protocol provides:
- Capability for immediate start-up

Quality Control:
- BD SMC Proliferation Medium, supplemented with 5% FBS, with BD BioCoat™ Collagen I Flasks are tested for ability to promote a seven-fold increase of rat aortic SMC within three days
- All components are tested and found negative for bacteria and fungi
- Media are tested for mycoplasma and endotoxin (LAL assay)

Storage and Stability:
BD SMC Proliferation Medium is stable for at least three months at 2-8°C. Collagen I Cellware is stable for at least six months at 4-30°C.

REFERENCES:
1. Grushkin-Lerner, L. and Flaherty, P., Mol. Cell Biol. **65**:279a (1995).
2. Yamamoto, M. and Yamamoto, K., Exp. Cell. Res. **212**:62 (1994).

RELATED PRODUCTS

BD BioCoat Collagen I Cellware 82
BD BioCoat Fibronectin Cellware 86
Vialed BD ECM Products 122
BD Platelet Derived Growth Factor (PDGF) 194


BD BioCoat
BD BioCoat

BD BioCoat™ Cellware

BD BioCoat™ Cellware is a unique line of tissue culture vessels that combines BD Falcon™ Multiwell Plates, Dishes, Flasks, CultureSlides, and glass Coverslips with a variety of extracellular matrix (ECM) proteins and attachment factors. Various ECM components are applied to vessel surfaces by a proprietary manufacturing process resulting in uniform, optically clear matrix substrates. This technology, together with our exacting quality control, guarantees the performance of each lot, as well as consistency from lot-to-lot.

BD BioCoat Cellware promotes cell attachment, spreading, growth, and differentiation of a variety of primary cells and cell lines in serum-free or serum-containing cultures.

Applications:

- Serum-free or serum-reduced culture
- Cell-adhesion assays
- Receptor-ligand binding
- Studies of tissue morphogenesis
- Studies of cell-matrix interactions
- Regulation of signal transduction and gene expression
- Routine drug screening assays

Table of Contents

BD BioCoat™ Cellware

The BD BioCoat™ Manufacturing Facility

BD Biosciences has a highly controlled manufacturing environment for BD BioCoat™ Collagen I, Gelatin, and Poly-Lysine products in its ISO 9002 certified plant in Plymouth, England. ISO certification verifies that the facility meets international quality standards and that BD provides assurance to customers that it is totally committed to delivering superior quality and product improvements.

The state-of-the-art clean room suite was designed and constructed to meet US, EU, and British standards.* All BD BioCoat products are produced under aseptic conditions to minimize the risk of product contamination from bacteria, fungi, pyrogens, and particulates.

Proprietary manufacturing technology, validated procedures and strict compliance with established protocols, combined with BD's exacting quality control, assure the biological performance of each lot, as well as consistency from lot-to-lot.

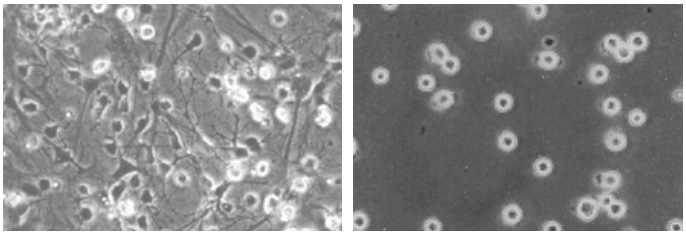
US Federal Standard 209E Class M3.5, British Standard 5295 Class E, EU Guide to GMP for medicinal products (Vol. 4) Class A/B

Quality Assurance Testing

BD BioCoat Cellware is prepared from rigorously tested raw materials to assure the best performance possible. Collagen I, Gelatin, Poly-D-Lysine (PDL), and Poly-L-Lysine (PLL) are tested for biological activity and the presence of bacteria, fungi, and mycoplasma prior to use for manufacture of BD BioCoat Cellware.

- Collagen I source: rat tail tendon
- Collagen I purity: >90% by SDS-PAGE
- PDL and PLL source: synthetic
- PDL MW: 75-150 kD; PLL MW: 30-70 kD

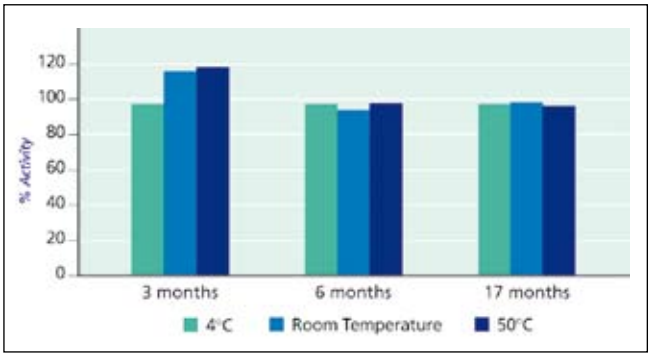
Representative samples of BD BioCoat Cellware are incubated for 14 days with tryptic soy and sabouraud dextrose broths. All passing lots are found negative for the presence of bacteria and fungi.



HT-1080 human fibrosarcoma cells, when cultured on BD BioCoat Collagen I plates (left), attach and spread in less than one hour. These same cells on tissue culture-treated plastic (right) do not attach or spread.

Room Temperature Stability:

Our proprietary formulation and manufacturing techniques allow us to produce room temperature stable Collagen I, Gelatin, and Poly-Lysine Cellware. Extensive accelerated and real-time studies in our laboratory have confirmed product performance for at least one year under dry conditions at temperatures from 4-30ºC.



Bioassay performed on BD BioCoat™ Collagen I Plates at various storage conditions show consistent bioactivity at 3, 6, and 17 months. Accelerated stability testing indicates similar results with Gelatin, PDL, and PLL Cellware.

Storage and Stability:

Collagen I, Gelatin, and Poly-Lysine can be stored at 4-30ºC under dry conditions. Product is stable for at least one year under these conditions.

BD BioCoat™ Advantages:

- **Ready-To-Use Convenience**
  Save labor and increase productivity. Spend more of your valuable time performing experiments instead of preparing for them.

- **Reliable Performance**
  Improve cell attachment and increase proliferation rates for a variety of normal and transformed cells.

- **Room Temperature Stability**
  Too little space in your cold room is no longer a problem. Our proprietary formulation and manufacturing techniques result in BD BioCoat Collagen I, Poly-Lysine, and Gelatin products that are stable at room temperature.

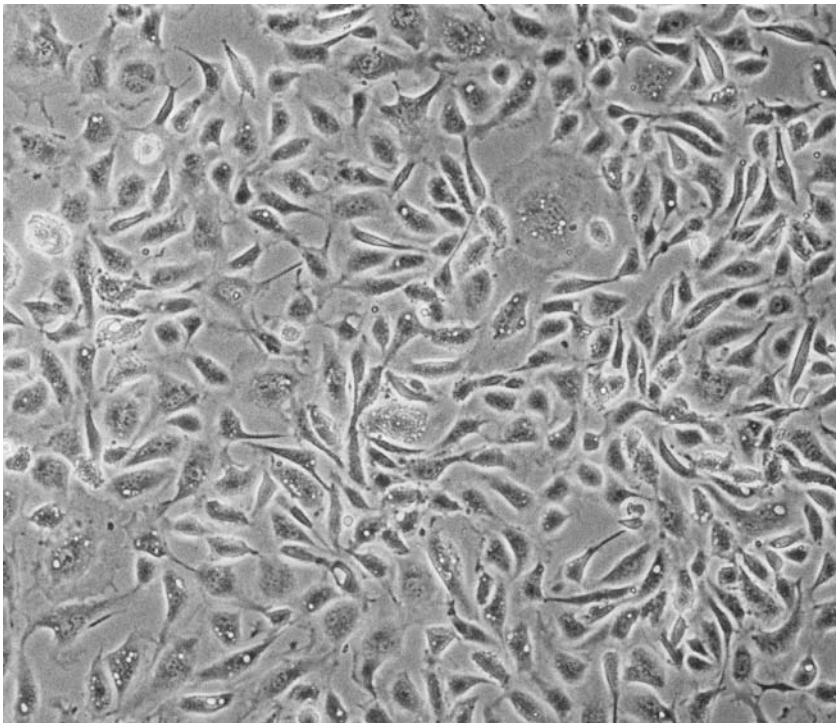
- **Quality Assurance Testing**
  Products are thoroughly tested and guaranteed to perform as claimed. Use them with complete confidence.

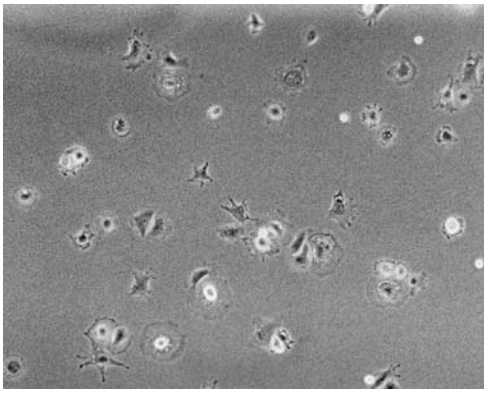
- **Lot-To-Lot Consistency**
  Highly controlled production environment and validated manufacturing procedures assure product uniformity and cell culture performance.

- **Wide Selection**
  BD BioCoat Collagen I, Poly-Lysine, and Gelatin Cellware are available in a wide assortment of tissue culture vessels, including BD Falcon™ clear polystyrene Multiwell Plates, Dishes, Flasks, Insert Systems, CultureSlides, and Coverslips. A variety of coated 96- and 384-well assay plates are available in clear, white, black/clear, and white/clear formats. BD BioCoat custom coating services are also available.

BD BioCoat™ Collagen I Cellware

- Improves cell attachment and increases proliferation rates for a variety of normal and transformed mammalian cell types





Effects of BD BioCoat™ Collagen I Cellware on Fetal Bovine Heart Endothelial Cells (FBHE)

FBHEs grown for five days in basal medium (above) containing 10% FBS on tissue culture plastic show sparse growth.

FBHEs grown for five days using the BD BioCoat Endothelial Cell Growth Environment (Collagen I Cellware, left) form a confluent monolayer and show numerous mitotic cells.

Collagen is an integral part of the framework that holds cells and tissues together and has been recognized as a useful matrix for improving cell culture. *In vitro* use of collagen can exert effects on the adhesion, morphology, growth, migration, and differentiation of a variety of cell types[1].

BD BioCoat™ Collagen I Cellware applications include:

- Promotion of cell attachment and spreading
- Rapid expansion of cell populations
- Serum-free or reduced serum culture
- Cell adhesion assays
- Studies of effects of Collagen I on cell behavior
- Improving survival of primary cells in culture

The following is a partial list of cells successfully cultured on BD BioCoat™ Collagen I Cultureware*:

Endothelial Cells
- primary human umbilical vein endothelial cells (HUVEC)[2,19]
- bovine brain microvessel endothelial cells[3]
- bovine aortic endothelial cells[4]
- fetal bovine heart endothelial cells (FBHE)
- primary porcine aortic endothelial cells

Hepatocytes
- primary rat hepatocytes[5,6]
- HepG2 cells
- primary human hepatocytes
- primary mouse hepatocytes[17,18]

Muscle Cells
- chick embryo and rat myocytes and myoblasts[7,8]
- skeletal muscle cells[15]
- rat and human smooth muscle cells[9]
- rat and quail primary cardiomyocytes[10]
- transfected MM41 skeletal myoblasts[11]

PC12 Cells (rat pheochromocytoma cells)[20]

Other Cells Types
- transfected CHO cells
- MDA-MB 435 tumor cells[13]
- COS-7 cells[12]
- Osteoclasts[16]
- Transfected HEK-293[14]

**** Please contact your local BD office for additional cell types and references.***

RELATED PRODUCTS

BD BioCoat Variety Pack Cellware 103
BD BioCoat Collagen I Cell Culture Inserts 111,113
BD BioCoat Collagen I in Drug Discovery & Dev. 164
BD™ 3D Collagen Composite Scaffolds 118
Vialed BD Collagen I 128
BD HUVEC-2 Cells 154

BD BioCoat™ Collagen I Cellware

BD BioCoat™ Collagen I Cellware are tissue culture vessels with a uniform application of rat tail collagen type I. BD BioCoat Collagen I Cellware is manufactured in a highly controlled environment and rigorously tested to assure product consistency and performance.

Description	Plate Type	Qty.	Cat. No.	Qty.	Cat. No.	Qty.	Cat. No.
Multiwell and Assay Plates							
6-well		5	**354400**	50	**356400**		
12-well		5	**354500**	50	**356500**		
24-well		5	**354408**	50	**356408**		
48-well		5	**354505**	50	**356505**		
96-well	Clear	5	**354407**	50	**356407**	80	**356698**
96-well	Black/Clear	5	**354649**	50	**356649**	80	**356700**
96-well	White/Clear	5	**354650**	50	**356650**	80	**356701**
96-well	White	5	**354519**	50	**356519**	80	**356699**
384-well	Black/Clear	5	**354667**	50	**356667**	80	**356705**
384-well	White/Clear	5	**354664**	50	**356664**	80	**356702**†††
384-well	Clear	5	354666	50	**356666**	80	**356704**†††
384-well	White	5	354665	50	**356665**	80	**356703**†††
Culture Dishes							
35 mm		20	**354456**	100	**356456**		
60 mm		20	**354401**	100	**356401**		
100 mm		10	**354450**	40	**356450**		
150 mm		5	**354551**				
Flasks							
25 cm^2 plug-seal†		10	**354531**	50	**356531**		
25 cm^2 vented-cap†		10	**354484**	50	**356484**		
75 cm^2 plug-seal††		5	**354462**	50	**356462**		
75 cm^2 vented-cap††		5	**354485**	50	**356485**		
150 cm^2 plug-seal		5	**354645**	40	**356645**		
150 cm^2 vented-cap		5	**354486**	40	**356486**		
175 cm^2 plug-seal		5	**354478**	40	**356478**		
175 cm^2 vented-cap		5	**354487**	40	**356487**		
Coverslips (No. 1 German Glass)							
22 mm Round				60	**354089**		
CultureSlides							
1-well				12	**354556**		
2-well				12	**354627**		
4-well				12	**354557**		
8-well				12	**354630**		

† BD BioCoat 25 cm^2 Flasks are 70 ml canted neck
†† BD BioCoat 75 cm^2 Flasks are 250 ml canted neck
††† Please call for shipping schedules on large orders

Source:

Rat tail tendon

Quality Control:

- Tested for ability to promote attachment and spreading of HT-1080 human fibrosarcoma cells
- Tested and found negative for bacteria and fungi
- Collagen I purity >90% by SDS-PAGE

Storage and Stability:

Cellware is stable for at least six months from date of shipment when stored at 4-30°C under dry conditions. Coverslips and CultureSlides are stable for at least three months from date of shipment when stored at 2-8°C.

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13. Brisson M., et al., Molecular Pharmacology **66**(4):2004.
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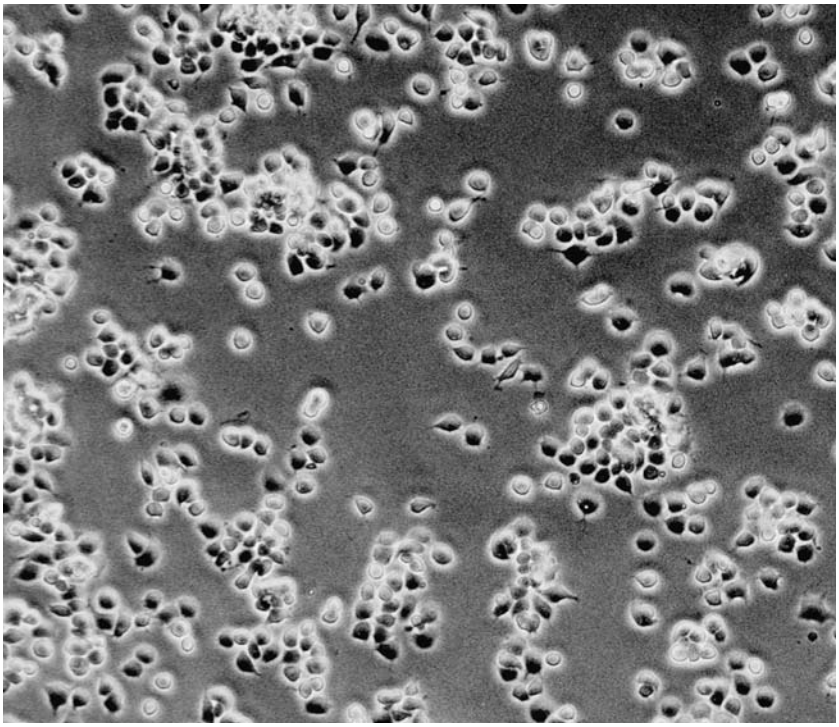
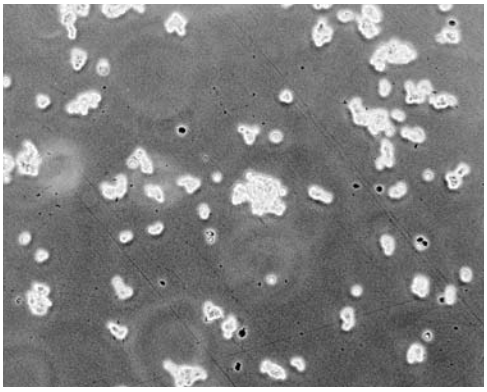
BD BioCoat™ Collagen IV Cellware

- Promotes cell adhesion and differentiation of a variety of cell types and proliferation of PC12 cells





Effects of BD BioCoat™ Collagen IV Cellware on PC12 Rat Pheochromocytoma Cells

PC12 cells cultured on tissue culture plastic (above) do not attach well and tend to float in clumps in the culture medium.

PC12 cells cultured on BD BioCoat Collagen IV Cellware (left) show 90% attachment and rapid proliferation.

Collagen IV is a ubiquitous component of basement membranes, the sheet-like matrix found in close proximity to epithelial, muscle, and nerve cells. Collagen IV plays a role in the regulation of cell growth, differentiation, and adhesion, as well as tissue formation.

BD BioCoat™ Collagen IV Cellware applications include:

- Promotion of cell attachment and spreading
- Cell differentiation and neurite outgrowth
- Increased proliferation of PC12 cells
- Studies of effects of Collagen IV on cell behavior
- Cell adhesion assays
- Serum-free or reduced serum culture

The following is a partial list of cell types cultured on BD BioCoat™ Collagen IV Cultureware:

- Sensory neurons[1]
- Human SMC[2]
- Macrophages[3]
- Endothelial cells[4,6]
- PC12 cells[5,7,12]
- Human Epidermal Stem Cells[8]
- Keratinocytes[9,10]
- Mouse ES Cells[11]
- Hepatocytes[14]
- HT-1080[13]

Source:

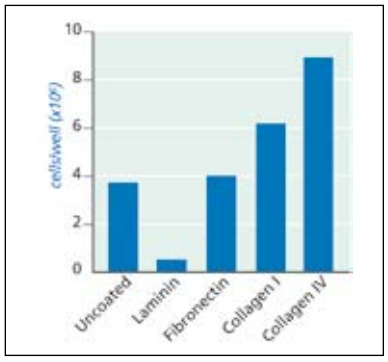
Engelbreth-Holm-Swarm lathrytic mouse tumor

Quality Control:

- Tested for ability to promote attachment and spreading of PC12 rat pheochromocytoma cells or to initiate differentiation (neurite outgrowth) of NG-108 rat glioma/mouse neuroblastoma cells
- Tested and found negative for bacteria and fungi
- Collagen IV purity >90% by SDS-PAGE

Storage and Stability:

Stable for at least three months at 2-8°C. **Do not freeze.**



Effect of Extracellular Matrix (ECM) on Proliferation of PC12 Cells
PC12 cells were seeded onto BD BioCoat™ Cellware 6-well Plates (with ECM, as indicated), at initial seed density of 6x10⁵ cells per well, in RPMI, 5% FBS and 5% horse serum. Cell numbers were determined after six days. The greatest increase in cell number was obtained on BD BioCoat Collagen IV.

BD BioCoat™ Collagen IV Cellware

BD BioCoat™ Collagen VI Cellware are tissue culture vessels with a uniform application of mouse collagen type IV. This cellware is manufactured in a highly controlled environment and rigorously tested to assure product consistency and performance.

Description	Qty.	Cat. No.
Multiwell and Assay Plates		
6-well	5	**354428**
24-well	5	**354430**
96-well	5	**354429**
Culture Dishes		
35 mm	20	**354459**
60 mm	20	**354416**
100 mm	10	**354453**
150 mm	5	**354554**
Flasks		
25 cm^2 plug-seal†	10	**354534**
75 cm^2 plug-seal††	10	**354523**
175 cm^2 plug-seal	5	**354528**

†BD BioCoat 25 cm^2 Flasks are 70 ml canted neck
††BD BioCoat 75 cm^2 Flasks are 250 ml canted neck

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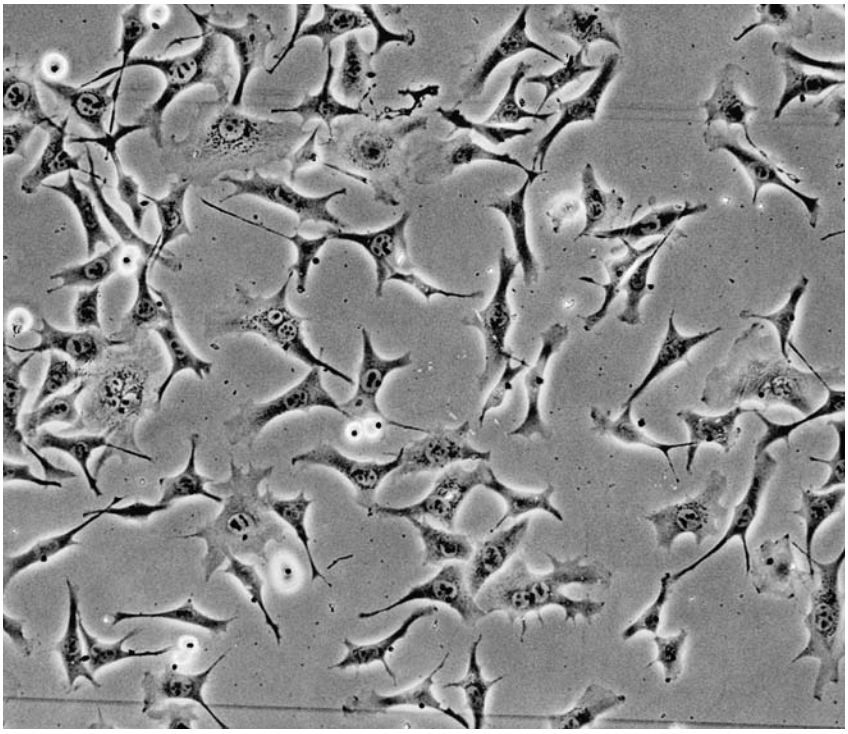
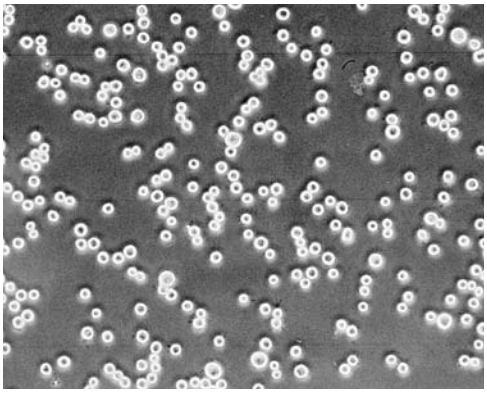
RELATED PRODUCTS

BD BioCoat Variety Pack Cellware 103
BD BioCoat Collagen IV Cell Culture Inserts 111
Vialed BD™ Collagen IV 131

BD BioCoat™ Fibronectin Cellware

- Promotes cell attachment, spreading, proliferation, and differentiation of many cell types, particularly fibroblasts and other mesenchymally-derived cells





Effects of BD BioCoat™ Fibronectin Cellware on BHK-21 Cells
BHK-21 fibroblasts cultured on glass CultureSlides (above) do not spread.

BHK-21 fibroblasts cultured on BD BioCoat Fibronectin CultureSlides (left) attach and spread within one hour.

Fibronectin exists as a dimer in plasma and in multimeric form in the extracellular matrix and on cell surfaces[1,2]. The primary function of fibronectin is cell adhesion to the extracellular matrix that occurs through an interaction of the Arg-Gly-Asp (RGD) sequence in its cell-binding domain with fibronectin-specific cell surface receptors[3]. The conformation and orientation of adsorbed fibronectin has been shown to affect cell spreading and strength of adhesion of endothelial cells[4].

BD BioCoat™ Fibronectin Cellware applications include:

- Promotion of cell attachment and spreading
- Rapid expansion of cell populations
- Serum-free or reduced-serum culture
- Cell adhesion assays
- Studies of effects of fibronectin on cell behavior
- Improving survival of primary cells in culture

The following is a list of cell types that have been cultured on BD BioCoat™ Fibronectin Cultureware:

- Smooth muscle cells[5]
- Endothelial cells[6]
- Human umbilical vein endothelial cells (HUVECs)[7,18]
- Monocytes[8]
- 3T3 preadipose cells[9]
- Neuroblastoma cells[10]
- Microvascular endothelial cells[11]
- Human myeloma cell lines[12]
- Metastatic, ras-transformed NIH 3T3 cells[13]
- MCF-7 tumor cells[14]
- Lung fibroblasts[17]
- VIC[16]
- Squamous cell carcinoma[15]

Source:

Human placenta

Note: Source material is tested for hepatitis B antigen and HIV-1 antibody

Quality Control:

- Tested for ability to promote attachment and spreading of BHK-21 hamster kidney cells
- Tested and found negative for bacteria and fungi
- Fibronectin purity >90% by SDS-PAGE

Storage and Stability:

Cellware is stable for at least three months at 2-8°C. **Do not freeze.** Coverslips and CultureSlides are stable for at least 3 months when stored at 2-8°C.

BD BioCoat™ Fibronectin Cellware

BD BioCoat Fibronectin Cellware is a line of tissue culture vessels with a uniform application of human fibronectin. This cellware is manufactured in a highly controlled environment and rigorously tested to assure product consistency and performance.

Description	Qty.	Cat. No.
Multiwell and Assay Plates		
6-well	5	**354402**
12-well	5	**354501**
24-well	5	**354411**
48-well	5	**354506**
96-well	5	**354409**
Culture Dishes		
35 mm	20	**354457**
60 mm	20	**354403**
100 mm	10	**354451**
150 mm	5	**354552**
Flasks		
25 cm^2 plug-seal†	10	**354532**
75 cm^2 plug-seal††	10	**354521**
150 cm^2 plug-seal	5	**354646**
175 cm^2 plug-seal	5	**354526**
Coverslips (No. 1 German Glass)		
22 mm round	60	**354088**
CultureSlides		
1-well	12	**354558**
2-well	12	**354628**
4-well	12	**354559**
8-well	12	**354631**

†BD BioCoat 25 cm^2 Flasks are 70 ml canted neck
††BD BioCoat 75 cm^2 Flasks are 250 ml canted neck

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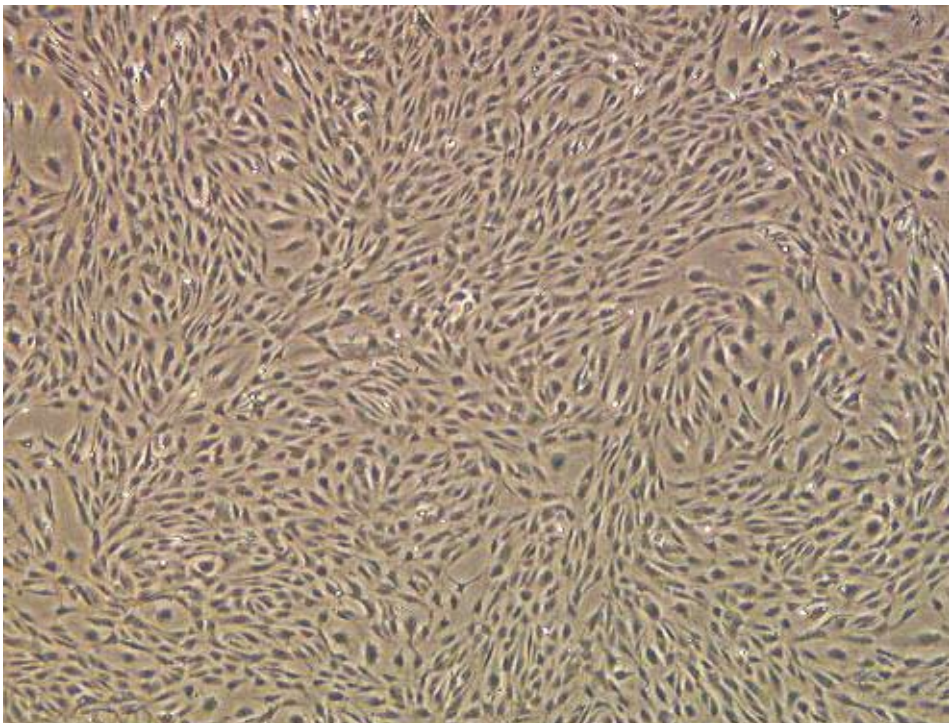
RELATED PRODUCTS

BD BioCoat Variety Pack Cellware 103
BD BioCoat Fibronectin Cell Culture Inserts 111-113
Vialed BD™ Fibronectin 132
BD HUVEC-2 Cells 154

BD BioCoat™ Gelatin Cellware

- Gelatin substrate enhances the attachment of a variety of normal and transfected cell types
- Pre-treatment with Gelatin eliminates time consuming preparation, saving time and money
- Lot-to-lot consistency ensures reproducible results



Human umbilical vein endothelial cells (HUVECs) grown for seven days on BD BioCoat Gelatin 6-well Plates seeded at a density of 2x10⁴ in the presence of BD™ Endothelial Cell Culture Medium (440x).

BD BioCoat™ Gelatin Cellware provides an attachment and growth promoting substrate for the culture of a variety of cell types. Gelatin is commonly used in the culture of normal and transfected cell types, including vascular endothelial, muscle, embryonic stem (ES), and F9 teratocarcinoma cells. Gelatin is a heterogeneous mixture of water soluble proteins derived through the hydrolysis of collagen.

The following is a partial list of cell types cultured on BD BioCoat™ Gelatin Cellware:

- Vascular endothelial cells (i.e., BME[1], BAEC[2])
- ES cells[3]
- C2C12 myoblasts[4] and MM14 myoblasts[5]
- F9 teratocarcinoma cells[6]
- HUVECs[7,8]

Source:
Gelatin, porcine

Quality Control:
- Tested for the ability to promote proliferation of Human Umbilical Vein Endothelial Cells (HUVEC)
- Tested and found negative for bacteria and fungi

Storage and Stability:
Stable for at least six months from the date of shipment when stored at 4-30°C under dry conditions.

BD BioCoat™ Gelatin Cellware

BD BioCoat™ Gelatin Cellwareis a line of tissue culture vessels with a uniform application of porcine gelatin. This cellware is manufactured in a highly controlled environment and rigorously tested to assure product consistency and performance.

Description	Qty.	Cat. No.
Multiwell and Assay Plates		
6-well	5	**354652**
6-well	50	**356652**
96-well	5	**354689**
96-well	50	**356689**
Culture Dishes		
100 mm	10	**354653**
100 mm	40	**356653**
Culture Flasks		
75 cm^2 plug-seal†	5	**354654**
75 cm^2 plug-seal†	50	**356654**
75 cm^2 vented cap†	5	**354488**
75 cm^2 vented cap†	50	**356488**

†BD BioCoat 75 cm^2 Flasks are 250 ml canted neck

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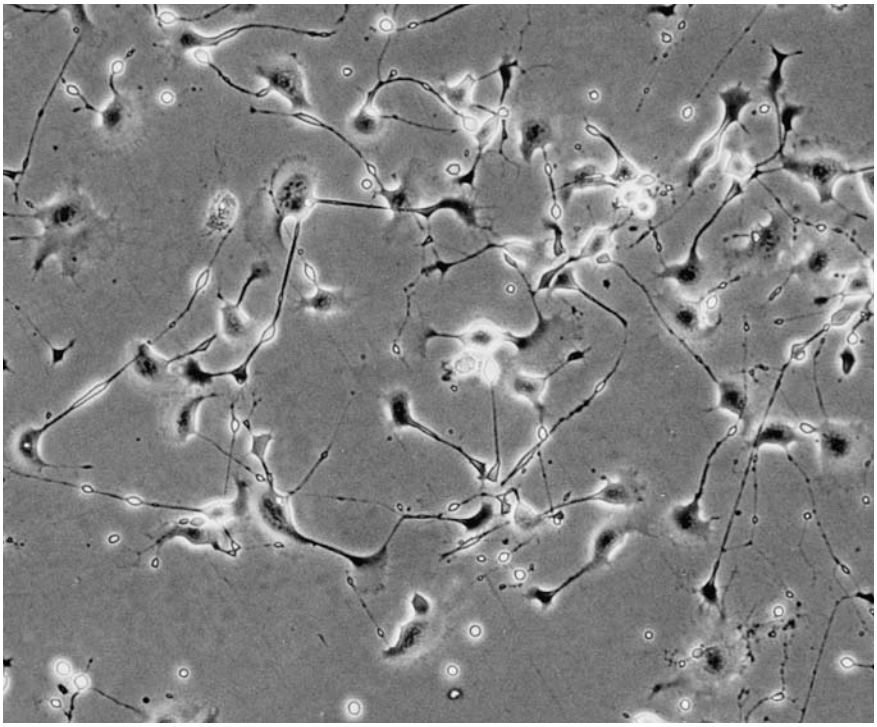
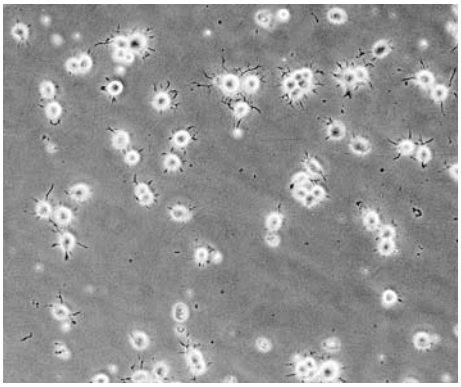
RELATED PRODUCTS

BD™ Endothelial Cell Culture Medium..... 69
BD HUVEC-2 Cells..... 154

BD BioCoat™ Laminin Cellware

- Promotes cell adhesion, proliferation, and differentiation of a variety of cell types, particularly neurons, epithelial cells, myocytes, and myoblasts





Effects of BD BioCoat™ Laminin Cellware on NG-108 Neuroblastoma Cells
NG-108 neuroblastoma cells cultured on tissue culture plastic (above) are loosely adhered and remain rounded.

NG-108 neuroblastoma cells cultured on BD BioCoat Laminin Cellware (left) exhibit a spindle-shaped morphology and dendritic processes.

Laminin, a major structural component of basement membranes, is a 900 kD glycoprotein composed of three polypeptide chains with a multidomain structure. Laminin has many varied functions that are mediated by binding to various components of the basement membrane (e.g., Collagen IV and heparan sulfate proteoglycan) and to cell surface receptors[1].

BD BioCoat™ Laminin Cellware applications include:

- Promotion of cell attachment and spreading
- Induction of cell differentiation and neurite outgrowth
- Increased proliferation of myoblasts[2]
- Studies of effects of laminin on cell behavior
- Cell adhesion assays

The following is a list of cell types cultured on BD BioCoat™ Laminin Cellware:

- Neuronal cells[3,5,13]
- Keratinocytes[4]
- 1003 embryonal carcinoma cells[6]
- Myoblasts[7]
- MC3T3-E1 osteoblast-like cell line[8]
- Cardiac myocytes[9,10,14]
- Macrophages[11]
- U937 (transfected)[12]
- Breast epithelial cells[15]

Source:
Engelbreth-Holm-Swarm mouse tumor

Quality Control:
- Tested for ability to initiate differentiation (neurite outgrowth) of NG-108 rat glioma/mouse neuroblastoma cells
- Tested and found negative for the presence of bacteria and fungi
- Laminin purity >90% by SDS-PAGE (contains entactin)

Storage and Stability:
Stable for at least three months at 2-8°C. **Do not freeze.**

BD BioCoat™ Laminin Cellware

BD BioCoat™ Laminin Cellware tissue culture vessels with a uniform application of mouse laminin. This Cellware is manufactured in a highly controlled environment and rigorously tested to assure product consistency and performance.

Description	Qty.	Cat. No.
Multiwell and Assay Plates		
6-well	5	**354404**
12-well	5	**354502**
24-well	5	**354412**
48-well	5	**354507**
96-well	5	**354410**
Culture Dishes		
35 mm	20	**354458**
60 mm	20	**354405**
100 mm	10	**354452**
150 mm	5	**354553**
Flasks		
25 cm^2 plug-seal†	10	**354533**
75 cm^2 plug-seal††	10	**354522**

†BD BioCoat 25 cm^2 Flasks are 70 ml canted neck
††BD BioCoat 75 cm^2 Flasks are 250 ml canted neck

REFERENCES:
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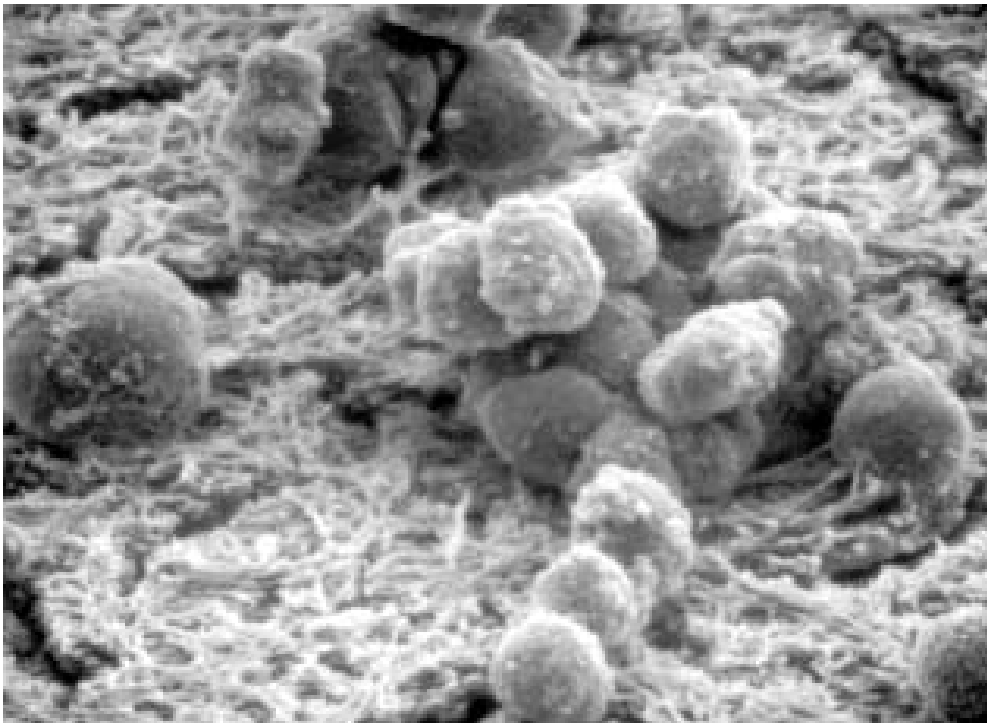
RELATED PRODUCTS

BD BioCoat Variety Pack Cellware 103
BD BioCoat Laminin Cell Culture Inserts 111
BD BioCoat Laminin Mixtured Cellware 98
Vialed BD™ Laminin 133

BD BioCoat™ Matrigel™ Matrix Cellware

- A three-dimensional model of basement membrane that promotes differentiation of a variety of cell types, especially epithelial, endothelial, muscle, and neuronal cells



BD Matrigel™ Basement Membrane Matrix
Scanning electron micrograph of hepatocytes cultured for two days on BD Matrigel Matrix.

BD Matrigel Matrix is a reconstituted basement membrane isolated from the Engelbreth-Holm-Swarm (EHS) mouse sarcoma, a tumor rich in extracellular matrix proteins. This matrix is composed of laminin, collagen IV, entactin (nidogen), and heparan sulfate proteoglycan (perlecan). Growth factors, collagenases, plasminogen activators, and other undefined components have also been reported to be found in BD Matrigel Matrix[1].

BD BioCoat™ Matrigel™ Matrix Cellware applications include:

- Elicitation of tissue-specific cellular morphology and protein production in epithelial cells
- Differentiation of endothelial, muscle, and neuronal cells
- Development of three-dimensional matrix model systems

The following cell types have been cultured on BD BioCoat™ Matrigel™ Cultureware:

- Parotid acinar cells[2]
- Myogenic cells[3]
- Sertoli cells[4]
- Human umbilical vein endothelial cells (HUVECs)[5]
- Mammary epithelial cells[6]
- Hybrid eosinophil/basophil granulocytes[7]
- Rat hepatic sinusoidal endothelial cells[8]
- Lacrimal gland epithelial cells[9,10]
- Rat brain microvessels[11]
- Buccal epithelial cells[19]
- Hepatocytes[20]

The following cell types have been cultured on BD BioCoat™ Matrigel™ Thin-Layer Cultureware:

- Skeletal myotubes[12]
- Bile duct epithelial cells[13]
- Rat muscle cells[14]
- Rat uterine epithelium[15]
- NTera2 cells[16]
- Vascular smooth muscle cells[17]
- Aortic endothelial cells[18]

Source:

Engelbreth-Holm-Swarm (EHS) mouse tumor

Formulation:

Dulbecco's Modified Eagles' Medium with 50 µg/ml gentamycin. BD Matrigel™ Matrix is compatible with all culture media.

Quality Control:

- BD BioCoat™ Matrigel™ Matrix Cellware is tested for ability to promote neurite outgrowth from chick dorsal root ganglia (in the absence of NGF)
- Tested and found negative for bacteria and fungi

Storage and Stability:

BD BioCoat Matrigel Matrix Cellware is stable for at least three months at –20°C. **Keep frozen until use.** BD BioCoat Matrigel Matrix Cellware, thin layer is stable for at least three months at 2-8°C.

BD BioCoat™ Matrigel™ Matrix Cellware

BD BioCoat Matrigel Matrix Cellware is a line of tissue culture vessels with a uniform application of BD Matrigel Matrix. This cellware is manufactured in a highly controlled environment and rigorously tested to assure product consistency and performance.

Description	Qty.	Cat. No.
BD BioCoat™ Matrigel™ Matrix Multiwell Plates		
6-well	2	**354432**
12-well	2	**354503**
24-well	2	**354433**
48-well	2	**354508**
BD BioCoat™ Matrigel™ Matrix Culture Dishes		
35 mm	8	**354460**
BD BioCoat™ Matrigel™ Matrix Thin-Layer Multiwell and Assay Plates		
6-well	5	**354603**
24-well	5	**354605**
96-well	5	**354607**
BD BioCoat™ Matrigel™ Matrix Thin-Layer Culture Dishes		
35 mm	20	**354602**
60 mm	20	**354601**
100 mm	10	**354600**
BD BioCoat™ Matrigel™ Matrix for Hepatocytes		
6-well plates	5	**354510**
100 mm culture dishes	5	**354634**

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Further references for BD Matrigel Matrix are listed on page 125.

TIPS

SPECIAL HANDLING: Store BD BioCoat Matrigel Matrix Cellware at –20°C, thaw at 4°C overnight. Do not thaw in a warm waterbath. Plates must be thawed on a level surface in order for the BD BioCoat Matrigel Matrix to be evenly distributed. To form a stable gel, place the thawed plate at 35-37°C for 30 minutes. Do not refreeze plates.

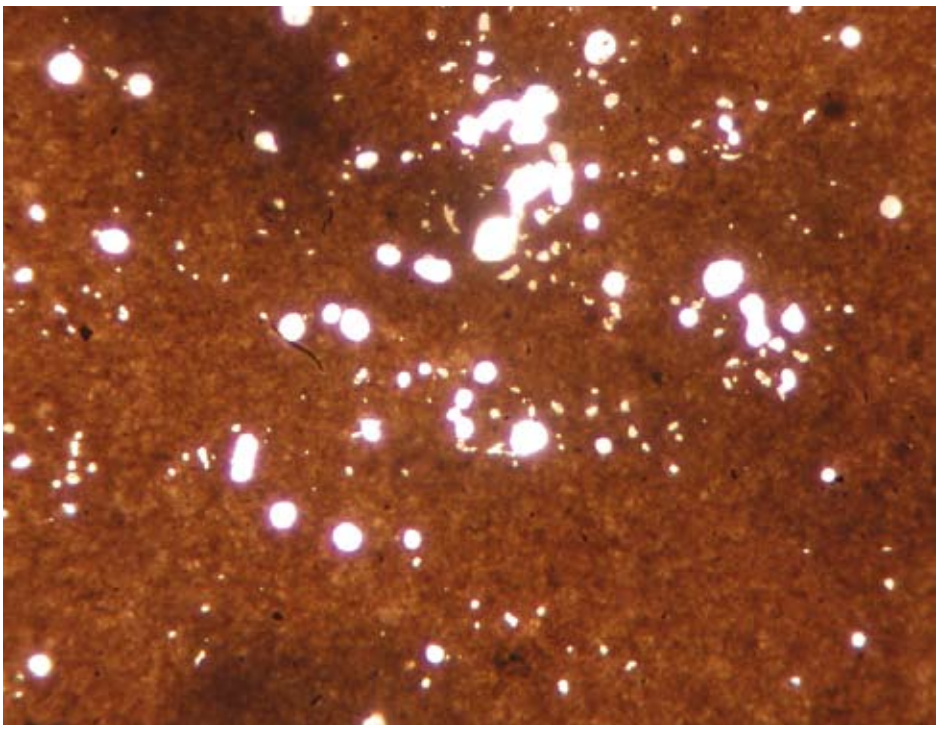
Recover cells cultured on BD BioCoat Matrigel Matrix with BD™ Dispase (Cat. No. 354235) or BD Cell Recovery Solution (Cat. No. 354253).

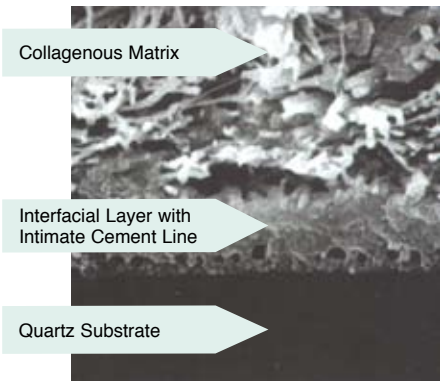
RELATED PRODUCTS

BD BioCoat Matrigel Matrix Cell Culture Inserts..... 111
Vialed BD Matrigel Matrices 124
BD BioCoat Matrigel Invasion Chambers 74
BD BioCoat Angiogenesis Products 148
BD Dispase 126

BD BioCoat™ Osteologic™ Bone Cell Culture System

- A unique family of products for direct assessment of osteoclast and osteoblast activity *in vitro,* specifically designed to improve productivity and quality of biological data in bone disease research and testing programs
- A reliable and consistent alternative to traditional bone slice culture methods





Osteoblasts - Bone Growth
Assessment of New Bone Tissue on BD BioCoat™ Osteologic™ Substrate (above) using freeze-fractured cross-section SEM. Note the formation of the cement line.

Bone Cells - Resorption
Von Kossa stain of BD BioCoat Osteologic Disc following ten-day culture with rat bone marrow cell washout. Back illuminated section shows resorption pits.

The mechanisms that regulate the formation of bone, in addition to resorption and remodeling, are part of a complex process that coordinates resorption of existing bone and formation of new bone. These multicellular functions are controlled by numerous factors that remain to be fully eludicated. The major cell types involved in bone metabolism are osteoblasts and osteoclasts[1]. Osteoclasts, which originate from hematopoetic stem cells in bone marrow, erode (resorb) bone, and osteoblasts secrete the matrix, forming the hard bone deposition. Normal function of these bone cells is modified in diseases such as osteoporosis, Paget's disease, arthritis, and other skeletal disorders.

Historically, biologically-derived hard tissues such as de-vitalized bone, dentine, or ivory slices are used as culture substrates for *in vitro* assays. However, preparation and handling of these matrices is often expensive and time consuming. Ceramic biomaterial substrates are now being considered as an alternative to biologically-derived substrates. The BD BioCoat Osteologic Bone Cell Culture System consists of sub-micron synthetic calcium phosphate thin films coated onto various culture vessels. This system has been used as an alternative method for compound screening for direct assessment of osteoclast[2-5] and osteoblast[6] activity *in vitro*. The thin film design permits easy and reliable quantification of results.

BD Biocoat™ Osteologic™ Innovative Tools for Bone Remodeling Research

Standardized Substrate
- Reduces variables
- Quality control guaranteed

Thin Film Design
- Easy and reliable quantification of results
- Permits co-culture

Multiwell Configuration
- Economical and flexible
- Statistically reliable data

Multiple Formats
- Meets wide array of research needs

BD BioCoat™ Osteologic™ MultiTest Slides

This unique multiwell test format is ideal for screening applications. It is also designed for customers requiring multiple assays on a common substrate, and for parallel tests of resorption and bone growth *in vitro*.

- Proprietary synthetic bone biomaterial
- High test density - 16 discrete wells per quartz slide
- Allows parallel resorption and bone growth studies - minimizes variables
- Data analysis using Microst™ Image Analyzer (see www.millenium-biologix.com)
- Cost-effective

BD BioCoat™ Osteologic™ Disposables Technical Specifications

Film Composition: Proprietary Calcium Phosphates
Film Thickness: Approximately 0.6 µm
Dimensions: Discs - 12.7 mm diam. x 1.0 mm thickness
Slides - 76.0 mm x 25.0 x 1.0 mm thickness
Coverslips - 12.7 mm diam. x 0.16 mm thickness

Quality Control:

- Tested for resorptive activity by rat primary osteoclasts
- Sterilized by ETO gas

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
444	Dennis Sindrey, et al. *Von Kossa Staining of Osteoclast Resorption on BD BioCoat™ Osteologic™ Discs*
445	Dennis Sindrey, et al. *Tartrate Resistant Acid Phosphatase (TRAP) Staining of Osteoclasts BD BioCoat™ Osteologic™ Discs and MultiTest Slides*
446	Dennis Sindrey, et al. *Chondrocyte Cell Culture and Tissue Engineering on BD BioCoat™*

For additional references or for help with an application, please call your local BD office.

BD BioCoat™ Osteologic™ Discs

This unique system incorporates a resorbable artificial bone analog in the form of sub-micron calcium phosphate films on transparent quartz substrates.

- Proprietary synthetic bone biomaterial
- Direct assessment of osteoclast and osteoblast activity *in vitro*
- Data analysis using Microst Image Analyzer (see www.millenium-biologix.com)
- Coverslip configurations also available for confocal microscopy, immunofluorescence, and electrophysiology studies

Description		Qty.	Cat. No.
Multitest Slides			
16-well		2	**354608**
16-well		8	**354609**
Discs			
12.7 mm	24 in a 24-well plate		**354610**
Coverslips			
12 mm round		5	**354611**

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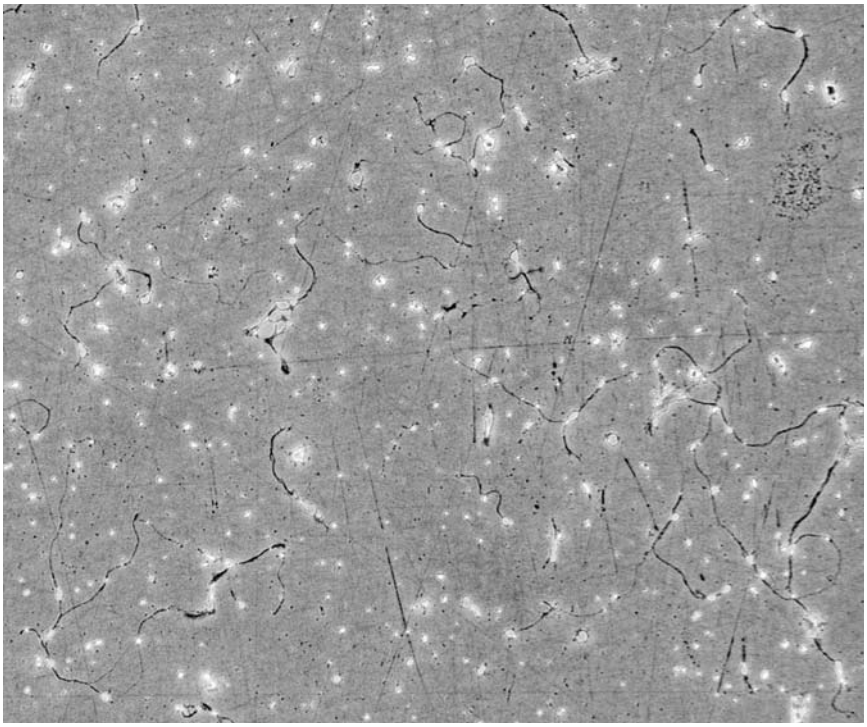
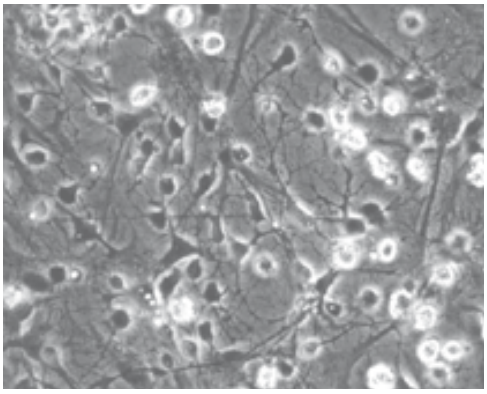
RELATED PRODUCTS

BD™ 3D Calcium Phosphate Scaffolds..... 116
Vialed BD Collagen II..... 129

BD BioCoat™ Poly-Lysine Cellware

- Promotes neuronal cell attachment and differentiation and adhesion of transfected cell lines





Effect of BD BioCoat™ PDL on Cortical Neurons
Mixed culture of cortical neurons and astrocytes cultured on BD BioCoat PDL Cellware. Neurons are highly branched with very long processes. Astrocytes show similar process elongation (above).

Effect of BD BioCoat PDL on RCG Cells
Rat cerebellar granule (RCG) cells cultured on BD BioCoat PDL show firm attachment (left). Similar results obtained on PLL.

Poly-D-Lysine (PDL) and Poly-L-Lysine (PLL) are synthetic molecules used to enhance cell attachment to plastic and glass surfaces[1]. For many anchorage-dependent cells, the nature of the culture substrate has a major effect on cell growth and the requirement for serum proteins. Tissue culture plastic has a net negative surface charge, which is produced by plasma treatment of the polystyrene[2]. Over the years, many researchers have shown that serum-free or reduced serum cultures can be dramatically improved by coating the culture surface with positively charged polymers, i.e., PDL and PLL[3-5]. Poly-Lysine surface treatment improves adhesive properties by altering the charge on the vessel surface from negative to positive. In addition to promoting cell adhesion, Poly-Lysine also enhances the adsorption of serum or extracellular matrix proteins to the culture substrate[1].

BD BioCoat™ PDL and PLL Cellware applications include:

- Attachment and spreading of a variety of cell types
- Cell differentiation and neurite outgrowth
- Attachment of fastidious transfected cell lines
- Support survival of primary neurons in culture
- Serum-free or reduced serum culture

The following is a list of cell types cultured on BD BioCoat™ Poly-Lysine Cellware:

Transfected Cell Lines
- HEK-293 cells[6,23-25,27,29]
- L929 cells
- NIH3T3 cells[7]
- PC12 cells[8,28,31]
- mouse 3T3 fibroblasts[9]
- COS-7 cells[22-26]
- CHO-1 cells[27]

Neuronal Cell Lines
- mouse GT1-7[10]
- transgenic mouse Q5B and Y8[11]

Glial Cells
- oligodendrocytes[18]
- astrocytes[19,21]
- Schwann cells[20]

Primary Neurons
- cerebellar granule[12]
- cerebral cortex[13]
- hippocampal pyramidal neurons[14]
- sympathetic neurons
- sciatic nerve
- cortical neurons[15,25,30]
- spinal cord neurons
- DRG (dorsal root ganglia)
- neocortical[16]
- septal neurons[17]
- rat brain cortical cells[26]

Source:
- PDL, synthetic (MW 75-150 kD)
- PLL, synthetic (MW 30-70 kD)

Quality Control:
- Tested for ability to promote firm attachment of RCG cells (except 96- and 384-well plates, see page 165 for further details)
- Tested and found negative for bacteria and fungi

Storage and Stability:
Cellware stable for six months from date of shipment at 4-30°C. Coverslips, CultureSlides and Coverslip-Bottom Dishes stable for at least three months from date of shipment at 4°C.

BD BioCoat™ Poly-Lysine Cellware

BD BioCoat™ Poly-Lysine Cellware is a line of tissue culture vessels with a uniform application of poly-lysine. This cellware is manufactured in a highly controlled environment and vigorously tested to assure product consistency and performance.

Description	Plate Type	Qty.	Cat. No.	Qty.	Cat. No.	Qty.	Cat. No.
BD BioCoat™ Poly-D-Lysine Cellware Multiwell and Assay Plates							
6-well		5	**354413**	50	**356413**		
12-well		5	**354470**	50	**356470**		
24-well		5	**354414**	50	**356414**		
48-well		5	**354509**	50	**356509**		
96-well	Clear	5	**354461**	50	**356461**	80	**356690**
96-well	Black/Clear	5	**354640**	50	**356640**	80	**356692**
96-well	White/Clear	5	**354651**	50	**356651**	80	**356693**
96-well	White	5	**354620**	50	**356620**	80	**356691**
384-well	Black/Clear	5	**354663**	50	**356663**	80	**356697**
384-well	White/Clear	5	**354660**	50	**356660**	80	**356694**†††
384-well	Clear	5	**354662**	50	**356662**	80	**356696**†††
384-well	White	5	**354661**	50	**356661**	80	**356695**†††
Culture Dishes							
35 mm		20	**354467**	100	**356467**		
60 mm		20	**354468**	100	**356468**		
100 mm		10	**354469**	40	**356469**		
150 mm		5	**354550**	–	–		
Flasks							
25 cm^2 plug-seal†		10	**354479**	50	**356479**		
25 cm^2 vented-cap†		10	**354536**	50	**356536**		
75 cm^2 plug-seal††		5	**354524**	50	**356524**		
75 cm^2 vented-cap††		5	**354537**	50	**356537**		
150 cm^2 plug-seal		5	**354495**	40	**356495**		
150 cm^2 vented-cap		5	**354538**	40	**356538**		
175 cm^2 plug-seal		5	**354529**	40	**356529**		
175 cm^2 vented-cap		5	**354539**	40	**356539**		
Coverslips (No. 1 German Glass)							
12 mm Round		80	**354086**				
Coverslip-Bottom Dishes (No. 1 German Glass)							
35 mm dish with coverslip bottom				20	**354077**		
CultureSlides							
1-well		–	–	12	**354566**		
2-well		–	–	12	**354629**		
4-well		–	–	12	**354577**		
8-well		–	–	12	**354632**		

† BD BioCoat T-25 Flasks are 70 ml canted neck
†† BD BioCoat T-75 Flasks are 250 ml canted neck
††† Please call for shipping schedules on large orders

Description	Plate Type	Qty.	Cat. No.	Qty.	Cat. No.
BD BioCoat™ Poly-L-Lysine Cellware Multiwell and Assay Plates					
6-well		5	**354515**	50	**356515**
96-well	Clear	5	**354516**	50	**356516**
Culture Dishes					
35 mm		20	**354518**	100	**356518**
60 mm		20	**354517**	100	**356517**
Coverslips (No. 1 German Glass)					
12 mm Round				80	**354085**

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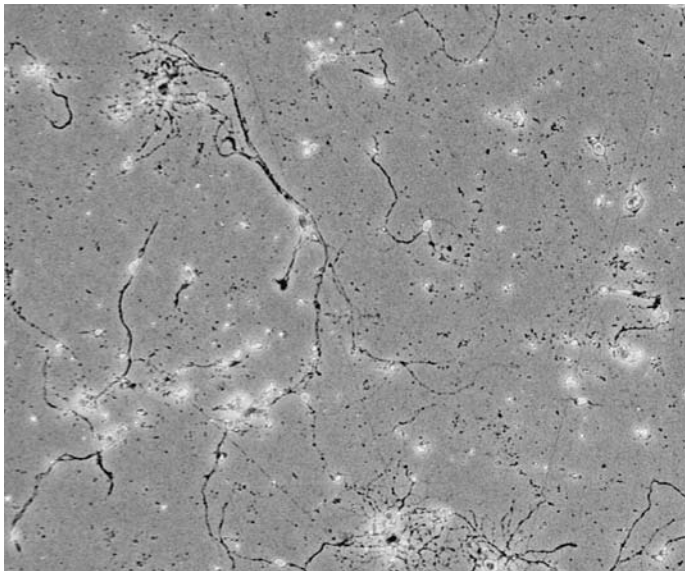
RELATED PRODUCTS

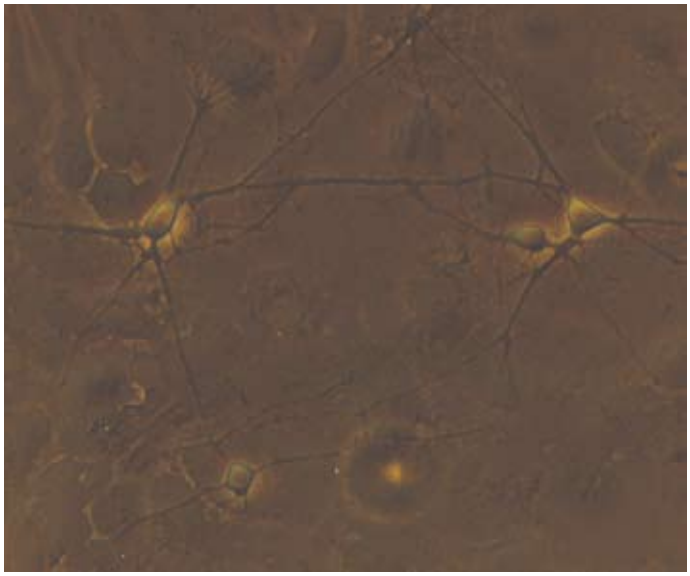
BD BioCoat Variety Pack Cellware 103
BD BioCoat Poly-D-Lysine Mixtured Cellware 98
BD BioCoat Poly-Lysine in Drug Discovery & Dev. 164
Vialed BD Poly-D-Lysine 134

BD BioCoat™ Poly-D-Lysine/Laminin, Poly-L-Ornithine/Laminin, and Laminin/Fibronectin Cellware

- Promotes neuronal cell attachment and differentiation for a variety of applications



RCG cells cultured on BD BioCoat™ PLO/LM Cellware exhibit a spindle-shaped morphology and dendritic processes.



Neurons plated on BD BioCoat LM/HFN Cellware form extensive connections. Once adherence to the substrate occurs, there is extension of the growth cone as it grows toward a target. Neurites respond to neurotransmitter by extending filopodia which contain actin.

BD BioCoat Poly-D-Lysine/Laminin (PDL/LM) and Poly-L-Ornithine/Laminin (PLO/LM) Cellware is suitable for culturing many different types of peripheral and central nervous system (CNS) networks and is useful for promoting neural cell attachment and differentiation. BD BioCoat Laminin/Fibronectin (LM/HFN) Cellware provides an *in vitro* environment that promotes cell attachment and extensive process formation. In addition, this substrate upregulates receptor systems that are integral to neuronal communications. BD BioCoat LM/HFN Cellware facilitates the study of pharmacological or physiological events of the CNS by providing molecular cues required to produce neuronal cultures capable of responding to many important neurotransmitters, neuropeptides, and excitatory amino acids such as glutamate, NMDA, and kainate[1].

BD BioCoat™ PDL/LM, PLO/LM and LM/HFN Cellware applications include:

- Enhancement of neuronal cell attachment to plastic and glass
- Promotion of neurite outgrowth
- Culture of glial cells as feeder layers for neurons
- Construction of neural cell model systems to study CNS function development and diseases

The following cell types have been cultured on BD BioCoat™ PDL/LM or PLO/LM Cultureware:

- Embryonic rat sympathetic neurons[2]
- Glial feeder layers as a substrate for neurons[3]
- Embryonic dorsal root ganglia (DRG)[4]
- E18 hippocampal neurons[5]
- Mouse striatal cells[6]
- Cerebellar macroneurons[7]
- Rat astrocytes[8]
- Adult human bone marrow stem cells[11]
- N2a, Sc2Na neuroral cells[9]
- Primary embryonic cortical neurons[10]

Source:

- Poly-D-Lysine (PDL), synthetic (MW 75-150 kD)
- Poly-L-Ornithine (PLO), synthetic (MW 30-70 kD)
- Laminin, Engelbreth-Holm-Swarm (EHS) mouse tumor
- Fibronectin, human plasma

Quality Control:

- PDL/LM and PLO/LM are tested for ability to promote neurite outgrowth with primary rat cerebellar granule cells (RCG) and NG-108 rat glioma/mouse neuroblastoma cells
- Tested and found negative for bacteria and fungi

Storage and Stability:

Cellware stable for at least three months at 2-8°C. **Do not freeze.** Coverslips and CultureSlides stable for at least 3 months from date of shipment when stored at 2-8°C.

BD BioCoat™ Poly-D-Lysine/Laminin (PDL/LM), Poly-L-Ornithine/Laminin (PLO/LM) and Laminin/Fibronectin (LM/HFN) Cellware

This line of tissue culture vessels have a uniform application of PDL/LM, PLO/LM or HFN/LM. BD BioCoat™ PDL/LM, PLO/LM, and LM/HFN Cellware are manufactured in a highly controlled environment and rigorously tested to assure product consistency and performance.

Description	Qty.	Cat. No.
Multiwell and Assay Plates		
PDL/LM		
6-well	5	**354595**
24-well	5	**354619**
96-well	5	**354596**
PLO/LM		
6-well	5	**354658**
24-well	5	**354659**
96-well	5	**354657**
LM/HFN		
96-well	5	**354670**
Culture Dishes		
PDL/LM		
100 mm	10	**354455**
Coverslips (No. 1 German Glass)		
PDL/LM		
12 mm round	80	**354087**
CultureSlides		
PDL/LM		
2-well		**354687**
8-well		**354688**

REFERENCES:
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BD BioCoat™ T-Cell Activation Plates

- Packaged ready-to-use with a choice of anti-mouse or anti-human CD3 antibodies
- All lots are quality tested to stimulate activation of T-cells in cell culture

BD BioCoat™ T-Cell Activation Plates coated with high-quality BD Pharmingen anti-CD3 antibodies.

Plate-bound antibodies against the T-cell receptor complex have been used to induce activation of T-cells from a variety of species without the help of accessory cells. BD BioCoat T-Cell Activation Plates are coated with high-quality BD Pharmingen™ anti-CD3 antibodies. Available for use with mouse or human T-cells, BD BioCoat T-Cell Activation Plates offer lot-to-lot consistency and come individually packaged with lids for ease of use.

BD BioCoat™ T-Cell Activation Plate applications include:

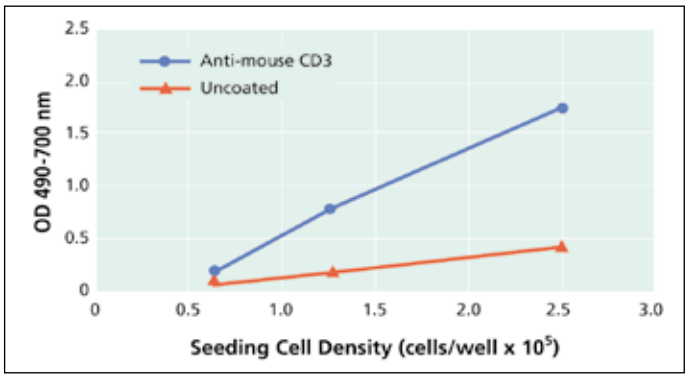
- T-Cell activation
- Cytokine production
- Cytokine mRNA quantitation
- Co-stimulation studies
- Analysis of drug effects on T-Cell function

Quality Control:

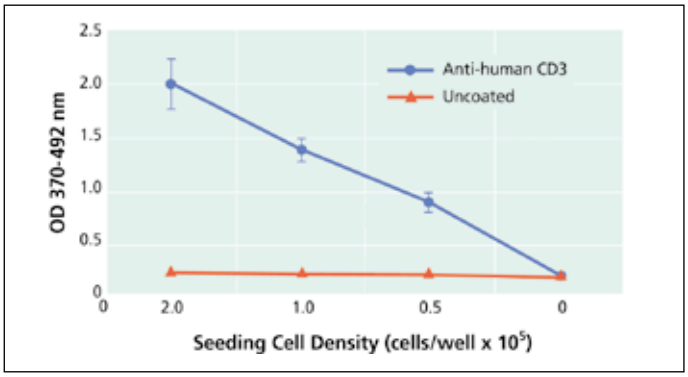
- Tested for ability to promote mouse splenocyte or human PBMC proliferation
- Tested and found negative for presence of bacteria and fungi

Storage and Stability:

Stable for at least three months at 2-8°C. **Do not freeze.**



Anti-Mouse CD3 Plates
48-hour incubation with mouse splenocytes on anti-mouse CD3 plates followed by a four hour MTS assay.



Anti-Human CD3 Plates
48-hour incubation with human PBMCs followed by cell proliferation assay using BrdU (six-hour labeling).

Description	Plate Type	Qty.	Cat. No.
Assay Plates, with lid			
Anti-Mouse CD3	96-well, clear	5	**354720**
Anti-Human CD3	96-well, clear	5	**354725**
Uncoated Control Plate	96-well, clear	5	**354730**

TIP

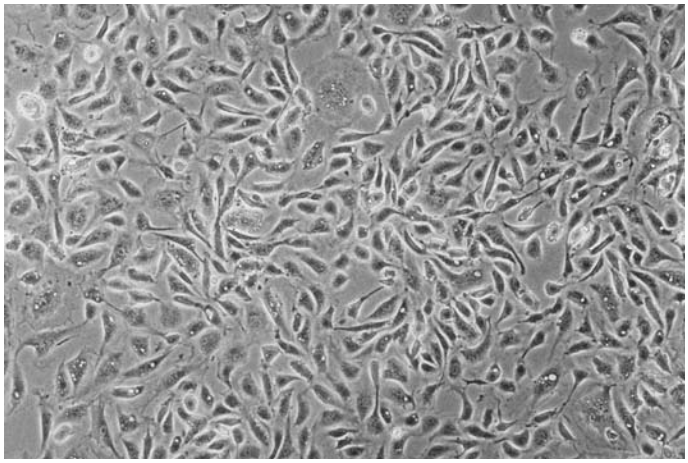
Inquire more information about related products from your BD Biosciences representative or contact your local BD office.

RELATED PRODUCTS

Anti-CD28
Hamster IgG (isotype control)
Anti-IL-2
IL-2 OptEIA ELISA Set
BD RiboQuant™ Cytokine Multi-Probe Template Set.....
See BD Biosciences Clinical & Research Catalog

BD BioCoat™ Variety Pack Cellware

- Provides convenient and economical substrates for determining the appropriate extracellular matrix for specific cell types and applications



BD BioCoat™ Variety Packs provide several evaluation coatings of different extracellular matrix proteins and attachment factors in order to optimize specific cell cultivation condition. In the above shown example fetal bovine heart endothelial cells (FBHEC) formed after five days a confluent monolayer on Collagen I coated cellware, while still exhibiting numerious mitotic cells.

Available configurations are either coated CultureSlides for optimized microscopic applications (above) or as a selection of 6-well Multiwell Plates (not shown).

BD BioCoat™ Variety Pack Cellware applications include:

- Determination of optimal substrate for growth or differentiation of particular cell types
- Studies of effects of various ECM components on cell behavior
- Cell adhesion assays

Quality Control:

- Tested for ability to promote cell growth or differentiation (cell type used is indicated for each individual BD BioCoat Cellware product)
- Tested and found negative for bacteria and fungi

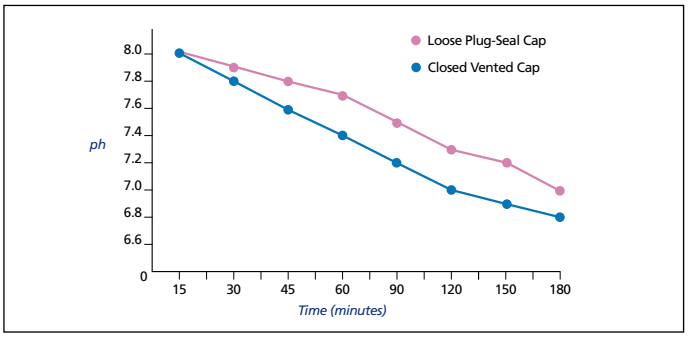
Storage and Stability:

Stable for at least three months at 2-8°C. **Do not freeze.**

Description	Qty.	Cat. No.
Multiwell Plates		
Variety Pack I includes 6-well plates of:		**354417**
Collagen I	1	
Fibronectin	1	
Laminin	1	
Poly-D-Lysine	1	
BD Falcon™ uncoated Control	1	
Variety Pack II includes 6-well plates of:		**354431**
Collagen I	1	
Collagen IV	1	
Fibronectin	1	
Laminin	1	
Poly-D-Lysine	1	
CultureSlides		
Includes three CultureSlides each of: Collagen I, Fibronectin, Poly-D-Lysine, and BD Falcon uncoated Control		
2-well	12	**354655**
8-well	12	**354656**

BD BioCoat™ Vented Caps for Flasks

- Vented Caps greatly reduce the risk of contamination often associated with standard, open incubation



pH equilibrium using vented caps after flasks are placed in an incubator 175cm² Flasks, 5% CO_2

BD BioCoat™ Flasks are delivered with either plug-seal caps (blue, middle right) or with vented caps (blue with the integrated white membrane filter, middle left). For the exchange of plug-seal caps packages with vented caps are separately available.

Vented caps are available for use with BD BioCoat Flasks. The vented caps are made from polyethylene and contain a 0.2 µm membrane vent that allows consistent gas exchange, but prevents passage of bacteria and fungi. The special design reduces the risk of contamination associated with standard cell culture open incubation.

Storage and Stability:

Store at ambient temperature.

Description	Qty.	Cat. No.
Vented Caps for Flasks of indicated size		
25 cm²	100	**354637**
75 cm²	100	**354638**
175 cm²	50	**354639**


354190
Store at 2 to 8°C
BD BioCoat™
CELL ENVIRONMENTS
Anti-Rabbit IgG Assay Plate
96-well clear
354177
Store at 2 to 8°C
BD BioCoat™
CELL ENVIRONMENTS
Anti-Mouse IgG Assay Plate
384-well white

BD BioCoat™ Assay Plates

BD BioCoat™ Assay Plates are designed to facilitate the use of capture assays in life science research, drug discovery, and high-throughput screening. The BD BioCoat manufacturing process ensures that assay plates are uniformly coated to minimize well-to-well variations and edge effects.

BD BioCoat Assay Plates utilize BD Falcon™ Microplates to ensure compatibility with many automated systems. Standard portfolio coating options are secondary antibodies, however, custom coatings such as protein A, wheat germ agglutinin, or others are possible on request.

BD BioCoat™ Assay Plate Applications:

- Immunoassays
- Recombinant protein screening
- Sandwich ELISA
- Competitive ELISA
- IgG titer levels

Table of Contents

BD BioCoat™ Secondary Antibody Assay Plates

- Packaged ready-to-use with a choice of anti-mouse IgG, anti-rabbit IgG, or anti-human IgG-coated antibody
- All plates are pre-blocked with protease-free blocking agent and screened for low background

Each lot of BD BioCoat™ Secondary Antibody plates is quality tested for total binding and well-to-well CV.

BD BioCoat™ Secondary Antibody Assay Plates offer:

- **High-Binding Capacity:** Plates provide a convenient capture substrate for primary mouse, rabbit, or human antibodies, which are either available, in small quantities or denatured when bound directly to polystyrene.
- **Pre-Blocked for Convenience:** Enable immunoassays to be completed in several hours, rather than waiting overnight with direct coating of capture antibodies.
- **Uniform Coating:** Offer consistent coating characteristics, which reduces well-to-well variation.
- **Reliable Performance:** Lot-to-lot consistency ensures that experiments are reproducible from one assay to the next.

Automation-friendly

BD BioCoat Secondary Antibody Assay Plates utilize BD Falcon™ Microplates to ensure compatibility with many automated systems. Available in standard 96-well clear formats, Anti-mouse IgG-coated plates are also available in 384-well formats to meet the growing demand for high-throughput.

Applications:

- Immunoassays
- Sandwich ELISA
- Competitive ELISA
- IgG titer measurements

Source: Proprietary

Quality Control:

- Tested for antibody binding
- Tested for well-to-well CV
- Tested for plate-to-plate CV

Storage and Stability:

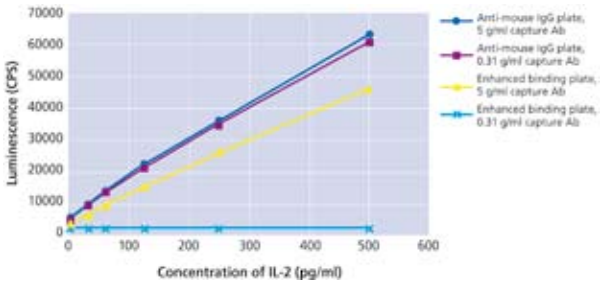
Store at 2-8°C upon arrival. Product is stable for a minimum of three months upon shipment.

Cross Reactivity of BD BioCoat™ Secondary Antibody Assay Plates

	Goat Anti-Mouse IgG Plate	Goat Anti-Human IgG Plate	Goat Anti-Rabbit IgG Plate
Donkey IgG	14% (a)	33% (a)	32% (a)
Human IgG	<1%	100%	22% (b)
Mouse IgG	100%	25% (a)	10% (a)
Rabbit IgG	<1%	8% (b)	100%
Rat IgG	94% (a)	44% (a)	25% (a)

(a) = in the presence of 0.5% horse sera
(b) = in the presence of 0.5% rabbit sera

Cross reactivities were determined by incubating the anti-species IgG plate with the IgG-HRP conjugate at 0.31 ng/ml for 60 minutes, followed by an incubation with TMB substrate. Corrections were made for the HRP specific activity.



Sandwich ELISA for Human IL-2
Secondary Antibody Attachment versus Direct Coating: BD BioCoat Secondary Antibody Assay Plates can reduce the required amounts of monoclonal capture antibodies in a sandwich ELISA. In this example, the use of anti-mouse IgG coating reduces the amount of capture antibody 15-fold with no noticeable difference in sensitivity.

BD BioCoat™ 96-well Secondary Antibody Assay Plates

Product Specifications:

- < 7.5% CV between wells
- Anti-mouse IgG: recognizes H&L regions of all mouse immunoglobulin isotypes, including IgM, and rat IgG
- Anti-human IgG: recognizes H&L regions of human IgG
- Anti-rabbit IgG: recognizes H&L regions of rabbit IgG
- 120 µl coating volume per well
- 180 µl blocking volume per well
- 0.3-0.6 µg/well binding capacity

BD BioCoat™ 384-well Secondary Antibody Assay Plates

Product Specifications:

- < 10% CV between wells
- Anti-mouse IgG: recognizes H&L regions of rat IgG and all mouse isotypes, including IgM
- 80 µl coating volume per well
- 100 µl blocking volume per well
- 0.3-0.6 µg/well binding capacity

Note: BD BioCoat Secondary Antibody Assay Plates are non-sterile and are intended for use with endpoint or kinetic assays.

Description	Qty.	Cat. No.	Qty.	Cat. No.
Goat Anti-Mouse IgG Coated Assay Plates				
96-well, Clear	5	**354170**	50	**356170**
384-well, Black	5	**354176**	50	**356176**
384-well, White	5	**354177**	50	**356177**
Goat Anti-Human IgG Coated Assay Plates				
96-well, Clear	5	**354180**	50	**356180**
Goat Anti-Rabbit IgG Coated Assay Plates				
96-well, Clear	5	**354190**	50	**356190**

RELATED PRODUCTS

BD BioCoat Secondary Antibody Assay Plates in Drug Discovery & Dev. 168
BD Falcon™ Enhanced Protein Binding Surface Plates 173


BD BioCoat™
BD BioCoat™

BD BioCoat™ Cell Culture Inserts

BD BioCoat™ Cell Culture Inserts combine the benefits of a microporous membrane substrate with extracellular matrix (ECM). Permeable membranes allow for free diffusion of ions, low molecular weight proteins and other nutrients to both apical and basolateral cell surfaces. The addition of ECM further improves *in vitro* culture systems by providing cells with a vital component of the microenvironment that is encountered *in vivo*.

The microporous membrane surface of BD Falcon™ Cell Culture Inserts are treated with ECM to make BD BioCoat Inserts. Packaged ready-to-use in BD Falcon™ Cell Culture Insert Companion Plates, BD BioCoat Cell Culture Inserts are available in multiple configurations and several pore sizes with a variety of ECM proteins.

Applications for BD BioCoat™ Cell Culture Inserts:

- Cell differentiation
- Cell migration and invasion
- Chemotaxis
- *In vitro* toxicity
- Co-culture studies
- Transport and permeability

Table of Contents

BD BioCoat™ Cell Culture Inserts

BD BioCoat™ Cell Culture Inserts

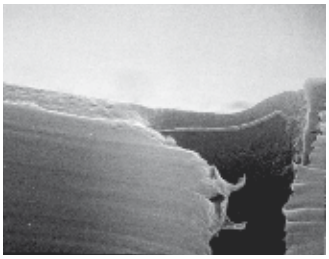
- Cell culture on permeable membranes permits diffusion of media components to both apical and basolateral cell surfaces
- Membranes with extracellular matrix (ECM) further improve *in vitro* cell culture systems by providing cells with relevant protein substrates

BD BioCoat™ Cell Culture Inserts contain BD Falcon™ Cell Culture Inserts coated with extracellular matrix (ECM) and are packaged ready-to-use in BD Falcon Companion Plates. Cell culture on microporous membranes has been shown to promote differentiation of a variety of epithelial and mesenchymal cells *in vitro*, especially in the presence of ECM.

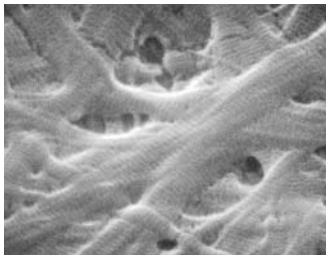
ECM is a vital component of the cellular microenvironment *in vivo*. The use of ECM growth substrates *in vitro* has been shown to promote cell growth, cell-specific morphology, and differentiated function. For example, collagen I and fibronectin have been used on microporous inserts to establish barrier function in monolayers of intestinal epithelial[1] and endothelial cells[2], to culture a renal cell line that expresses kidney-specific peptide transporters[3], and to culture keratinocytes[4]. Additionally, BD BioCoat™ Matrigel™ Matrix coated inserts have been used to maintain polarized secretion in uterine, thyroid and mammary epithelial cells.

Typical applications for BD BioCoat™ Cell Culture Inserts:

- Promotion of epithelial cell polarity
- Differentiation of a variety of cell types
- Transport and permeability studies
- Transendothelial migration
- Tumor cell invasion assays
- Chemotaxis and haptotaxis assays
- *In vitro* toxicology
- Co-culture studies



BD BioCoat Matrigel Basement Membrane Matrix
Scanning electron micrograph showing an even layer of BD Matrigel Matrix overlaying an 8 µm pore size insert.



Fibrillar Collagen
Scanning electron micrograph of Fibrillar Collagen on a 1 µm pore size membrane insert.

The track-etched polyethylene teraphthalate (PET) membranes used in BD BioCoat™ Cell Culture Inserts have individual cylindrical pores in a broad range of sizes including 0.4, 1.0, 3.0, and 8.0 µm.

The PET membrane offers several advantages:

- Low binding properties minimize the loss of small molecules, including low molecular weight proteins and other natural and synthetic compounds. Therefore, the membrane is ideal for transport or intercellular communications studies.
- Low pore-density membranes are transparent, allowing living cells to be viewed with a phase contrast microscope
- Exceptional durability assures membranes are compatible with most solvents used during fixation and staining protocols for light and electron microscopy
- Membranes will not tear or curl and remain easy to handle when removed from insert housing

BD BioCoat™ Cell Culture Inserts offer:

- BD Falcon Cell Culture Inserts' innovative hanging design facilitates pipetting and reduces risk of medium wicking (see page 52 for details)
- BD Falcon Companion Plates' labyrinth lid design and condensation rings reduce evaporation and risk of contamination (see page 54 for details)
- Choice of 6-, 12-, and 24-well plate plate sizes
- An extensive selection of ECMs for improved cell attachment morphology, and functionality

BD BioCoat™ Cell Culture Inserts are available with the following selection of ECMs:

Three-Dimensional Matrices

- BD Matrigel Matrix
- Fibrillar Collagen

Thin-Layer Matrices

- Collagen I
- Fibronectin
- Collagen IV
- Laminin

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3. Brandsch, M., et al., FASEB J. **9**:1489 (1995).
4. Konstantinova, N.V., et al., J. Invest. Dermatol. **107**:615 (1996).

Quality Control:

- All cell culture inserts are tested for ability to promote cell attachment and spreading or differentiation (cell type used is specific for each ECM)
- Tested and found negative for bacteria and fungi

Storage and Stability:

BD BioCoat™ Collagen I, Collagen IV, Fibrillar Collagen, Fibronectin, and Laminin Inserts stable for ≥ three months at 2-8˚C.

BD BioCoat™ Matrigel™ Matrix Inserts stable for ≥ three months at -20˚C.

BD BioCoat Control Inserts and Deep-Well Plates stable at room temperature.

Description	Qty.	Cat. No.
BD BioCoat™ Collagen I Cell Culture Inserts		
0.4 µm inserts in four 6-well plates	24	**354442**
0.4 µm inserts in four 12-well plates	24	**354490**
0.4 µm inserts in two 24-well plates	24	**354444**
1.0 µm inserts in four 6-well plates	24	**354580**
1.0 µm inserts in four 12-well plates	24	**354581**
1.0 µm inserts in two 24-well plates	24	**354482**
3.0 µm inserts in four 6-well plates	24	**354540**
3.0 µm inserts in four 12-well plates	24	**354565**
3.0 µm inserts in two 24-well plates	24	**354541**
BD BioCoat™ Collagen IV Cell Culture Inserts[1]		
1.0 µm inserts in two 24-well plates	24	354591
3.0 µm inserts in four 6-well plates	24	354544
3.0 µm inserts in two 24-well plates	24	**354545**
BD BioCoat™ Fibrillar Collagen Cell Culture Inserts		
1.0 µm inserts in four 6-well plates	24	**354472**
1.0 µm inserts in four 12-well plates	24	**354473**
1.0 µm inserts in two 24-well plates	24	**354474**
BD BioCoat™ Fibronectin Cell Culture Inserts[2,3]		
0.4 µm inserts in four 6-well plates	24	**354440**
0.4 µm inserts in two 24-well plates	24	**354445**
1.0 µm inserts in two 24-well plates	24	**354585**
3.0 µm inserts in four 12-well plates	24	**354492**
3.0 µm inserts in two 24-well plates	24	**354543**
BD BioCoat™ Laminin Cell Culture Inserts		
0.4 µm inserts in two 24-well plates	24	**354446**
3.0 µm inserts in two 24-well plates	24	**354547**
BD BioCoat™ Matrigel™ Matrix Cell Culture Inserts		
0.4 µm inserts in four 6-well plates	24	**354443**
0.4 µm inserts in two 24-well plates	24	**354447**

BD BioCoat™ Cell Culture Insert Variety Packs

BD BioCoat Cell Culture Insert Variety Packs are useful in determining optimal substrates for growth or differentiation of specific cell types or to study interactions between cells and various ECM components.

Description	Qty.	Cat. No.
BD BioCoat™ Cell Culture Insert Variety Packs		
0.4 µm inserts in four 24-well plates • Includes Collagen I, Fibronectin, Laminin, and Control Inserts	48 inserts	**354437**
3.0 µm inserts in five 24-well plates • Includes Collagen I, Collagen IV, Fibronectin, Laminin, and Control Inserts	60 inserts	**354436**

BD BioCoat™ Control Cell Culture Inserts

BD BioCoat Control Cell Culture Inserts are BD Falcon™ Cell Culture Inserts, without ECM, packaged ready-to-use in BD Falcon Cell Culture Insert Companion Plates. They may be used as control inserts alongside ECM-treated inserts while studying effects of the ECM component present on the BD BioCoat Cell Culture Inserts.

Description	Qty.	Cat. No.
BD BioCoat™ Control Cell Culture Inserts		
0.4 µm inserts in four 6-well plates	24	**354570**
0.4 µm inserts in four 12-well plates	24	**354571**
0.4 µm inserts in two 24-well plates	24	**354572**
1.0 µm inserts in four 6-well plates	24	**354567**
1.0 µm inserts in four 12-well plates	24	**354568**
1.0 µm inserts in two 24-well plates	24	**354569**
3.0 µm inserts in four 6-well plates	24	**354573**
3.0 µm inserts in four 12-well plates	24	**354574**
3.0 µm inserts in two 24-well plates	24	**354575**
8.0 µm inserts in four 6-well plates	24	**354576**
8.0 µm inserts in two 24-well plates	24	**354578**

REFERENCES:
1. Wu, Y., et al., J. of Immunology **175**:3484 (2005).
2. Reese, D.E., et al., Dev. Cell. **6**(5) (2004).
3. Chitu, V., et al., Mol. Biol. Cell. **16**(6):2947 (2005).

BD BioCoat™ FluoroBlok™ Fibronectin Cell Culture Inserts

BD BioCoat™ FluoroBlok™ Fibronectin Cell Culture Inserts offer the combined benefits and convenience of BD Falcon™ FluoroBlok Inserts coated with fibronectin for enhanced cell attachment and growth. Run real-time chemotaxis and cell migration assays and save both time and labor using our pre-coated BD FluoroBlok Cell Culture Inserts.

Description	Qty.	Cat. No.
BD BioCoat™ FluoroBlok™ Fibronectin Cell Culture Inserts[2,3]		
Individual 3.0 µm inserts in two 24-well plates	24 inserts	**354597**

BD BioCoat™ Cell Culture Inserts and BD Falcon™ Companion Plates: Physical Specifications

	Individual			Plate
	6-well	12-well	24-well	24-Multiwell
Effective Diameter of Membrane (mm)	23.1	10.5	6.4	6.4
Effective Growth Area of Membrane (cm^2)	4.2	0.9	0.3	0.3
Insert Height (mm)	17.2	17.2	17.5	18
Distance from Membrane to Bottom of Well (mm)	0.9	0.9	0.8	2.0
Suggested Media in Insert (ml)	1.5-2.5	0.4-1.0	0.2-0.35	0.3-0.5
Suggested Media in Well (ml)	2.7-3.2	1.4-2.3	0.7-0.9	1-1.4
Growth Area in Plate per Well (cm^2)	9.6	3.8	2.0	2.0

BD Falcon™ Cell Culture Companion Plates

BD Falcon Cell Culture Companion Plates have been specifically designed for use with BD BioCoat Cell Culture Inserts to limit evaporation and contamination. BD Falcon Cell Culture Inserts may be pushed to the sides of the plate well for easy pipet access for improved fluid handling on the basolateral side.

Reagents can be added quickly and consistently for timed experiments. Aspirating media from the well is easier, reducing the risk of contamination.

When the Cell Culture Inserts are seated within the notches of the BD Falcon Companion Plate, media will not wick up between the insert and well wall. The patented BD Falcon low-evaporation lid provides a tortuous air-passage system that reduces evaporation and contamination.

BD Falcon™ Deep-Well Companion Plates

The BD Falcon Deep-Well Companion Plate is a unique plate designed for use with BD BioCoat or BD Falcon 6-well Cell Culture Inserts. This plate accommodates the large media volumes needed when culturing cells on microporous membranes. The basolateral compartment of one well of the BD Falcon Deep-Well Companion Plate can hold up to seven times as much medium as the basolateral compartment of a regular 6-well plate (17 ml versus 2.5 ml). This significantly larger media volume reduces the frequency of cell feeding during extended cell culture periods or when culturing cells at the air-liquid interface. Recommended applications include the culture of Caco-2 cells, airway epithelial cells, or keratinocytes on BD BioCoat and BD Falcon Cell Culture Inserts.

Description	Qty./Pk.	Qty./Case	Cat. No.
BD Falcon™ Cell Culture Insert Companion Plates			
Specifically designed for use with BD Falcon and BD BioCoat Cell Culture Inserts. Tissue culture treated polystyrene, sterile, non-pyrogenic, with lid. May be used with or without Cell Culture Inserts.			
6-well	1	50	**353502**
12-well	1	50	**353503**
24-well	1	50	**353504**
Deep-Well Cell Culture Insert Companion Plates			
6-well	1	4	**355467**

BD BioCoat™ Cell Environments

BD BioCoat™ Cell Culture Inserts containing a uniform layer of ECM or a highly organized three dimensional matrix have been essential to the construction of integrated cell culture systems, the BD BioCoat Cell Environments. The matrix and other key components of these systems have been optimized for specific cell types and applications.

The following BD BioCoat Cell Environments have been used successfully to develop physiologically relevant *in vitro* models:

Description	Qty.	Cat. No.
BD BioCoat™ Matrigel™ Invasion Chambers, 8.0 µm		
A model system to investigate cell invasion through basement membrane (See page 74).		
6-well	24	**354481**
24-well	24	**354480**
BD BioCoat™ Growth Factor Reduced (GFR) Matrigel™ Invasion Chambers, 8.0 µm		
A system to study cell invasion through basement membrane with controlled levels of growth factors (See page 75).		
24-well	24	**354483**
BD BioCoat™ Intestinal Epithelium Differentiation Environment		
A culture system for rapid establishment of enterocyte barrier function for absorption and transport studies (See page 72).		
24-well	24	**355057**

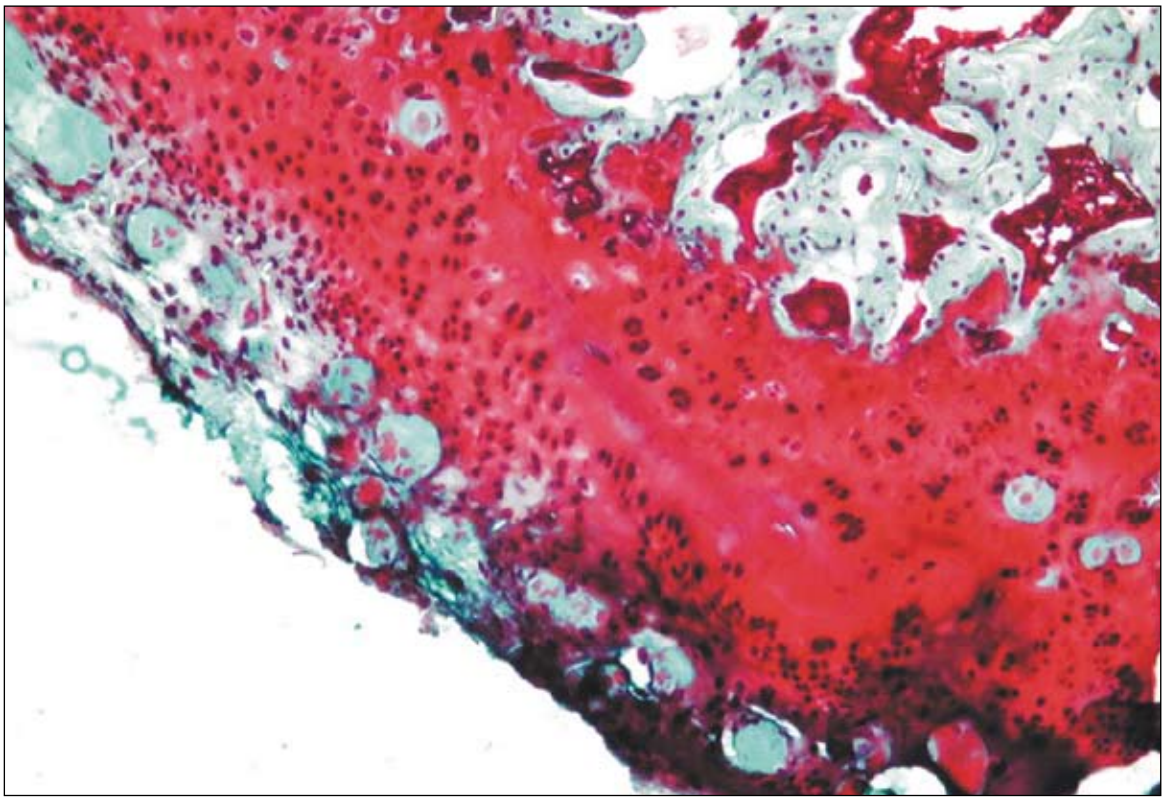
BD BioCoat™ 24-Multiwell Insert Systems

BD BioCoat 24-Multiwell Insert Systems contain BD Falcon™ 24-Multiwell Insert Systems coated with Fibrillar Collagen, Collagen I, or Fibronectin for improved cell attachment, growth or differentiation. BD BioCoat 24-Multiwell Insert Systems offer all the benefits of the BD BioCoat individual cell culture inserts in an automation-friendly format and are compatible with most robots and fluid handlers. Handle 24 inserts simultaneously; all 24 inserts are part of a single unit that is compatible with BD Falcon 24-well plates (Cat. No. 351147) and Feeder Trays (Cat. No. 351186).

Description	Qty.	Cat. No.
BD BioCoat™ Collagen I 24-Multiwell Insert System		
3 µm pore size with 24-well plate and lid	1 plate	**354598**
BD BioCoat™ Fibronectin 24-Multiwell Insert System		
3 µm pore size with 24-well plate and lid	1 plate	**354599**
BD BioCoat™ Fibrillar Collagen 24-Multiwell Insert System		
1 µm pore size with feeder tray and lid	1 plate	**354803**
1 µm pore size with feeder tray and lid	5 plates	**354804**

RELATED PRODUCTS

BD Falcon Cell Culture Inserts..... 52
BD Falcon Multiwell Insert Systems..... 156,158
BD Falcon FluoroBlok Cell Culture Inserts 56
BD Falcon FluoroBlok Multiwell Insert Systems..... 142,144
BD BioCoat Tumor Invasion Systems..... 146
BD BioCoat Angiogenesis Systems..... 148
BD BioCoat Caco-2 Assay System 160



BD™ Three Dimensional Scaffolds - more than just physical support

The pioneering work in Tissue Engineering has influenced advanced cell cultivation by a demand for new three dimensional (3D) cultivation environments. A variety of 3D biodegradable scaffolds have been identified or developed and are used now as artificial substitutes for the extracellular matrix. These materials may consist of natural molecules and/or synthetic polymers.

In contrast to conventional 2D cell culture systems, 3D scaffolds provide an adhesive substrate that also serves as a 3D physical support matrix for *in vitro* cell culture as well as *in vivo* tissue regeneration. A variety of cell types, progenitor lines, and pluripotent stem cells have been tested for expansion and differentiation.

The portfolio of BD™ 3D Scaffolds provide a selection of ready-to-use culture supports originating from different material types. For cells that require natural components, biocompatible and bioresorbable collagen-based scaffolds are available. The BD 3D Calcium Phosphate Scaffolds may be optimal for osteogenic cells that prefer a bone-specific matrix. This scaffold is a proprietary, mineralized calcium phosphate bioceramic material ideal for studies of bone metabolism and remodeling.

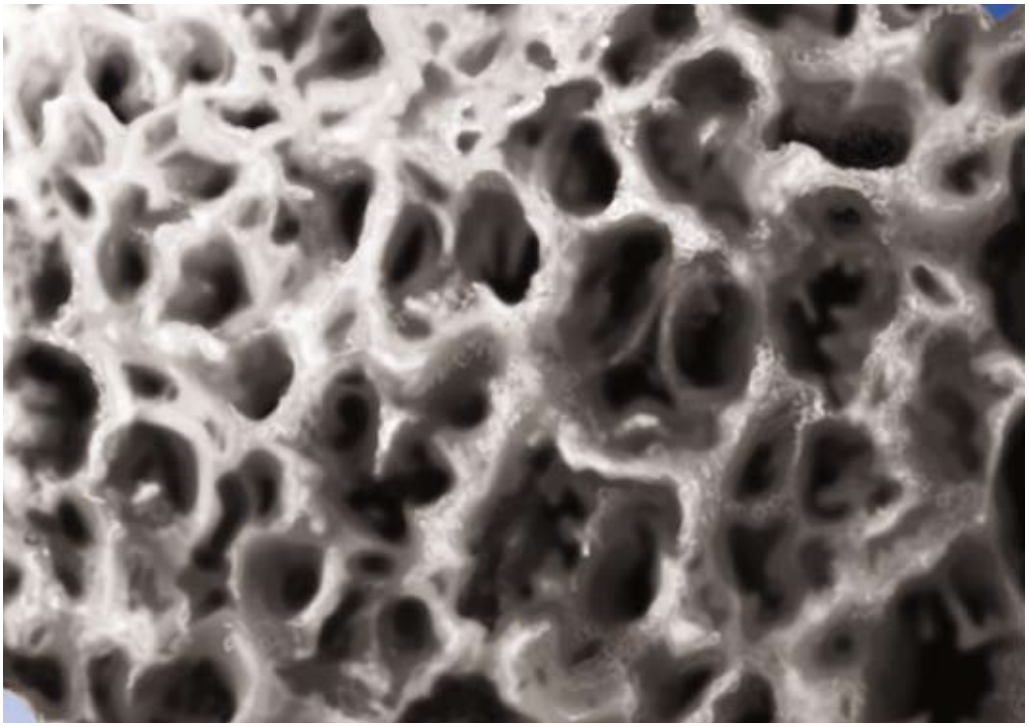
Synthetic polymers commonly utilized for advanced 3D culture applications include poly-α-hydroxy acids, e.g. polylactic acid (PLA) and polyglycolic acid (PGA). Other materials used are polyesters, polyurethanes, and hydrogels. The material of BD™ 3D OPLA® (open-cell polylactic acid) scaffolds is synthesized from D,D-L,L PLA, one of the few synthetic degradable polymers that have been approved for human clinical use.

Table of Contents

BD™ Three Dimensional Scaffolds

BD™ Three Dimensional Calcium Phosphate Scaffolds

- Support mesenchymal cell growth and differentiation
- Ideal for studies on bone remodeling and cartilage regeneration
- Proprietary mineralized calcium phosphate bioceramic material



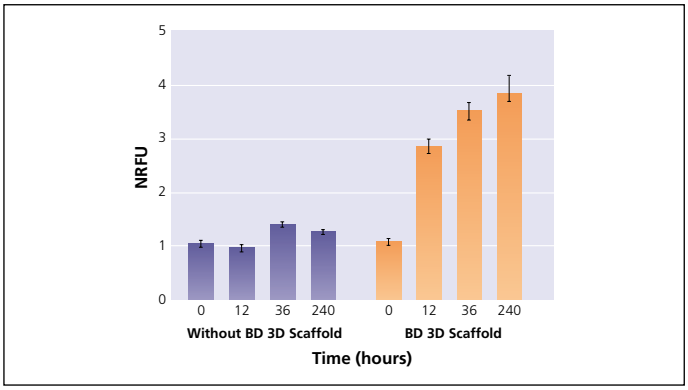
Scanning electron microscope image of the BD™ 3D Calcium Phosphate Scaffold.

Three dimensional (3D) scaffolds provide an adhesive substrate that also serves as a 3D physical support matrix for *in vitro* cell culture[1,2] as well as *in vivo* tissue regeneration[3,4]. The BD 3D Calcium Phosphate Scaffold is a proprietary mineralized calcium phosphate bioceramic that is ideal for *in vitro* and *in vivo* analysis of mesenchymal cells, i.e. bone metabolism.

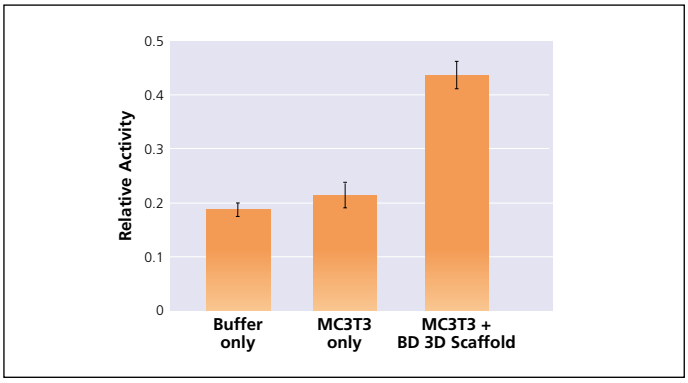
Bone metabolism is a complex process that involves the resorption of existing bone by osteoclasts and the subsequent formation of a new bone matrix by osteoblasts. The mineralized calcium phosphate used in the manufacturing process of BD 3D Calcium Phosphate Scaffolds has been shown to support the functional properties of osteogenic cells[5-7]. Inorganic composites are especially relevant for bone regeneration studies.

BD™ 3D Calcium Phosphate Scaffold applications include:

- Promotion of cell growth and differentiation (e.g., MC3T3-E1 osteoblasts[8,9])
- Stationary cell cultivation in Multiwell plates
- Dynamic cell seeding in larger vessels (e.g., BD Falcon™ 50 ml Conical Tubes)
- Bone remodeling studies *in vitro* and *in vivo*
- Non-invasive evaluation of cell growth using the BD Oxygen Biosensor System



MC3T3-E1 osteoblasts cultured on BD™ 3D Calcium Phosphate Scaffolds were compared to cultivation in traditional 2D environments. The BD Oxygen Biosensor System was used to analyze cellular growth. The consumption of oxygen indicated by an increase of fluorescence over time showed higher cell proliferation when MC3T3-E1 osteoblasts were cultured on scaffolds.



Expression of alkaline phosphatase, a marker for osteoblast differentiation, was greatly enhanced when MC3T3-E1cells were cultured on BD 3D Calcium Phosphate Scaffolds.

Characteristics:

Scaffold Material: Calcium Phosphate
Dimensions (fit into a well of a 96-well plate):

- 5 mm (diameter)
- 3 mm (height)
- 0.058 cm^3 (volume)

Hydration Capacity: 30 µl
Average Pore Size: 200-400 µm
Property: Sponge-like structure/non-compressible

Quality Control:

- Scaffold chemistry and morphology assessed by X-ray diffraction and SEM
- Sterilized by ETO gas

Storage and Stability:

Stable for at least 12 months from the date of shipping when stored at 4-30°C.

The following Technical Bulletin is available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
446	Sindrey, Dennis, et al., *Chondrocyte Cell Culture and Tissue Engineering on BD BioCoat™ Osteologic™ Discs and BD™ 3D Calcium Phosphate Scaffolds*

For additional references or for help with an application, please contact your local BD office.

Description	Qty.	Cat. No.
BD™ 3D Calcium Phosphate Scaffolds	24	**354617**

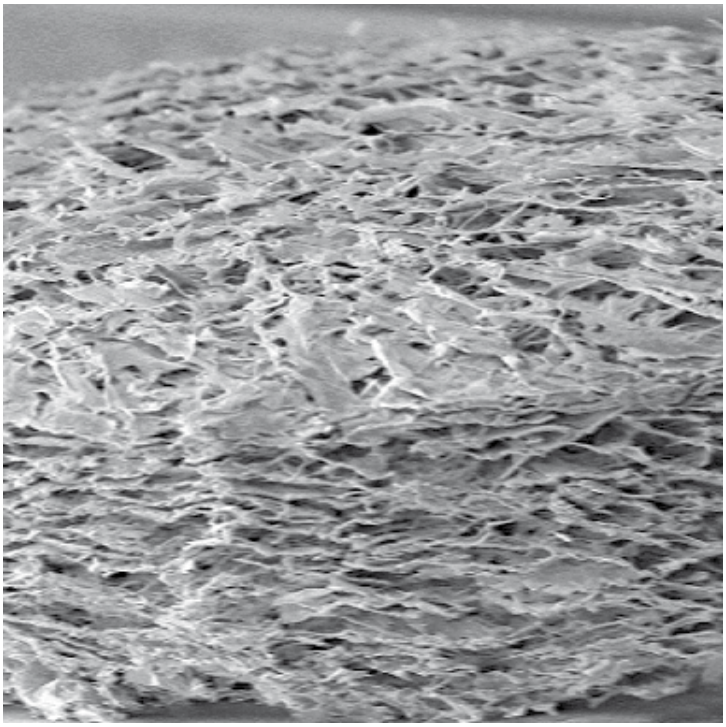
REFERENCES:
1. Martin, I., et al., J. Orthopaedic Res. **16**:181 (1998).
2. Wei Tan, B.S., et al., Tissue Engineering **7**:203 (2001).
3. Evans, G.R., et al., Biomaterials **20**:1109 (1999).
4. Saito, N., et al., Nature Biotech. **19**:332 (2001).
5. Ripamonti, U., et al., Matrix **12**:202 (1992).
6. DeRuijter, J.E., et al., Tissue Engineering **7**:279 (2001).
7. Langstaff, S., et al., Biomaterials **22**:135 (2001).
8. Chung, C.Y., et al., Biochem. Biophys. Research Commun. **265**:246 (1999).
9. Shea, L.D., et al., Tissue Engineering **6**:605 (2000).

RELATED PRODUCTS

BD BioCoat™ Osteologic™
Bone Cell Culture System 94
BD Oxygen Biosensor
System 180
Vialed BD Collagen II 129

BD™ Three Dimensional Collagen Composite Scaffolds

- Support short- and long-term cell growth and differentiation
- Suitable for *in vitro* and *in vivo* basic research
- Highly biocompatible and bioresorbable natural material



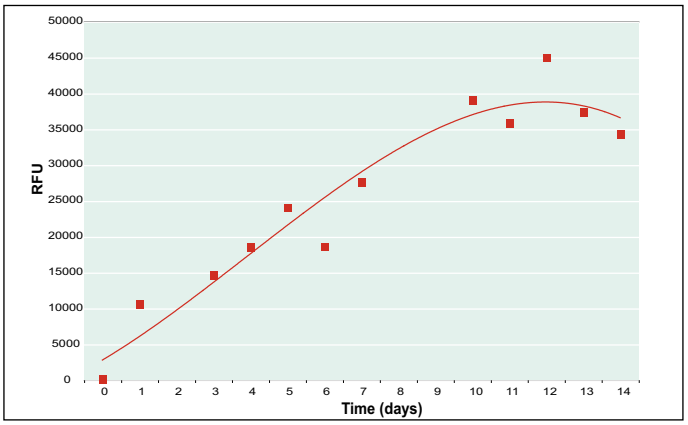
Scanning electron microscope image of a collagen composite scaffold.

One of the most common biomaterials used for three dimensional (3D) cultivation is collagen. The major advantage of natural collagens is that they are highly biocompatible, biodegradable, and safe. Their abundance, the ability to support the growth of a wide variety of tissues and a relative lack of immunogenicity are additional positive aspects. Depending on the experimental design, polymers of collagen can either be formed as 3D gel[1,2] or as 3D structure of a fibrillar network[3]. It has also been tried to coat pieces of sponges with collagen[4].

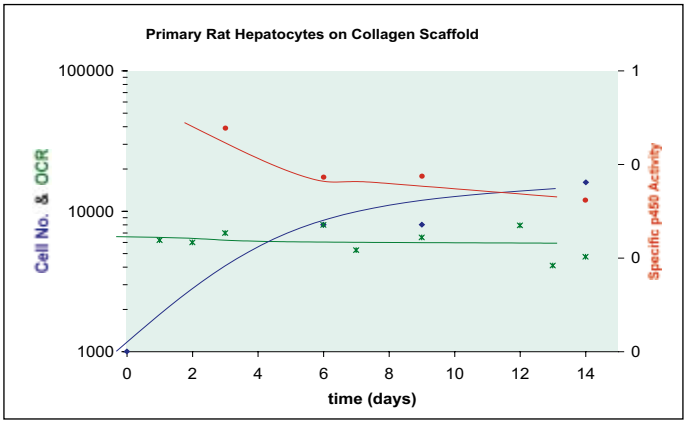
The BD™ 3D Collagen Composite Scaffolds are manufactured from a proprietary mixture of collagens that are derived from bovine hide. This material exhibits collagen fibrillar architecture, which is representative of the natural structure of collagen within the interstitial matrix. These ready-to-use scaffolds are a convenient substrate in 3D culture applications.

BD™ 3D Collagen Composite Scaffold applications include:

- Promotion of cell growth and differentiation (e.g., MC3T3-E1 osteoblasts, WI-38 human lung fibroblasts, primary rat hepatocytes)
- ECM pre-incubation for specific stem/progenitor cell differentiation assays
- Dynamic cell seeding in larger vessels (e.g., BD Falcon™ 50 ml Conical Tubes)
- Non-invasive evaluation of cell growth using the BD Oxygen Biosensor System



Proliferation of WI-38 Human Lung Fibroblasts cultured on BD™ 3D Collagen Composite Scaffolds indicated by oxygen consumption. The BD Oxygen Biosensor System was used to analyze the oxygen consumption rate (OCR) over time. A polynomial fit to the OCR points was added.



Functional assessment over time of primary rat hepatocytes cultured on the BD 3D Collagen Composite Scaffold. Oxygen consumption rate (OCR, analyzed with the BD Oxygen Biosensor System), cell number (computed from Pico Green fluorescence) and specific CYP3A4 activity (measured with the BD Gentest™ Cytochrome P450 Inhibition Kit and reported as fluorescence divided by cell number) are given. Compared with results from BD OPLA Scaffolds rat hepatocytes show low rates of proliferation but much higher specific P450 activity on collagen scaffolds.

Characteristics:

Scaffold Material: Proprietary mixture of type I and III collagens derived from bovine hide

Dimensions (fit into a well of a 96-well plate):

- 5 mm (diameter)
- 3 mm (height)
- 0.039 cm^3 (volume)

Hydration Capacity: 25 µl

Average Pore Size: 100–200 µm

Property: Sponge-like structure/compressible

Storage and Stability:

Stable for at least three months from the date of shipping when stored at 4-30°C.

Description	Qty.	Cat. No.
BD™ 3D Collagen Composite Scaffolds	24	354613

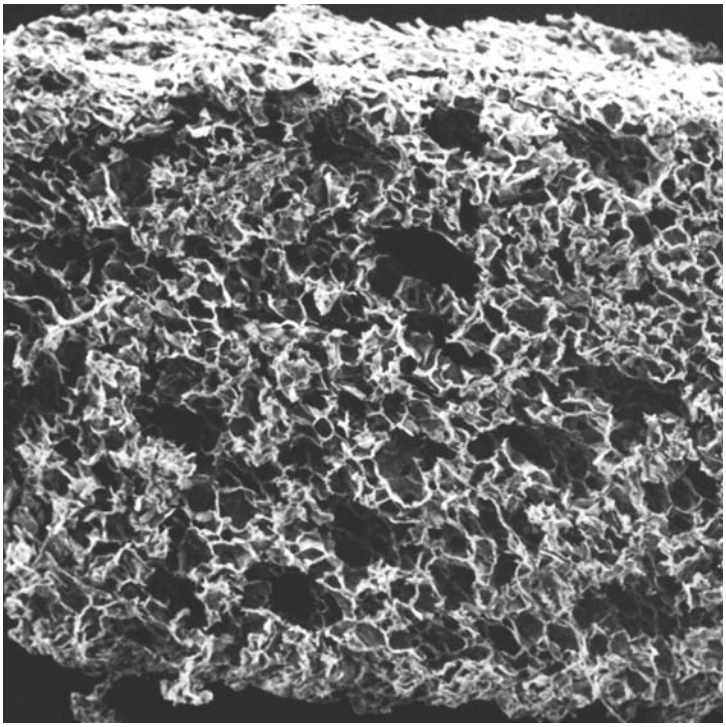
RELATED PRODUCTS

Vialed BD Collagens..... 128
BD™ PuraMatrix™ Peptide Hydrogel 135
BD Oxygen Biosensor System 180
BD Gentest™ Cryopreserved Hepatocytes .....
.....see BD Gentest Catalog

REFERENCES:
1. Douglas, W.H.J., et al., In Vitro **16**:306 (1980).
2. Yang, J., et al., Cancer Res. **41**:1021 (1981).
3. Swiderek, M., et al., FASEB J. **8**:4 (1994).
4. Leighton, J., et al., Cancer Res. **28**:286 (1968).

BD™ Three Dimensional OPLA® Scaffolds

- Support short- and long-term growth and differentiation of a variety of cells
- Suitable for *in vitro* and *in vivo* basic research
- Biocompatible synthetic polymer



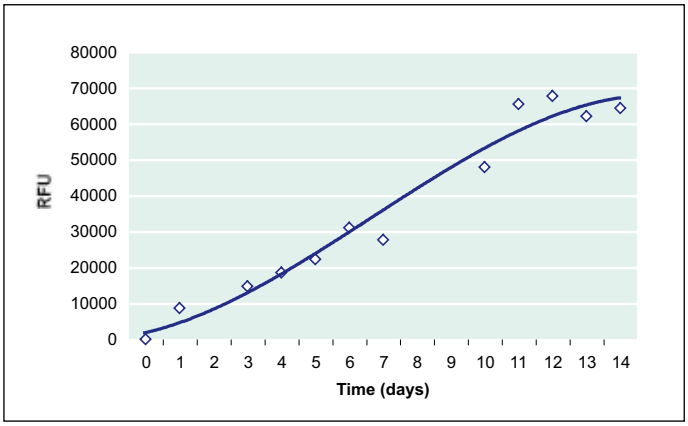
Scanning electron microscope image of a BD™ 3D OPLA Scaffold (Open-Cell Poly-Lactic Acid).

Besides natural components synthetic polymers are another active field for bioengineered three dimensional (3D) scaffold investigation. Several materials have been investigated, e.g. poly (α-hydroxy acids) such as polylactic acid (PLA) and polyglycolic acid (PGA). PLA and PGA are among the few synthetic degradable polymers that have been approved for human clinical use.

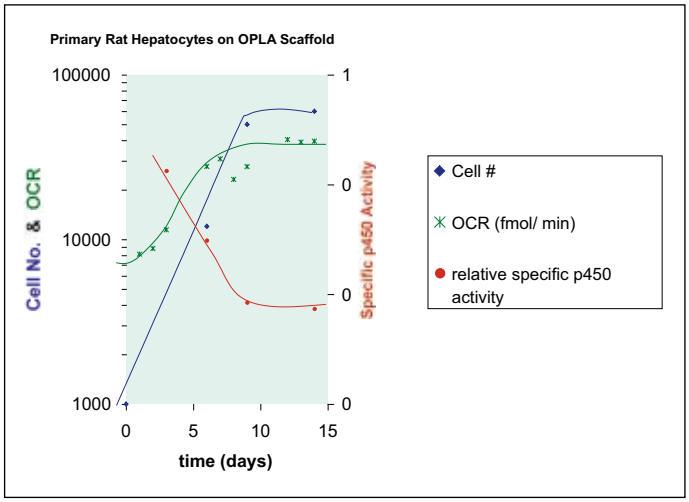
Synthesized from D,D-L,L polylactic acid the BD 3D OPLA (Open-Cell Polylactic Acid) Scaffolds are available for basic research. This material has a facetted architecture, which is effective for culturing high density cell suspensions.

BD™ 3D OPLA® Scaffold applications include:

- Short- and long-term growth and differentiation of a variety of cell types, including epithelial cells (e.g., hepatocytes), neurons, endothelialcells, osteoblasts, chondrocytes, fibroblasts, and smooth muscle cells
- ECM pre-incubation for specific stem/progenitor cell differentiation assays
- Dynamic cell seeding in larger vessels (e.g. BD Falcon™ 50 ml Conical Tubes)
- Non-invasive evaluation of cell growth using the BD Oxygen Biosensor System



Proliferation of WI-38 Human Lung Fibroblasts cultured on BD™ 3D OPLA® Composite Scaffolds indicated by oxygen consumption. The BD Oxygen Biosensor System was used to analyze the oxygen consumption rate (OCR) over time. A polynomial fit to the OCR points was added.



Functional assessment over time of primary rat hepatocytes cultured on the BD 3D OPLA Scaffold. Oxygen consumption rate (OCR, analyzed with the BD Oxygen Biosensor System), cell number (computed from Pico Green fluorescence) and specific CYP3A4 activity (measured with the BD Gentest™ Cytochrome P450 Inhibition Kit and reported as fluorescence divided by cell number) are given. Cells proliferated exponentially on OPLA, however, specific P450 was lower compared to collagen scaffolds.

Characteristics:

Scaffold Material: Synthesized from D,D-L,L polyactic acid
Dimensions (fit into a well of a 96-well plate):

- 5 mm (diameter)
- 3 mm (height)
- 0.039 cm^3 (volume)

Hydration Capacity: 30 µl
Average Pore Size: 100-200 µm
Property: Sponge-like structure/noncompressible

Storage and Stability:

Stable for at least three months from the date of shipping when stored at 4-30°C.

Description	Qty.	Cat. No.
BD™ 3D OPLA® Scaffolds	24	354614

RELATED PRODUCTS

Vialed BD ECMs 122
BD™ PuraMatrix™ Peptide Hydrogel 135
BD Oxygen Biosensor System 180
BD Gentest™ P450 Inhibition Kit . . . . . see BD Gentest™ Catalog


BD
BD MATRIGEL
BD
COLLAGEN
BD
BD
BD

Cells behave better on BD Matrigel™ Matrix

The interaction of cells with basement membrane is an important factor in the regulation of cell behavior. Cells normally in contact with a basement membrane *in vivo* often are well differentiated when cultured on BD Matrigel™ Matrix *in vitro*.

At BD Biosciences, we use patented technology* to isolate BD Matrigel Matrix from the EHS mouse sarcoma, a tumor rich in extracellular matrix proteins. BD Matrigel Matrix is composed of laminin, collagen IV, entactin, and heparan sulfate proteogylcan. It also contains growth factors, matrix metalloproteinases, and other components. A solution at 4˚C, BD Matrigel Matrix gels at room temperature to form a three-dimensional reconstituted basement membrane. This model system closely mimics the structure, composition, physical properties, and functional characteristics of the basement membrane *in vivo*.

BD Matrigel Matrix is especially suited for the culture of polarized cells, such as epithelial cells. It promotes the differentiation of many cell types, including hepatocytes, mammary epithelial, endothelial, and smooth muscle cells, as well as various other glandular cells and neurons.

Cells behave as they do *in vivo* when they are cultured on BD Matrigel Matrix. It provides a physiologically relevant environment for studies of cell morphology, biochemical function, migration or invasion, and gene expression.

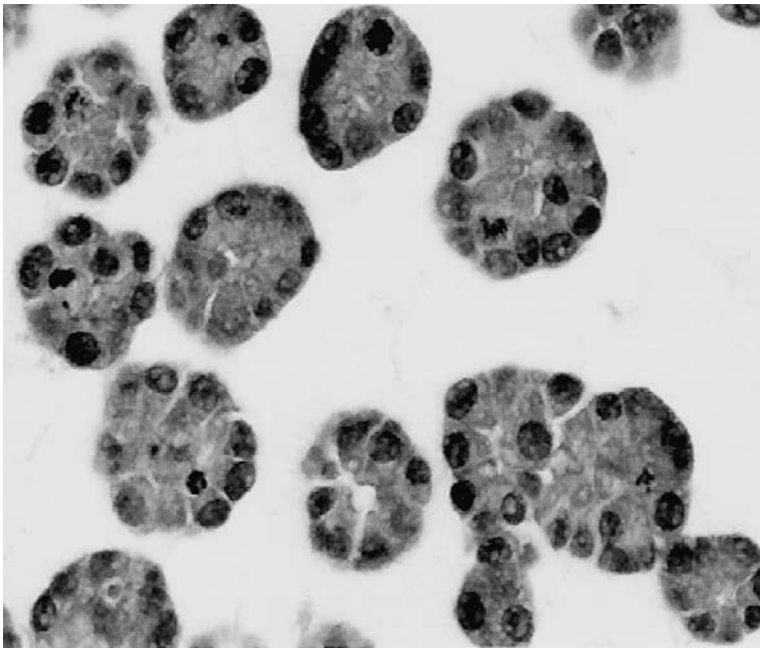
* U.S. Patent 4,829,000

Table of Contents

Extracellular Matrices

BD Matrigel™ Basement Membrane Matrix

- Promotes differentiation of many cell types
- Gels to form a three-dimensional model of basement membrane
- Increases rate of human tumor cell growth in nude mice
- Creates models to measure invasive potential of tumor cells



Human Submandibular Gland (HSG) *cells cultured on GFR BD Matrigel™ Matrix differentiate to form acinar structures within 24 hours. The acini shown above were stained with H/E at 72 hours. Indirect immunofluorescence staining also revealed the salivary gland specific cysteine protease inhibitor, cystatin, in HSG cell acini (data not shown). (Photo courtesy of Dr. Hynda Kleinman).*

BD Matrigel Basement Membrane Matrix is a solubilized basement membrane preparation extracted from the Engelbreth-Holm-Swarm (EHS) mouse sarcoma, a tumor rich in extracellular matrix proteins. Its major component is laminin, followed by collagen IV, entactin, and heparan sulfate proteoglycan[1]. It also contains TGF-ß fibroblast growth factor, tissue plasminogen activator[2], and other growth factors that occur naturally in the EHS tumor.

At room temperature, BD Matrigel Matrix polymerizes to produce a biologically active matrix material resembling the mammalian cellular basement membrane.

Amounts of Growth Factors (GF) Present in BD Matrigel™ Matrix vs. GFR BD Matrigel™ Matrix

Growth Factor	**Range** of GF Concentration in BD Matrigel Matrix	**Average** GF Concentration in BD Matrigel Matrix	Typical GF Concentration in **GFR** BD Matrigel Matrix
EGF	0.5-1.3 ng/ml	0.7 ng/ml	< 0.5 ng/ml
bFGF	< 0.1-0.2 pg/ml	n.a.*	n.d.**
NGF	< 0.2 ng/ml	n.a.*	< 0.2 ng/ml
PDGF	5-48 pg/ml	12 pg/ml	< 5 pg/ml
IGF-1	11-24 ng/ml	16 ng/ml	5 ng/ml
TGF-ß	1.7-4.7 ng/ml	2.3 ng/ml	1.7 ng/ml

** n.a. - not applicable*
*** n.d. - not determined*

BD Matrigel Basement Membrane Matrix is effective for the attachment and differentiation of both normal and transformed, anchorage-dependent epithelial and other cell types. These include neurons, hepatocytes, Sertoli cells, mammary epithelial, melanoma cells, vascular endothelial cells, thyroid cells, and hair folicle cells[3-6]. BD Matrigel Basement Membrane Matrix will influence casein gene expression in mouse mammary epithelial cells[7-8]. It will also support *in vivo* peripheral nerve regeneration[9] and facilitates differentiation of bovine oviduct epithelial cells[10].

The Growth Factor Reduced (GFR) product is useful as an alternative to BD Matrigel Matrix in many of the applications listed above where a more highly defined basement preparation is desired. It has been used to define the signals necessary in the formation of canicular cell processes in bone cells[11], in elucidating the role of growth factors in the formation of tubules by primary mouse kidney cells[12], and in gene expression studies of primary mouse mammary epithelial cells[13]. The phenol red-free product is suitable for those assays that require color detection (i.e. fluorescence).

All BD Matrigel Basement Membrane Matrices including the High Concentration formulation can also be used to assess *in vivo* angiogenic activity of different compounds by subcutaneous injection into mice (BD Matrigel Plug Assay)[14-18]. A similar approach can be used for the transplantation and investigation of human tumor cells. Reports include studies with prostatic, breast, small-cell lung, colon, adrenal carcinomas, melanomas, and lymphoblastic leukemia cells[19-24].

ECM Composition of BD Matrigel™ Matrix vs. GFR BD Matrigel™ Matrix GFR

Basement Membrane Matrigel Component	Percent in BD Matrigel Matrix	Percent in **GFR** BD Matrigel Matrix
Laminin	56%	61%
Collagen IV	31%	30%
Entactin	8%	7%

Quality Control:

- Tested for ability to gel quickly and maintain this form with culture medium for a period of 14 days at 37°C
- Tested for ability to promote neurite outgrowth of chick dorsal root ganglia cells
- Tested and found negative for bacteria, fungi, and mycoplasma
- Tested for endotoxin (LAL assay)

Source:

Engelbreth-Holm-Swarm mouse tumor

Instructions for Use:

BD Matrigel™ Matrix may be used undiluted to culture cells on thin (0.5 mm) or thick (1.0 mm) layers. It may also be diluted with serum-free culture medium and applied as a thin layer to culture substrates. Coating concentration will vary depending on cell type and application.

Storage and Stability:

Stable for at least three months when kept frozen at -20°C or 12 days at 37°C. **Avoid multiple freeze-thaws. Do not store in frost-free freezer.**

REFERENCES:
1. Kleinman, H.K., et al., Biochem. **21**:6188 (1982).
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Description	Qty.	Cat. No.

BD Matrigel™ Basement Membrane Matrix

Formulation: Dulbecco's Modified Eagle's Medium with 10 µg/ml gentamycin. Typical protein concentrations are between 9-12 mg/ml. BD Matrigel Matrix is compatible with all culture media.

	5 ml	**356234**
	10 ml	**354234**
	(5x10 ml) 50 ml	**356235**

BD Matrigel™ Matrix High Concentration (HC)

Formulation: Dulbecco´s Modified Eagle´s Medium with 10 µg/ml gentamycin. Typical protein concentrations are between 18-22 mg/ml. BD Matrigel Matrix HC is compatible with all culture media.

	10 ml	**354248**

BD Matrigel™ Matrix, Phenol Red-free

Formulation: Dulbecco's Modified Eagle's Medium (without phenol red) with 50 µg/ml gentamycin. Phenol Red-free BD Matrigel Matrix is compatible with all culture media.

Standard Concentration	10 ml	**356237**
High Concentration	10 ml	**354262**

Growth Factor Reduced (GFR) BD Matrigel™ Matrix

Formulation: Dulbecco's Modified Eagle's Medium with 50 µg/ml gentamycin. GFR BD Matrigel™ Matrix is compatible with all culture media.

Purification: Purified by the method of Taub, et al., reducing the level of heparan sulfate proteoglycan and several growth factors (e.g., EGF, bFGF, IGF-1, PDGF, and NGF, but not TGF-ß).

Standard Concentration	5 ml	**356230**
Standard Concentration	10 ml	**354230**
High Concentration	10 ml	**354263**

Growth Factor Reduced BD Matrigel™ Matrix, Phenol Red-free

Formulation: Dulbecco's Modified Eagle's Medium (without phenol red) with 50 µg/ml gentamycin. Phenol Red-free BD Matrigel Matrix is compatible with all culture media.

Purification: Purified by the method of Taub, et al., reducing the level of heparan sulfate proteoglycan and several growth factors (e.g., EGF, bFGF, IGF-1, PDGF, and NGF, but not TGF-ß).

	10 ml	**356231**

TIPS

The use of BD™ Cell Recovery Solution or BD Dispase is necessary to recover cells cultured on BD Matrigel Matrix. For biochemical analyses (mRNAs or proteins), use BD Cell Recovery Solution (Cat. No. 354253) for recovering cells from BD Matrigel Matrix. Use BD Dispase (Cat. No. 354235) when single cell suspensions are required for cell counting-replating. Please see page 126 for ordering information.

Prior to preparation of gel, thaw BD Matrigel Matrix at 4°C overnight. Keep on ice until use. When preparing gel, use pre-cooled pipettes, plates, and tubes. BD Matrigel Matrix will gel rapidly at 22-35°C. (Caution: Gel may liquify if stored for several hours at 4°C).

RELATED PRODUCTS

BD BioCoat™ Matrigel™ Matrix Cellware 92
BD BioCoat Matrigel Matrix Cell Culture Inserts 111
BD BioCoat Matrigel Matrix Cell Environments 70,74,76

BD™ Dispase

Dispase is a bacillus-derived neutral metalloprotease that is recommended for recovering cells cultured on BD Matrigel™ Basement Membrane Matrix. BD™ Dispase will yield a single cell suspension far more gently and effectively than trypsin, collagenase or other proteolytic enzymes; it will not harm cells harvested for subcultivation or bioassays. In addition, BD Dispase may be used for tissue dissociation. BD Dispase cleaves fibronectin, collagen IV, and to a lesser extent collagen I, but it does not cleave collagen V or laminin.

Description	Qty.	Cat. No.
BD™ Dispase	100 ml (5,000 caseinolytic units)	**354235**

Formulation:

Frozen in HBSS, pH 7.4

Source:

Bacillus polymyxa-derived metalloprotease

Molecular Weight:

36 kD

Quality Control:

- Tested for ability to solubilize a 1 mm thick layer of gelled BD Matrigel Matrix after two hours at 37°C
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 10 U/cm^2 of BD Matrigel Matrix (e.g., 100 U per 35 mm dish).

Storage and Stability:

Stable for at least three months at -20°C. **Avoid multiple freeze-thaws.**

BD™ Cell Recovery Solution

BD Cell Recovery Solution allows for the recovery of cells cultured on BD Matrigel Basement Membrane Matrix for subsequent biochemical analyses. BD Cell Recovery Solution depolymerizes BD Matrigel Matrix gels without enzymatic digests and lengthy incubation periods at high temperatures. Cells are released without damage, thereby avoiding biochemical changes during incubation and digestion of extracellular portions of cell-surface receptors and adhesion molecules.

Description	Qty.	Cat. No.
BD™ Cell Recovery Solution	100 ml	**354253**

Formulation:

Non-enzymatic proprietary solution

Quality Control:

- Tested for ability to depolymerize a 1 mm thick layer of gelled BD Matrigel Matrix after one hour at 2-8°C
- Filtered (0.2 µm membrane) and tested for bacteria, fungi, and mycoplasma

Instructions for Use:

BD Cell Recovery Solution is used full strength to recover cells from BD Matrigel Matrix. Complete protocol provided with product.

Storage and Stability:

Stable for at least three months at 2-8°C.

TIPS

Dispase is not only recommended to recover cells cultured on BD Matrigel Matrix, but is also useful in primary tissue dissociation.

Human Extracellular Matrix

Human Extracellular Matrix (ECM) is a chromatographically partially purified matrix extract derived from human placenta. It is comprised of laminin, collagen IV, and heparan sulfate proteoglycan. Human ECM promotes attachment, spreading, mitosis, and differentiation of anchorage-dependent epithelial cells, particularly of human origin.

Description	Qty.	Cat. No.
BD™ Extracellular Matrix, human	1 mg	**354237**

Formulation:

Frozen in 20 mM sodium phosphate buffer, pH 7.4

Source:

Human placenta

Note: Source material tested for hepatitis B antigen and HIV-1 antibody

Quality Control:

- Partially purified
- Tested for ability to initiate differentiation (neurite outgrowth) of NG-108 rat glioma/mouse neuroblastoma cells
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 1-10 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at -70°C. **Avoid multiple freeze-thaws.**

BD Cell Tak™ Cell and Tissue Adhesive

BD Cell Tak™ Cell and Tissue Adhesive is a formulation of polyphenolic proteins extracted from *Mytilus edulis* (marine mussel). These proteins are the key components of the glue secreted by the mussel to anchor itself to solid substrates in its marine environment. BD Cell Tak is used to attach cells or tissue sections to many types of surfaces, including plastic, glass, metal, Teflon®, and biological materials. BD Cell Tak is biocompatible and demonstrates no species specificity. It can simplify the manipulation of biological samples for a number of *in vitro* techniques, including *in situ* hybridization, immunoassays, microinjection, immunohistochemistry, and establishing primary cells in culture. BD Cell Tak has been used successfully with sperm cells[1], T47D human breast cancer cells[2], and neutrophils[3].

Description	Qty.	Cat. No.
BD Cell Tak™ Cell and Tissue Adhesive	1 mg	**354240**
	5 mg	**354241**
	(2 x 5 mg) 10 mg	**354242**

Formulation:

As a liquid in 5% acetic acid

Source:

Polyphenolic proteins secreted by *Mytilus edulis*

Molecular Weight:

110-140 kD

Quality Control:

- Dopa: Protein ratio > 0.05
- Tested for ability to promote cell attachment and spreading of BHK-21 and U937 cells
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions of Use:

Recommended concentration — 1-5 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at 2-8°C. **Do not freeze.**

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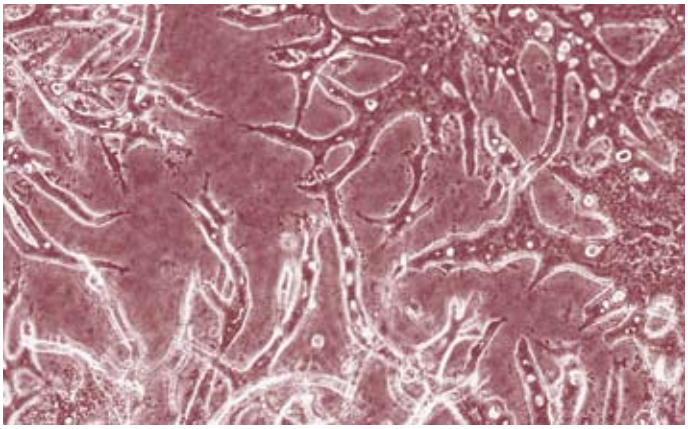
Collagen I

Collagen I is found in most tissues and organs, but is most plentiful in dermis, tendon, and bone. It can be used as a thin layer on tissue culture surfaces to enhance cell attachment and proliferation, or as a gel to promote expression of cell-specific morphology and function. Collagen I is commonly used to culture endothelial cells, hepatocytes, muscle cells, and a variety of other cell types. See page 82 for more information on Collagen I.



Formation of branching tubules by MDCK cells co-cultured with 3T3 fibroblasts in a three-dimensional collagen gel at 120x magnification. (Picture courtesy of Professor Roberto Montesano, Geneva).

Description	Qty.	Cat. No.
BD™ Collagen I, bovine	30 mg	**354231**

Formulation:

As a liquid in 0.012 N HCl

Source:

Bovine dermis

Quality Control:

- Purity > 95% by SDS-PAGE
- Shown to promote attachment and spreading of HT-1080 human fibrosarcoma cells
- Tested for formation of a firm gel by exposure to ammonia vapors from solutions of 0.5 mg/ml. Further dilution will decrease the rigidity of the gel.
  Note: This preparation contains native collagen molecules with a small amount of nicked or shortened sequences due to pepsin treatment.
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Effective as a gel or thin coating at a recommended concentration — 5-10 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at 2-8°C. **Do not freeze.**

Description	Qty.	Cat. No.
BD™ Collagen I, human	0.25 mg	**354243**

Formulation:

Frozen in 10 mM acetic acid

Source:

Human placenta
Note: Source material tested for hepatitis B antigen and HIV-1 antibody.

Quality Control:

- Electrophoretically homogeneous (SDS-PAGE)
- Shown to promote attachment and spreading of HT-1080 human fibrosarcoma cells
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Effective as a gel or thin coating at a recommended concentration — 0.2-2 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at -20°C.

Description	Qty.	Cat. No.
BD™ FIBROGEN Collagen I, human recombinant	0.25mg	**354254**

Formulation:

As a liquid in 0.01 M hydrochloric acid

Source:

Recombinant expression in yeast

Quality Control:

- Purity ≥ 95% by SDS-PAGE
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recombinant Human Collagen I is generally used for *in vitro* assays as a thin coating, but may be used as a gel if desired. Guidelines included with product.

Storage and Stability:

Stable for a minimum of three months from date of shipment when stored at 2-8°C.
FIBROGEN Human Recombinant Collagens are manufactured for BD Biosciences by FibroGen, Inc.

Description	Qty.	Cat. No.
BD™ Collagen I, rat tail	100 mg	**354236**
	(10 x 100 mg) 1g	**356236**

Description	Qty.	Cat. No.
BD™ Collagen I High Concentration (HC), rat tail	100 ml	**354249**

Formulation:

As a liquid in 0.02 N acetic acid. Typical protein concentration 3-4 mg/ml in standard preparation, and 8-11 mg/ml in HC formulation.

Source:

Rat tail tendon

Quality Control:

- Purity ≥ 90% by SDS-PAGE
- Tested for ability to promote attachment and spreading of HT-1080 human fibrosarcoma cells
- Tested for formation of a firm gel up to a dilution of 1:10; (standard formulation) further dilution will decrease the rigidity of the gel
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Effective as a gel or thin coating at a recommended concentration — 5-10 µg/cm^2 of growth surface depending on cell type. HC formulation is used for three dimensional applications requiring a sturdy gel that provides a maximal 3D support matrix. Guidelines included with product.

Storage and Stability:

Stable for at least three months at 2-8°C. **Do not freeze.**

Collagen II

Collagen II is the principal collagenous component of cartilage, intervertebral disc, and vitreous humour. Its primary function is to provide cartilage with tensile strength and the ability to resist shear forces. Collagen II supports chondrocyte adhesion and may influence the differentiated phenotype of these cells. In culture, Collagen II is used for attachment and differentiation of chondrocytes. It can also be used as an *in vivo* model in rats and mice for arthritis studies (injection of Bovine Collagen II induces arthritis).

Description	Qty.	Cat. No.
BD™ Collagen II, bovine	5 mg	**354257**

Formulation:

Frozen in 15 mM acetic acid

Source:

Bovine articular cartilage

Quality Control:

- Purity ≥ 95% by SDS-PAGE
- Membrane-filtered (0.2 µm) preparation
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Used as an adhesive substrate. Guidelines included with product.

Storage and Stability:

Stable for at minimum of three months from date of shipment when stored at -70°C.

RELATED PRODUCTS

BD BioCoat™ Collagen I Cellware 84
BD BioCoat Collagen I Cell Culture Inserts 115,116
BD™ 3D Collagen Composite Scaffolds 118

RELATED PRODUCTS

BD 3D Calcium Phosphate Scaffolds 116
BD BioCoat Osteologic™ Bone Cell Culture System 94

Collagen III

Collagen III is found in several stromal connective tissues including the dermis of young organisms, human skin, and cornea. It can be used as a thin coating on tissue culture surfaces to promote cell attachment and to modulate cell behavior.

Description	Qty.	Cat. No.
BD™ Collagen III, human	0.25 mg	**354244**

Formulation:

Frozen in 10 mM acetic acid

Source:

Human placenta

Note: Source material tested for hepatitis B antigen and HIV-1 antibody

Quality Control:

- Electrophoretically homogeneous (SDS-PAGE)
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Effective as a thin coating at a recommended concentration — 0.2-1.0 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at -20°C. **Avoid multiple freeze-thaws.**

Description	Qty.	Cat. No.
BD™ FIBROGEN Collagen III, human recombinant	0.25 mg	**354255**

Formulation:

As a liquid in 0.01 M hydrochloric acid

Source:

Recombinant expression in yeast

Quality Control:

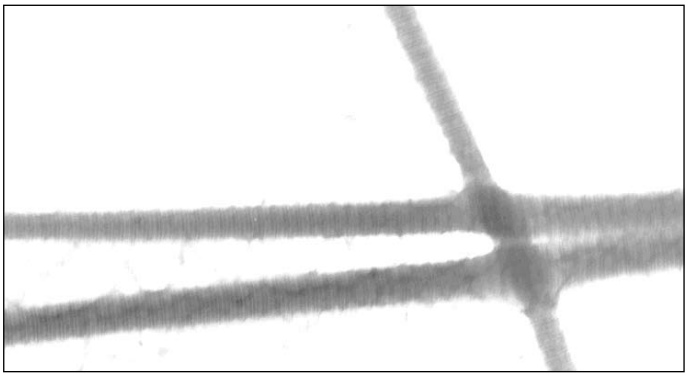
- Purity ≥ 95% by SDS-PAGE
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recombinant Human Collagen III is generally used for *in vitro* assays as a thin coating, but may be used as a gel if desired. Guidelines included with product.

Storage and Stability:

Stable for a minimum of three months from date of shipment when stored at 2-8°C.
FIBROGEN Human Recombinant Collagens are manufactured for BD Biosciences by FibroGen, Inc.



BD Fibrogen Human Recombinant Collagen Type I Fibrils: Note the banding pattern characteristic of collagen.

Collagen IV

Collagen IV is a ubiquitous component of basement membranes, the sheet-like matrix that underlies epithelial and endothelial cells and surrounds muscle fat and nerve cells. It can be used as a thin coating on tissue culture surfaces to promote cell attachment and proliferation and to study its effects on cell behavior. See page 84 for more information on Collagen IV.

Description	Qty.	Cat. No.
BD™ Collagen IV, human	0.25 mg	**354245**

Formulation:

Frozen in 10 mM acetic acid

Source:

Human placenta

Note: Source material tested for hepatitis B antigen and HIV-1 antibody.

Quality Control:

- Electrophoretically homogeneous (SDS-PAGE)
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Effective as a gel or thin coating at a recommended concentration of 1 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at -20°C. **Avoid multiple freeze-thaws.**

Description	Qty.	Cat. No.
BD™ Collagen IV, mouse	1 mg	**354233**
	(10 x 1 mg) 10 mg	**356233**

Formulation:

Frozen in 0.05 M HCl

Source:

Engelbreth-Holm-Swarm lathrytic mouse tumor

Quality Control:

- Purity ≥ 90% by SDS-PAGE
- Tested for ability to promote attachment and spreading of PC12 rat pheochromocytoma cells
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 1-10 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at -70°C. **Avoid multiple freeze-thaws.**

RELATED PRODUCTS

BD BioCoat™ Collagen IV Cellware 84
BD BioCoat™ Collagen IV Cell Culture Inserts 111

Collagen V

Collagen V is found in whole placenta, amnion, chorion, and cornea. It can be used as a thin coating on tissue culture surfaces to study Collagen V effects on cell behavior. Collagen V has been shown to inhibit endothelial cell proliferation selectively.

Description	Qty.	Cat. No.
BD™ Collagen V, human	0.25 mg	**354246**

Formulation:

Frozen in 10 mM acetic acid

Source:

Human placenta

Note: Source material tested for hepatitis B antigen and HIV-1 antibody

Quality Control:

- Electrophoretically homogeneous (SDS-PAGE)
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 1-5 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at -20°C. **Avoid multiple freeze-thaws.**

Collagen VI

Collagen VI is a large, multidomain extracellular matrix protein. Its heterotrimeric chains assemble into a microfibrillar network via tetramerization and end-to-end association[1]. Its pattern of distribution and its unique structure and expression, compared with other ECM molecules, indicate that Collagen VI may fulfill specialized tasks in tissue organization and full cell functioning[2-4].

Description	Qty.	Cat. No.
BD™ Collagen VI, human	0.5 mg	**354261**

Formulation:

Frozen in 100 mM borat buffer, pH 8.0.

Source:

Human placenta

Note: Source material tested for hepatitis B antigen, for antibody to human immunodeficiency (anti-HIV-1 and anti-HIV-2), and antibody to hepatitis C virus-1 and virus-2.

Quality Control:

- Electrophoretically homogeneous (SDS-PAGE)
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 1-5 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

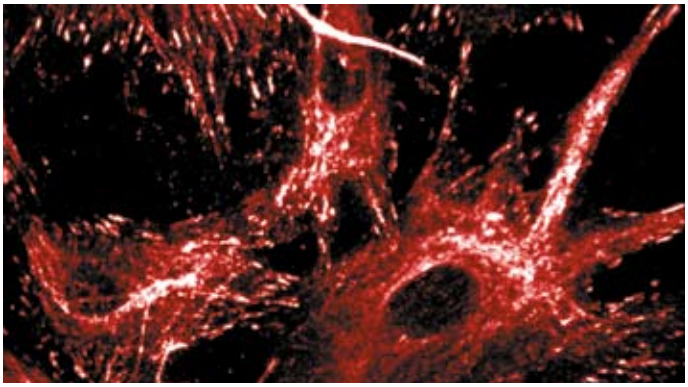
Stable for at least three months at -20°C. **Avoid multiple freeze-thaws.**

REFERENCES:

1. Bruns, R.R., et al., J. Cell Biol. **103**:393 (1986).
2. Loreal, O., et al., Gasteroenterology **102**:980-987 (1992).
3. Hatamochi, A., et al., J. Biol. Chem., **264**:3494-3499 (1989).
4. Kuo, H.J., et al., J. Biol. Chem., **272**:26522-26529 (1997).

Fibronectin

Fibronectin (FN) is found in interstitial matrix and plasma. Cell adhesion to fibronectin is mediated by the central cell-binding domain of FN through RGD (Arg-Gly-Asp) sequence. Fibronectin's principal function appears to be in cellular migration during wound healing and development. It can be used as a thin coating on tissue culture surfaces to promote attachment, spreading, and proliferation of a variety of cell types. Fibronectin can also be used as an additive to serum-free culture medium. See page 86 for more information on Fibronectin.



Immunofluorescent labeling of Paxillin in human fibroblasts grown on BD BioCoat™ Fibronectin Coverslips.

Description	Qty.	Cat. No.
BD™ Fibronectin, human	1 mg	**354008**
	5 mg	**356008**
	(5 x 5 mg) 25 mg	**356009**

Formulation:

Lyophilized from CAPS buffer containing NaCl and $CaCl_2$, pH 11.0; reconstitute in distilled H_20 **(do not agitate or swirl)**.

Source:

Human plasma

Note: Source material tested for hepatitis B antigen and HIV-1 antibody.

Molecular Weight:

440 kD (unreduced form)

Quality Control:

- Purity ≥ 90% by SDS-PAGE
- Tested for ability to promote attachment and spreading of BHK-21 cells
- Filtered (0.2 µm membrane), tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 1-5 µg/cm^2 of growth surface for coating or at 5 µg/ml as a media additive. Guidelines for coating included with product.

Storage and Stability:

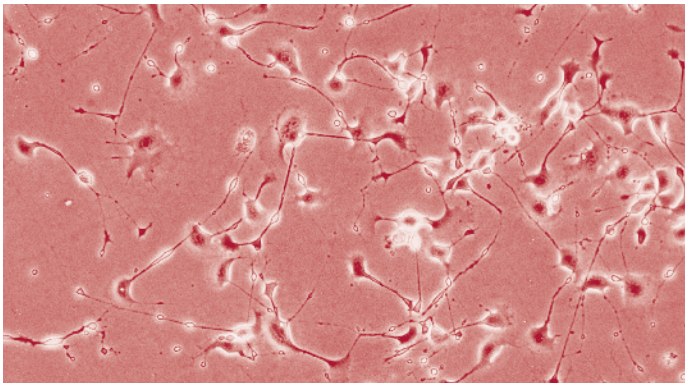
Stable for three months at 2-8°C (lyophilized) or two weeks at -20°C (solubilized). Do not store in frost-free freezer. **Avoid multiple freeze-thaws.**

Laminin

Laminin, a major component of basement membranes, has numerous biological activities including promotion of cell adhesion, migration, growth, and differentiation, including neurite outgrowth. It can be used as a thin coating on tissue culture surfaces or as a soluble additive to culture medium. Laminin has been shown in culture to stimulate neurite outgrowth, and promote cell attachment, chemotaxis, and cell differentiation.

The Laminin/Entactin Complex High Concentration (HC) is a special formulation that has been developed for three dimensional (3D) culture. Culturing cells in or on gels such as the Laminin/Entactin Complex will enable the study of specific mechanisms that dictate cell differentiation and functionality. Application examples are endothelial cell tubulogenesis[1] and acinar differentiation[2,3].

See page 90 for more information on Laminin.



NG-108 neuroblastoma cells cultured on BD BioCoat™ Laminin Cellware exhibit a spindle-shaped morphology and dendritic processes.

Description	Qty.	Cat. No.
BD™ Laminin, mouse	1 mg	**354232**

Description	Qty.	Cat. No.
BD™ Laminin/Entactin Complex High Concentration, mouse	10.5 mg	**354259**

Formulation:

Standard: 1 mg/ml frozen in 0.05 M Tris-HCl, 0.15 M NaCl, pH 7.4
HC Laminin/Entactin Complex: ≥ 10 mg/ml frozen in Dulbecco's Phosphate-Buffered Saline

Source:

Engelbreth-Holm-Swarm mouse tumor

Molecular Weight:

900 kD (unreduced)

Quality Control:

- Purity > 90% by SDS-PAGE (contains entactin)
- Tested for ability to initiate differentiation (neurite outgrowth) of NG-108 rat glioma/mouse neuroblastoma cells
- Filtered (0.2 µm membrane), tested, and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 1-10 µg/cm^2 of growth surface depending on cell type. HC Laminin/Entactin Complex provides a 3D matrix and cell can either be cultured on top or within the gel. Guidelines included with product.

Storage and Stability:

Stable for at least three months at -70°C. **Do not store in frost-free freezer. Avoid multiple freeze-thaws.**

Description	Qty.	Cat. No.
BD™ Ultrapure Laminin, mouse (entactin-free)	1 mg	**354239**

Formulation:

Frozen in 0.05 M Tris-HCl, 0.15 M NaCl, pH 7.4

Source:

Engelbreth-Holm-Swarm mouse tumor

Molecular Weight:

900 kD (unreduced)

Quality Control:

- Purity > 95% by SDS-PAGE. (Highly purified laminin preparation that is free of entactin. Entactin is a 150 kD protein tightly bound to laminin, serving as a bridge between laminin and collagen IV.)
- Tested for ability to initiate differentiation (neurite outgrowth) of NG-108 rat glioma/mouse neuroblastoma cells
- Filtered (0.2 µm membrane), tested, and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 1-10 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at -70°C. **Do not store in frost-free freezer. Avoid multiple freeze-thaws.**

RELATED PRODUCTS

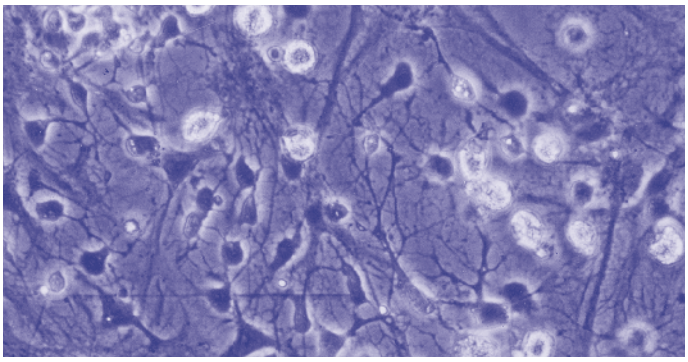
BD BioCoat™ Laminin coated Cellware 90
BD BioCoat Laminin coated Cell Culture Inserts 111

REFERENCES:
1. Grant, D.S., et al., Cell, **58**:933 (1989).
2. Hoffman, M.P., et al., J. Biol. Chem., **273**:28633 (1998).
3. Zheng, C., et al., J. Cell. Physiol., **177**:628 (1998).

Poly-D-Lysine

Poly-D-Lysine (PDL) is a synthetic molecule used as a coating to enhance cell attachment to plastic and glass surfaces. It has been used to culture a wide variety of cell types, particularly neurons, glial cells, and transfected cells. PDL is commonly used as a culture substrate to promote adhesion, growth, and differentation for a variety of neuronal and transfected cell lines.

See page 96 for more information on PDL.



Mixed culture of rat cortical neurons and astrocytes cultured on BD BioCoat™ Poly-D-Lysine Cellware. Neurons are highly branched with very long processes. Astrocytes show similar process elongation.

Description	Qty.	Cat. No.
Poly-D-Lysine	20 mg	**354210**

Formulation:

Lyophilized from aqueous solution; reconstitute in distilled water

Source:

Synthetic

Molecular Weight:

500-550 kD

Quality Control:

- Shown to promote cell attachment and spreading of rat cerebellar granule cells
- Filtered (0.2 µm membrane), tested, and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 2.5-5 µg/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for three months at 2-8°C (lyophilized) or three months at -20°C (solubilized). **Avoid multiple freeze-thaws.**

RELATED PRODUCTS

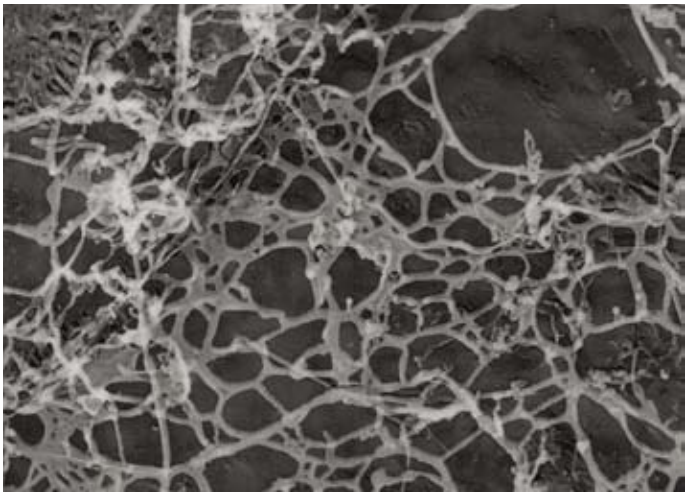
BD BioCoat™ Laminin Cellware ... 90
BD BioCoat Poly-Lysin/Laminin Cellware ... 98
BD BioCoat Laminin Cell Culture Inserts ... 111
BD BioCoat Poly-Lysine Cellware ... 96

BD™ PuraMatrix™ Peptide Hydrogel

BD™ PuraMatrix™ Peptide Hydrogel is a synthetic matrix that is used to create defined three-dimensional (3D) microenvironments for a variety of cell culture experiments. To achieve optimal cell growth and differentiation, it is necessary to determine the appropriate mixture of this material and bioactive molecules (e.g., growth factors, extracellular matrix (ECM) proteins, and/or other molecules). BD PuraMatrix Peptide Hydrogel consists of standard amino acids (1% w/v) and 99% water. Under physiological conditions, the peptide component self-assembles into a 3D hydrogel that exhibits a nanometer scale fibrous structure (average pore size of 50-200 nm).

Successful cell differentiation has been reported for a variety of cells, including hepatocyte progenitor cells[1], rat pheochromocytoma cells (PC12)[2], hippocampal neurons[3], and endothelial cells[5-7]. Primary (e.g., neuronal, fibroblast, keratinocyte) and transformed (e.g., MG-63, SH-SY5Y, HEK-293, NIH 3T3) cell types attach easily to this hydrogel[4].

Other potential applications include stem cell proliferation, tumor cell migration/invasion, angiogenesis assays, and *in vivo* analyses of tissue regeneration.



Electron micrograph of BD PuraMatrix Peptide Hydrogel (bar, 100 nm).

Description	Qty.	Cat. No.
BD™ PuraMatrix™ Peptide Hydrogel	5 ml	**354250**

Formulation:

1% solution (w/v) of purified synthetic peptide (Arginine-Alanine-Aspartate repeat (AcN-(RADA)4-CNH2)); packaged material exhibits pH = 3.0

Source:

Synthetic

Quality Control:

- Identity confirmed using Mass Spectrometry
- Demonstration of fiber formation using a self-assembly assay
- Cell viability > 80% based on cytotoxicity analysis of NIH 3T3 fibroblasts
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Easily mixed with cells and/or bioactive molecules (e.g., growth factors) prior to gelation. In the presence of salt containing solution, the peptide component self-assembles and forms a transparent 3D hydrogel. The gel can be used multi-fold: 3D cell encapsulation culture, surface plating of adherent cells on BD Falcon™ microporous membrane inserts and microplates, cell recovery for sub-culturing or biochemical analyses, *in vivo* injection. Guidelines included with product.

Storage and Stability:

Stable for a minimum of three months from date of shipment when stored at 4-30ºC.

REFERENCES:
1. Semino, C.E., et al., Differentiation **71**:262 (2003).
2. Holmes, T.C., et al., PNAS USA **97**:6728 (2000).
3. Semino, C.E., et al., Tissue Engineering **10**:643 (2004).
4. Zhang, S., et al., Biomaterials **16**:1385 (1995).
5. Narmoneva, D.A., et al., Biomaterials **26**:4837 (2005).
6. Davis, M.E., et al., Circulation **111**:442 (2005).
7. Narmoneva, D.A., et al., Circulation **110**:962 (2004).

RELATED PRODUCTS

BD 3D Scaffolds 114
BD Matrigel™ Matrix 124
BD High Concentration
vialed ECMs 125,129,133

Vitronectin

Vitronectin, also known as S-protein, serum spreading factor and epibolin, is a mixture of two monomeric glycoproteins (65 and 75 kD) present in blood and the extracellular matrix (ECM) of many tissues. Vitronectin and fibronectin are the two major adhesive proteins in plasma and serum. Like many other adhesion molecules, vitronectin binds to cells through an interation of the Arg-Gly-Asp (RGD) sequence in its cell binding domain with vitronectin-specific cell surface receptors, such as integrins $\alpha_v\beta_3$ and $\alpha_v\beta_5$.

Interactions with ECM components are mediated principally through the collagen-binding domain of vitronectin. By binding to plasminogen activator inhibitor type I, matrix-bound vitronectin plays a role in regulating pericellular proteolysis. When used as a thin coating on tissue culture surfaces, vitronectin is useful to promote cell attachment, spreading, proliferation, and differentiation of many normal and neoplastic cells, and to study cell migration.

Description	Qty.	Cat. No.
Vitronectin, human	0.25 mg	**354238**

Formulation:

Lyophilized (dialyzed against 10 mM phosphate buffer pH 7.7); reconstitute in distilled water or buffered solution at neutral pH

Source:

Human plasma

Note: Source material tested for hepatitis B antigen and HIV-1 antibody

Molecular Weight:

75 kD and 65 kD components

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to promote attachment and spreading of HT-1080 human fibrosarcoma cells
- Filtered (0.2 µm membrane), tested, and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Recommended concentration — 50 ng/cm^2 of growth surface depending on cell type. Guidelines for coating included with product.

Storage and Stability:

Stable for at least three months at 2-8°C (lyophilized) or one week at 2-8°C (solubilized). **Do not store in frost-free freezer. Avoid multiple freeze-thaws.**


354407
BD Bio
Collagen I Ce
96-well Pla
5 plates/pack
Store at 2 to 8°C
354803
BD BioCoat™
CELL ENVIRONMENTS
Fibrillar Collagen Type I Insert System
24-Multiwell Insert Plate 1.0 µm
1 Plate Pack
STORE AT -20
354165
BD BioCoat
CELL ENVIRONMENTS
Tumor Invasion System
24-Multiwell Insert Plate 8.0 Micron
1 Plate/Pack
BD BioCoat™
BD

Table of Contents

Drug Discovery and Development

Better Discovery, Better Detection, Better Decision-Making Tools

As the 21st century unfolds, the art of drug discovery presents great promise, boundless challenges and unprecedented change. As a supplier of drug discovery tools, BD Biosciences - Discovery Labware remains steadfast in its promise to provide high-quality disposable plasticware. However, our vision to develop "higher content" *in vitro* models and cutting-edge consumables is reflective of the shifting industry around us. Trust BD Biosciences for better discovery, better detection, and better decision-making tools for the 21st century.


BD BioCoat™
BD BioCoat
BD BioCoat™

BD BioCoat™ and BD Falcon™ Multiwell Insert Systems

The use of cell-based assays plays an important role in many drug discovery screening programs, particularly for secondary cell-based screening of prospective compounds. In many cases, cells are often maintained on microporous membranes when studies require the maintenance of cell polarity, the analysis of compound permeability or the ability to observe cell migration or invasion.

The BD Falcon™ and the BD BioCoat™ Multiwell Insert Systems combine the microporous polyethylene terephthalate (PET) membrane of various pore sizes with an automation compatible Multiwell insert plate. The BD FluoroBlok™ versions of these inserts enable simplified fluorescence detection and real-time analysis. The BD BioCoat versions of these
inserts add extracellular matrices (ECM) that have been optimized for selected cell types and applications, providing cells with a vital component of their native microenvironment.

There are BD Falcon and BD BioCoat Multiwell Insert Systems for:

- *In vitro* intestinal models using Caco-2 and MDCK cells.
- Tumor cell invasion and migration
- Angiogenesis assays
- Cell migration of leukocytes and smooth muscle cells
- Cell-cell interactions, cell-ECM interactions, adhesion, matrix formation, and co-cultures
- 24- and 96-Multiwell formats

Table of Contents

BD BioCoat™ and BD Falcon™ Multiwell

BD Falcon™ FluoroBlok™ 24-Multiwell Insert Systems

- Increase cell migration and invasion assay productivity with simplified fluorescence detection and real-time analysis

BD Falcon™ FluoroBlok™ 24-Multiwell Insert System
Each system contains an automation-friendly 24-multiwell cell culture membrane insert suitable for both manual and robotic screening of cells or compounds. Handle 24 inserts simultaneously; all 24 inserts are part of a single unit that is compatible with BD Falcon 24-well plates and Feeder Tray.

The BD Falcon FluoroBlok Insert System is made with a unique light-tight PET membrane that effectively blocks the transmission of light from 490-700 nm. Fluorescence from labeled cells or compounds present in the top chamber of the insert system is blocked from detection in the bottom chamber by the intervening dyed membrane. Once fluorescently labeled cells or compounds pass through the membrane, they are no longer shielded from the light source and are easily detected with a bottom-reading fluorescence plate reader. The wide blocking range of the BD FluoroBlok™ membrane allows the flexibility to choose a variety of fluorophores for chemotaxis, cell migration, tumor cell or bacterial invasion, leukocyte extravasation, cell signaling, toxicity and permeability studies for oral bioavailability and absorption assays (e.g., Caco-2 cells).

BD Falcon™ FluoroBlok™ 24-Multiwell Insert Systems offer:

- Save time and labor using automated fluorescence detection
- Eliminate cell insert manipulation - get rapid data collection without the need for plate washing or manual cell scraping and counting. Chart migration of cells and molecules in real-time without dismantling or destroying the insert
- Increase sample throughput - automate many commonly used membrane-based cell assays and increase the efficiency, productivity and throughput of these assays in the drug discovery process
- Handle 24 inserts simultaneously - all 24 wells are part of a single unit that is compatible with BD Falcon 24-well Plates and Feeder Tray
- Each insert has a generous, automation-compatible sampling port. When used with BD Falcon 24-well plates, users can sample above and below the membrane with standard 200 µl or 1000 µl pipet tips or automated fluid handler tips.

TIPS

- Cell labeling efficiencies will vary depending on fluorophore and cell type. For optimized conditions, titration of fluorophore is recommended.
- Visit our Website (bdbiosciences.com/discovery_labware) for information on compatible and incompatible fluorophores, frequently asked questions, and technical bulletins.

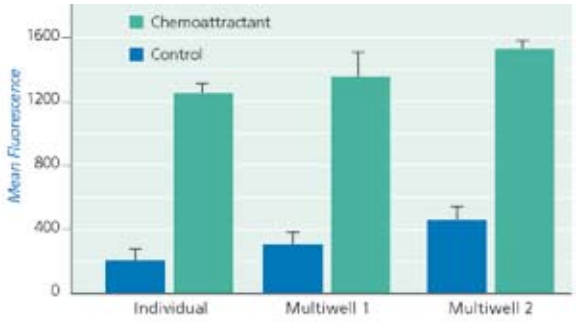
REFERENCES:
Crouch, M.F., et. al., J. Cell. Biol. **152**:263 (2001).
Crouch, M.F., J. Neuro. Meth. **104**:87 (2000).
Townson, J.R., et. al., J. Biol. Chem. **275**:39254 (2000).
Yamakawa, S., et. al., Biol. Pharm. Bull. **10**:1264 (2000).
Tang, S., et. al., J. Cell Biol. **147**:1073 (1999).

RELATED PRODUCTS

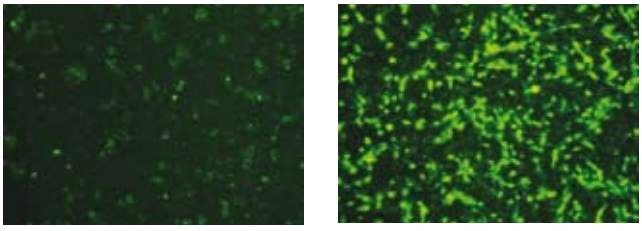
BD Falcon FluoroBlok
Individual Cell Culture Inserts 56
BD BioCoat FluoroBlok
Fibronectin Cell Culture Inserts. 122

Physical Specifications:
BD Falcon™ FluoroBlok™ 24-Multiwell Insert Systems

Effective Diameter of Membrane	6.5 mm
Effective Growth Area of Membrane	0.3 cm^2
Distance from Membrane to Bottom of Well (24-well plate)	2.0 mm
Insert Height	18 mm
Suggested Media Volume in Insert	300-500µl
Suggested Media Volume in Well	1000-1400 µl
Effective Growth Area in 24-well Plate (one well)	2.0 cm^2
Pore Density: 1.0 µm insert	1.6 x 10^6 pores/cm^2
Pore Density: 3.0 µm insert	8.0 x 10^5 pores/cm^2
Pore Density: 8.0 µm insert	1.0 x 10^5 pores/cm^2



Comparison of HUVEC Migration Through BD Falcon™ FluoroBlok™ Individual Inserts and 24-Multiwell Insert Systems
Human umbilical vein endothelial cells (HUVECs) labeled with the fluorescent dye Calcein-AM were placed in both BD Falcon FluoroBlok individual inserts (3.0 µm pore size) and 24-multiwell insert plates (3.0 µm pore size) in either the absence (Control) or presence of chemoattractant (10% fetal bovine serum). Chemotaxis was measured by detecting the fluorescence of cells migrating through the pores to the lower chamber with an Applied Biosystems CytoFluor® 4000 plate reader at 485 nm excitation and 530 nm emission. Data represents the mean of n=3 inserts ± SD.



- Serum *+ 10% Serum*

Migration of Calcein AM Labeled HMVECs through BD Falcon FluoroBlok 24-Multiwell Insert System
Human microvascular endothelial cells (HMVECs) labeled with the fluorescent dye Calcein AM were placed in a BD Falcon FluoroBlok 24-Multiwell Insert System (3.0 µm pore size) in either the absence (-Serum) or presence of chemoattractant (+10% Serum). Cells were visualized using an Olympus IMT-2 phase epifluorescent microscope. Images were captured using IPWIN 4.0 software.

CytoFluor is a registered trademark of Applied Biosystems

Description	Qty./Pk.	Qty./Case	Cat. No.
BD Falcon™ FluoroBlok™ 24-Multiwell Insert Systems			
with Feeder Tray and Lid			
1.0 µm pore size	1 plate	–	**351153**
1.0 µm pore size	5 plates	–	**351154**
with 24-well Plate and Lid			
3.0 µm pore size	1 plate	–	**351155**
3.0 µm pore size	5 plates	–	**351156**
8.0 µm pore size	1 plate	–	**351157**
8.0 µm pore size	5 plates	–	**351158**
BD Falcon™ 24-well Feeder Tray			
Specifically designed for use with BD Falcon HTS FluoroBlok 24-Multiwell Insert Systems			
Feeder Tray with Lid	5 plates	–	**351186**
BD Falcon™ 24-well Plates			
For use with BD Falcon FluoroBlok 24-Multiwell Insert Systems			
Standard tissue culture	1/tray	50	**353047**
Standard tissue culture	6/bag	36	**353226**
Standard tissue culture	10/RS Tray*	60	**353935**
BD Primaria™	1/tray	50	**353847**
Non-treated surface	1/tray	50	**351147**

** Ready-Stack Tray*

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

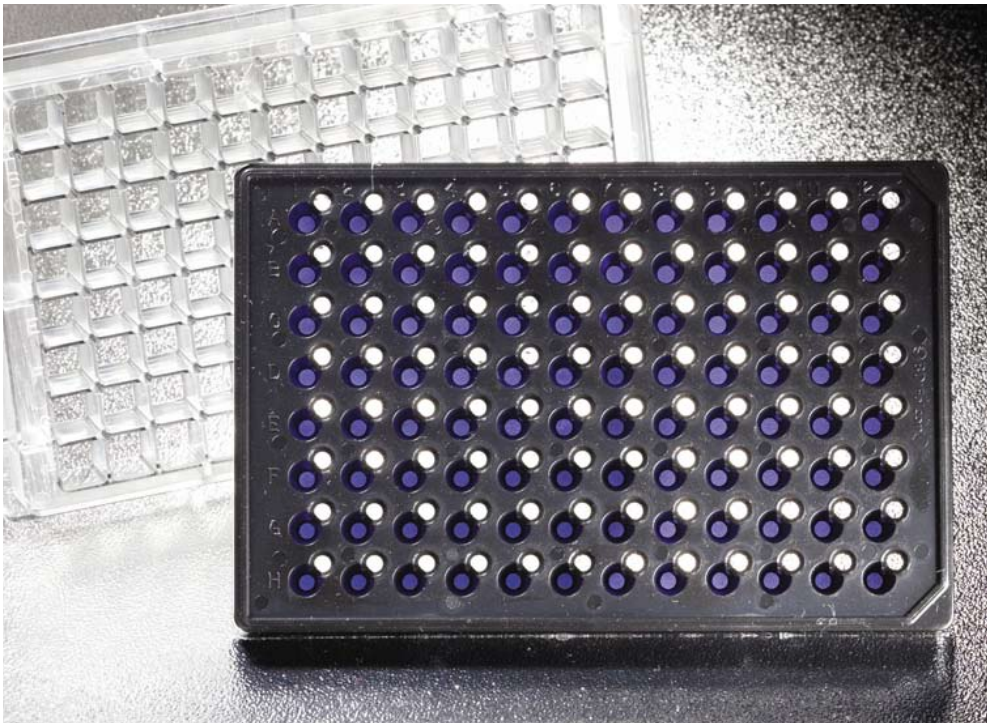
Bulletin No.	Author/Title
428	A. Goldberger and M. Septak *A Fluorescence Blocking Membrane Insert Enhances Analysis of Cell-Motility Assays*
430	M. Septak *A Novel Fluorescence Blocking Microporous Membrane Material Useful in Efficient Information-Rich Cell-Based Assays*
433	A. Goldberger and M. Septak *Comparison of Fluorescence Plate Readers for Quantitation of Cell Migration Assays in BD Falcon™ FluoroBlok™ Multiwell Insert Systems*
435	BD Falcon™ and BD BioCoat™ Microplate Measurements and Plate Characteristics
436	Set up Guidelines and Dimensional Templates for Fluorescence Plate Readers used with BD Falcon™ HTS FluoroBlok™ Insert Systems and BD BioCoat™ Multiwell Insert Cell-Based Assays
N/A*	R. Tchao, *Original developer of the FluoroBlok Insert (U.S. Patent 5,601,997). Development of a Novel Fluorescence Blocking Membrane for Chemotaxis and Tumor Invasion Studies*

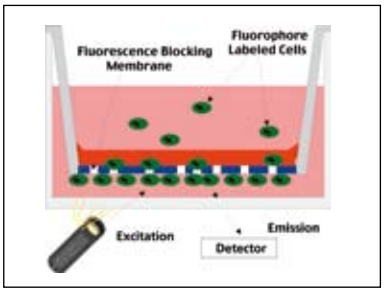
***Not applicable**

Note: All membranes are track-etched PET. All products are sterilized by gamma irradiation and are intended for single use only.
BD Gentest™ Enhanced Recovery Companion Plates are also available Cat No. 453600.

BD Falcon™ FluoroBlok™ 96-Multiwell Insert System

- A solution for automated, high throughput cell-based studies of chemotaxis, migration and invasion
- Increase cell migration and invasion assay productivity with simplified fluorescence detection and real-time analysis





Cell Migration/Invasion assays using a Fluorescence Blocking Membrane
The PET membrane is dyed to block the excitation and emission wavelengths of fluorophores commonly used to label cells, such as Calcein AM and DiI. Greater than 99% of input fluorescence in the insert is blocked by the dyed membrane. Fluorescently labeled cells stimulated by a chemoattractant, pass through the membrane. The non-migrated population does not have to be removed from the inserts prior to analysis and no further manipulation is require to quantitate the results using a bottom-reading fluorescence plate reader.

The BD Falcon™ FluoroBlok™ 96-Multiwell Insert System is a cell culture assay platform designed with automation in mind. The one-piece insert housing and fluorescence blocking microporous membrane (available in 3.0 and 8.0 µm pore sizes) enables increased efficiency, productivity and throughput in the drug discovery process. The novel receiver plate design minimizes crosstalk between the wells; the black housing of the 96-Multiwell Insert virtually eliminates autofluorescence. These features ensure fluorescence measurements that result from your assay, not crosstalk or background signal.

BD Falcon™ FluoroBlok™ 96-Multiwell Insert Systems offer:

- **Simplification of chemotaxis, cell migration, and invasion assays**
  Standard technology platform allows multiple protocols
- **Homogeneous protocols for real-time kinetic readouts**
  Real-time detection without dismantling or destroying the insert
- **Increased sample throughput**
  Eliminates need for manual cell scraping and counting
- **Automation friendly**
  96-Multiwell format is compatible with commercial detectors and fluid handling instruments
- **Unique, patented, fluorescence blocking membrane**
  Blocks greater than 99% of the excitation and emission wavelengths of fluorophores commonly used to label cells

Physical Specifications
BD Falcon™ FluoroBlok™
96-Multiwell Insert System

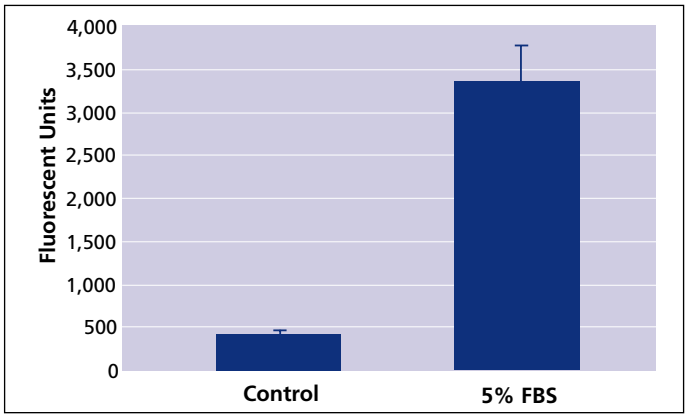
Effective Diameter of Membrane	3.2 mm
Effective Growth Area of Membrane	0.0804 cm^2
Distance from Membrane to Bottom of Well (96-well Plate)	1.4 mm
Insert Height	10.4 mm
Suggested Media Volume in Insert (optimum volume: 50 µl)	30-70 µl
Suggested Media Volume in Well (optimum volume: 225 µl)	200-225 µl
Effective Growth Area in 96-Square Well Flat Bottom Plate (per well)	0.64 cm^2
Pore Density: 3.0 µm insert	8.0 x 10^5 pores/cm^2
Pore Density: 8.0 µm insert	1.0 x 10^5 pores/cm^2

TIPS

- Cell labeling efficiencies will vary depending on fluorophore and cell type. For optimized conditions, titration of fluorophore is recommended.
- Visit our Website (bdbiosciences.com/discovery_labware) for information on compatible and incompatible fluorophores, frequently asked questions and technical bulletins.

RELATED PRODUCTS

BD Falcon FluoroBlok 24-Multiwell Insert System 142
BD Falcon FluoroBlok Individual Cell Culture Inserts 56
BD BioCoat™ FluoroBlok Invasion System 146
BD BioCoat™ FluoroBlok™ Fibronectin Cell Culture Inserts. 122



HUVEC Migration through BD Falcon™ 96-Multiwell FluoroBlok™ Inserts (3.0 µm pore size)
HUVEC cells were plated at a density of 2.5x10⁴ cells per well on the top of the insert suspended in assay medium. Into the bottom wells, assay medium (control) or chemoattractant (5% FBS in assay medium) were added and the plates were incubated at 37°C for 20 hours in a cell culture incubator. Cells were labeled with fluorescent dyes and cells that migrated to the bottom of the membrane were quantitated using a fluorescence plate reader.

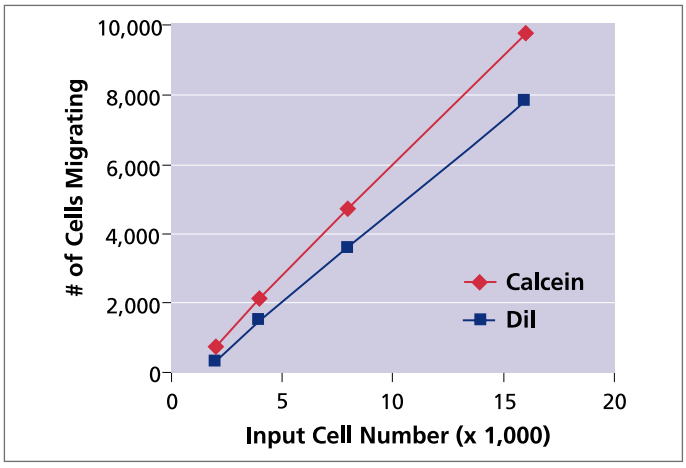
Simplify and Automate Cell-Based Assays using the BD Falcon™ FluoroBlok™ 96-Multiwell Insert System

The BD Falcon FluoroBlok 96-Multiwell Insert System, designed with automation in mind, is well suited for high-throughput analysis of cell-based assays. Good detection sensitivity is observed even when a small number of cells is added to the wells. Variability is also low, as CV values of 10% and below are routinely observed.

The wide blocking range (490-700 nm) of the BD FluoroBlok membrane allows the flexibility to choose from a variety of fluorophores for screening compounds in cell-based assays such as chemotaxis, cell invasion and migration, and monolayer permeability. Unlike traditional *in vitro* cell-based assays, the BD Falcon FluoroBlok 96-Multiwell Insert System allows rapid data collection without the need for plate washing or tedious manual cell scraping and counting. Each insert has a generous automation-compatible sampling port so you may sample above and below the membrane with standard pipet tips or automated fluid handing equipment. The 96-Multiwell Insert plate format is compatible with many standard fluorescence plate readers, robots and fluid handlers.

Description	Qty./Pk.	Cat. No.
BD Falcon™ FluoroBlok™ 96-Multiwell Insert Systems		
3.0 µm pore size	1 plate	**351161**
3.0 µm pore size	5 plates	**351162**
8.0 µm pore size	1 plate	**351163**
8.0 µm pore size	5 plates	**351164**
BD Falcon™ 96-Square well, Flat-Bottom Plate and Lid		
96 square-well, flat-bottom plate	5 plates	**353928**

Custom Coatings: BD FluoroBlok Inserts may be coated with variety of ECM proteins.
Note: All membranes are track-etched PET. All products are sterilized by gamma irradiation and are intended fore single use only.



HT-1080 Migration through BD Falcon 96-Multiwell FluoroBlok Inserts (8.0 µm pore size)
Relationship of migrated cells versus input cell number. The four-hour fluorescence data was converted to cells migrated using the standard curve. The relationship was linear at all cell concentrations. This data indicates that the number of pores in the small membrane area was not saturated, even at higher cell numbers.

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
450	Amy Goldberger, PhD and Mike Septak, Ph D. *BD Falcon FluoroBlok 96-Multiwell Insert System Enhances High-Throughput Analysis of Cell-Based Assays*
435	*BD Falcon™ and BD BioCoat™ Microplate Measurements and Plates Characteristics*
436	BD Biosciences - Discovery Labware, Bedford, MA, 01730 *Set Up Guidelines and Dimensional Templates for Fluorescence Plate Readers Used With BD Falcon™ FluoroBlok™ Insert Systems and BD BioCoat™ Multiwell Insert Cell-Based Assays*

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Dong, J., et al., EMBO **23**(14):2800 (2004).
Nick, J., et al., Blood **104**(13):3878 (2004).
Shen, X., et al., Exp. Cell Res, **294**(2):420 (2004).
Meissner, M., et al., Circ. Res., **94**(3):324 (2004).
Bockhorn, M., et al., Cancer Res. **64**(7):2469 (2004).
Kuijpers, T.W., et al., Blood **103**(10):3915 (2004).
Violeta, C., et al., Mol Bio Cell **16**(6):2947 (2005).
Sheng-Bin P., et al., Mol Cancer Research **3**:227 (2005).

BD BioCoat™ Tumor Invasion Systems

- Increase throughput for tumor cell invasion assays
- Automate your assay with simplified and non-destructive fluorescence detection
- Save time and labor screening for prospective anti-metastatic compounds

An *in vitro* system designed for assessing the invasive potential of both malignant and normal cells.

BD BioCoat™ Tumor Invasion Systems provide a unique, quantitative platform for screening prospective compounds that inhibit tumor cell invasiveness. Available as 24- and 96-Multiwell insert plates, these robust systems are ideal for screening a variety of tumor cell types and performing IC_{50} analysis. In addition, this assay platform can be used to study the mechanisms that govern the behavior of tumor cells[1,2].

BD BioCoat Tumor Invasion Systems are based on the fluorescence blocking BD FluoroBlok™ PET microporous membrane (8 µm pore size), which allows for fluorescence detection in a simplified and non-destructive manner. To provide an appropriate model for tumor cell invasion through a basement membrane, the BD FluoroBlok membrane is uniformly coated with BD Matrigel™ Matrix.

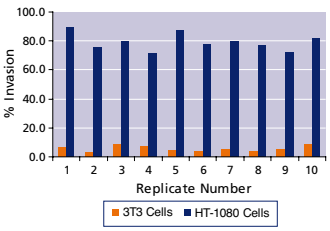
BD BioCoat™ Tumor Invasion Systems offer:

- Proven biological performance using BD FluoroBlok PET membrane coated with BD Matrigel Matrix
- Highly reproducible results:
  Average Z' = 0.7 (24-Multiwell)
  Average Z' = 0.66 (96-Multiwell)
- Easy-to-use: No need for multiple pipeting or handling steps. Just add cells, label, and read.
- Robust platform with high signal-to-noise ratio
- Increased throughput with 96-Multiwell format

REFERENCES:
1. Ichikawa, H., et al., The Journal of Immunology **174**:7383 (2005).
2. Takada, Y., et al., J. Biol. Chem. **280**(17):17203 (2005).

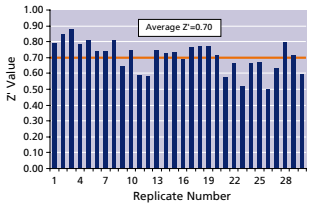
BD BioCoat™ 24-Multiwell Tumor Invasion System

Comparison of Mean Percent Invasion



Multiple lots of the BD BioCoat 24-Multiwell Tumor Invasion System were assayed. A CytoFluor® plate reader was then used to measure fluorescently labeled cells residing on the bottom of the insert membrane post-invasion. Mean percent invasion of NIH-3T3 and HT-1080 cells was compared. Cells were labeled post-invasion using Calcein AM.

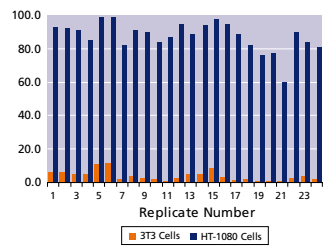
Z' Values for Tumor Cell Invasion



Using multiple lots of BD BioCoat 24-Multiwell Tumor Invasion System, two operators ran ten separate assays with three plates from each assay. Z' was calculated using % invasion of HT-1080 cells and % invasion of NIH-3T3 cells (negative control). Cells were labeled post-invasion using Calcein AM.

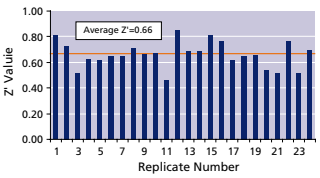
BD BioCoat™ 96-Multiwell Tumor Invasion System

Comparison of Mean Percent Invasion



Multiple lots of the BD BioCoat 96-Multiwell Tumor Invasion System were assayed. A Victor2™ plate reader was used to measure fluorescently labeled cells on the bottom of the insert membrane post-invasion. Mean percent invasion of NIH-3T3 and HT-1080 cells was compared. Cells were labeled post-invasion using Calcein AM.

Z' Values for Tumor Cell Invasion



Using multiple lots of BD BioCoat 96-Multiwell Tumor Invasion System, three operators ran eight separate assays with three plates from each assay. Z' was calculated using % invasion of HT-1080 cells and % invasion of NIH-3T3 cells (negative control). Cells were labeled post-invasion using Calcein AM.

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
N/A	S. Ilsley, et al. *A Fluorescence-Based HTS Invasion Assay: Dose-Dependent Inhibition of Tumor Cell Invasion by Doxycycline*
N/A	P. Flaherty, et al. *Screening of Anti-Metastatic Compounds by a Fluorescence Based Tumor Cell Invasion Assay*
436	BD Biosciences - Discovery Labware, Bedford, MA, 01730 Set up Guidelines and Dimensional Templates for Fluorescence Plate Readers Used with BD Falcon™ FluoroBlok™ Insert Systems and BD BioCoat™ Multiwell Insert Cell-Based Assays

Standardized, Reproducible Assay Platform

BD BioCoat™ Tumor Invasion Systems are ideal for use in secondary cell-based screening assays of prospective anti-metastatic compounds. These proprietary systems are suitable for both manual and robotic uses and are compatible with most fluorescence plate readers, robots, and fluid handling instruments.

Note: To set up your fluorescence plate reader with the correct plate map (template), see BD Biosciences Technical Bulletin #436 "Set-Up Guidelines and Dimensional Templates for Fluorescence Plate Readers used with BD Falcon™ FluoroBlok™ Insert Systems and BD BioCoat Multiwell Insert Cell-Based Assays" at bdbiosciences.com/technical_resources/

Quality Control

Each lot of BD BioCoat Tumor Invasion System is tested for its ability to allow invasion of HT-1080 cells, an invasive human fibrosarcoma cell line, and to exclude invasion of NIH-3T3 cells, a non-invasive fibroblast cell line. All lots are tested and found negative for bacteria and fungi.

Storage and Stability

Product is shipped on dry ice. Upon receipt, store immediately at -20°C. Stable for at least three months from date of shipment.

BD BioCoat™ Tumor Invasion Systems

An *in vitro* system for the study of tumor cell invasion through basement membrane. Consists of BD Falcon FluoroBlok Multiwell Insert Plates containing an 8.0 µm pore size FluoroBlok membrane coated with a uniform layer of BD Matrigel™ Basement Membrane Matrix. The BD Matrigel Matrix occludes the pores of the FluoroBlok membrane, blocking non-invasive cells from migrating through the membrane.

Description	Qty.	Cat. No.
BD BioCoat™ 24-Multiwell Tumor Invasion System (8.0 µm pore size)		
one insert plate with 24-well plate and lid	1	**354165**
five insert plates with 24-well plate and lid	5	**354166**
BD BioCoat™ 96-Multiwell Tumor Invasion System (8.0 µm pore size)		
one insert plate with 96-well plate and lid	1	**354167**
five insert plates with 96-well plate and lid	5	**354168**

Victor2 is a trademark of PerkinElmer, Inc.
CytoFluor is a registered trademark of Applied Biosystems.

TIP

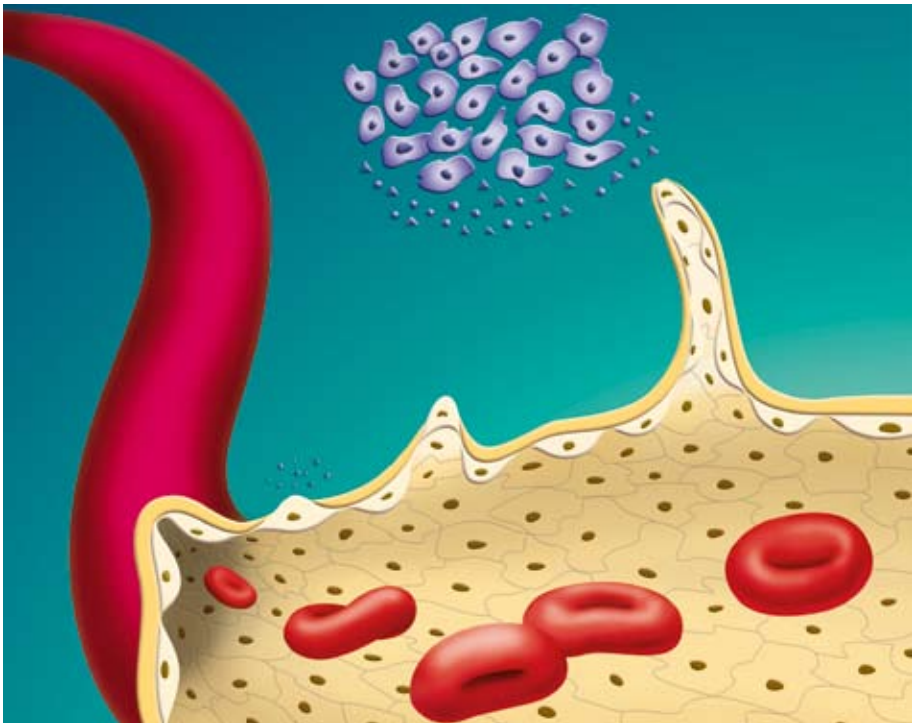
Remember to order BD Falcon FluoroBlok Multiwell Insert System as control plates when purchasing the BD BioCoat FluoroBlok Invasion System.

RELATED PRODUCTS

BD BioCoat Matrigel Invasion Chambers 74
BD Falcon FluoroBlok Multiwell Insert Systems 142

BD BioCoat™ Angiogenesis Systems

- Address key steps in the angiogenesis process using standardized cell-based assays
- Increase throughput with screening-compatible formats and data acquisition options
- Obtain human umbilical vein endothelial cells pre-qualified for use in the endothelial cell migration assay



Angiogenesis is the development of new blood vessels from pre-existing ones. This process is essential for normal growth and homeostasis. However, angiogenesis becomes altered during certain disease states, which results in excessive or insufficient blood vessel formation. Diseases such as cancer, diabetic retinopathy and rheumatoid arthritis are characterized by excessive angiogenesis. A variety of conditions are associated with insufficient angiogenesis and reduced blood flow (e.g., stroke, coronary artery disease, and delayed wound healing). In an attempt to restore normal blood flow, it will be necessary to target these disorders with therapeutic strategies that effectively reduce or enhance angiogenesis.

Various *in vitro* assays have been developed to understand the mechanisms underlying angiogenesis and to identify potential therapeutic molecules[1,2]. These assays address key aspects of the angiogenesis process such as endothelial cell adhesion, proliferation, permeablization, migration, invasion, tubulogenesis, and vessel stabilization. However, it is recognized that many of these assays are cumbersome, laborious, poorly quantitated, and not standardized.

The lack of effective tools for studying angiogenesis has constrained efforts to identify therapeutic compounds that inhibit one or more components of the angiogenesis process. The BD BioCoat™ Angiogenesis Systems facilitate investigation of compound effects on endothelial cell invasion, migration, and tubulogenesis. The availability of these standardized assays has facilitated a better understanding of the molecular mechanism of angiogenesis and simplified the routine use of cell-based assays for screening of anti- and pro-angiogenic compounds.

REFERENCES:
1. Auerbach, R., et al., Clinical Chemistry, **49**:32 (2003).
2. Taraboletti, G. and Giavazzi, R., et al., European J Cancer, **40**:881 (2004).

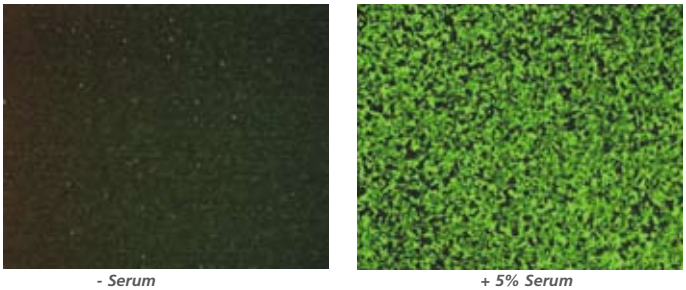
BD BioCoat™ Angiogenesis System: Endothelial Cell Invasion

- Evaluate endothelial cell invasion using real-time fluorescence detection in a simplified and reproducible manner
- Increase screening throughput for prospective pro- and anti-angiogenic compounds

During angiogenesis, endothelial cells are activated and express matrix metalloproteinases (MMPs), which degrade the vascular basement membrane and facilitate cellular movement towards angiogenic stimuli[1,2].The BD BioCoat™ Angiogenesis System: Endothelial Cell Invasion provides an *in vitro*, quantitative assay for prospective anti- and pro-angiogenic compounds. It is composed of a BD Falcon™ 24-Multiwell Insert Plate (and a non TC-treated 24- or 96-well receiver plate and lid) containing a BD FluoroBlok™ fluorescence-blocking microporous (3.0 µm pore size) polyethylene terephthalate (PET) membrane coated with BD Matrigel™ Matrix. BD Matrigel Matrix is a reconstituted basement membrane preparation derived from Engelbreth-Holm-Swarm (EHS) mouse tumors. Furthermore, this matrix is primarily composed of laminin, collagen IV, entactin, and a number of growth factors. An optimized coating process effectively occludes the membrane pores and provides a functional barrier that is analogous to the basement membrane *in vivo*. This coating blocks the passage of non-invasive cells and allows the passage of activated endothelial cells with invasive capacity. Following activation by angiogenic factors, the endothelial cells express MMP 2 and 9. These proteases digest the matrix and enable the cells to invade through the matrix barrier to the bottom side of the microporous membrane[1,3].

Unlike traditional *in vitro* cell invasion assays, the BD Endothelial Cell Invasion Assay allows for rapid data collection without multiple handling steps (i.e., plate washing, manual cell scraping, and manual counting). Since the BD FluoroBlok membrane effectively blocks the fluorescence of labeled cells that have not invaded through the membrane, only cells that appear on the underside of the BD FluoroBlok membrane are detected. Cells may be labeled with a fluorescent dye either pre- or post-invasion. The BD FluoroBlok membrane effectively blocks > 99% of the excitation and emission wavelengths of fluorophores commonly used to label cells (see Figure 1). This reproducible system routinely yields inter- and intra-assay CVs of ≤ 15%. This assay has been shown to be suitable for use with human microvascular endothelial cells (HMVEC) and the human microvascular endothelial cell line, HMEC-1. Using this system, endothelial cell invasion occurs in response to angiogenic factors such as VEGF and bFGF. Furthermore, the inhibition of endothelial cell invasion has been demonstrated using known anti-angiogenic agents.

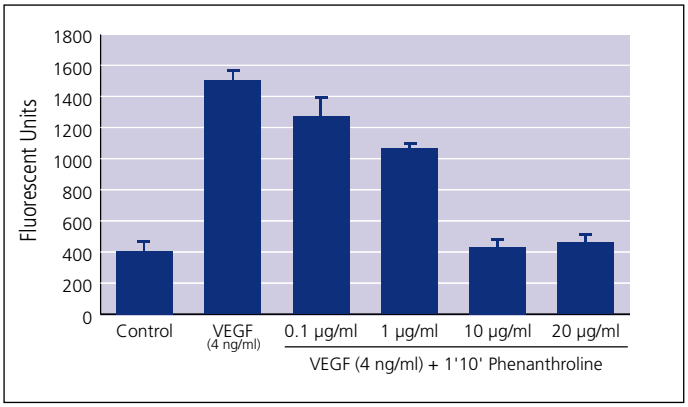
HMVEC Invasion through BD BioCoat™ Angiogenesis System: Endothelial Cell Invasion



- Serum ***+ 5% Serum***

Human microvascular endothelial cells (HMVECs) were placed in the BD BioCoat Angiogenesis System: Endothelial Cell Invasion in either the absence (control) or presence of serum and allowed to invade for 22±1 hour. Cells were labeled post-invasion with Calcein AM and visualized using an Olympus IMT-2 phase epifluorescent microscope. Images were captured using IPWIN 4.0 software.

REFERENCES:
1. Harris, S.R., et al., *In Vivo*, **12**:563 (1998).
2. Molema, G., Pharmacological Reviews, **52**(2):237 (2000).
3. Benelli, R., et al., The Int. J. Biol. Markers, **14**(4):243 (1999).



Effect of MMP Inhibitor 1'10' Phenanthroline on HMVEC Invasion
HMVECs were assayed in the BD BioCoat Angiogenesis System: Endothelial Cell Invasion in the absence (Control) or presence of VEGF (4 ng/ml) with varying concentrations of 1'10' Phenanthroline in the bottom chamber. Cells were allowed to invade for 22±1 hour. Cells were labeled post-invasion with Calcein AM (4 µg/ml) and measured by detecting the fluorescence of cells that invaded through the BD Matrigel Matrix with an Applied Biosystems CytoFluor® 4000 plate reader at 485 nm excitation and 530 nm emission. Data represents the mean of n=3 inserts ± SD.

Quality Control:

- Tested for its ability to allow invasion of HMVEC-1 cells, an invasive human microvascular endothelial cell line, and to exclude invasion of NIH-3T3 cells, a non-invasive fibroblast cell line
- Tested and found negative for bacteria and fungi

Storage and Stability:

Stable for at least three months from the date of shipping when stored at -20°C.

Description	Qty.	Cat. No.
BD BioCoat™ Angiogenesis System: Endothelial Cell Invasion		
24-Multiwell Insert System	1	**354141**
24-Multiwell Insert System	5	**354142**

TIP

Remember to order BD Falcon FluoroBlok 24-Multiwell Insert System as control plates when purchasing the BD BioCoat Angiogenesis System: Endothelial Cell Invasion.

RELATED PRODUCTS

More BD BioCoat Angiogenesis Systems.....next pages
BD BioCoat Endothelial Cell Growth Environment..... 68
BD™ Vascular Endothelial Growth Factor 194

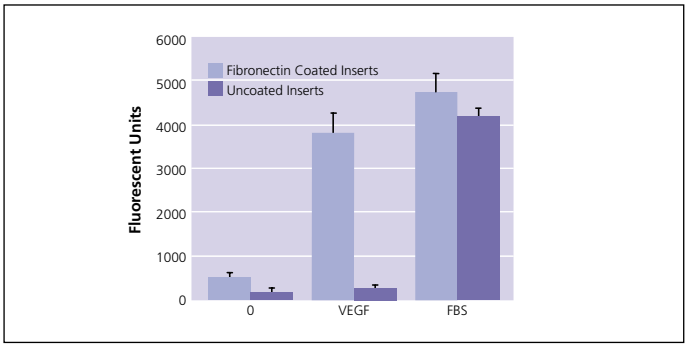
BD BioCoat™ Angiogenesis System: Endothelial Cell Migration

- A quantitative and reproducible *in vitro* model system for examining the effects of prospective compounds on endothelial cell migration

Cell migration (or chemotaxis) is the directional movement of cells in response to a concentration gradient of a soluble chemoattractant. During angiogenesis, activated endothelial cells invade through the basement membrane and migrate towards a variety of pro-angiogenic factors[1].

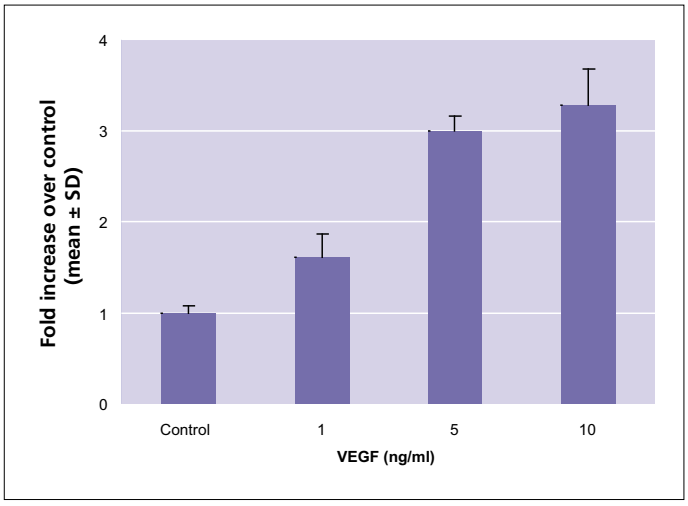
The BD BioCoat™ Angiogenesis System: Endothelial Cell Migration is composed of a BD Falcon™ 24- or 96-Multiwell Insert Plate (and a non-TC treated 24- or 96-well receiver plate and lid) containing a BD FluoroBlok™ fluorescence-blocking microporous polyethylene terephthalate (PET) membrane (3.0 µm pore size) evenly coated with human fibronectin. An optimized coating process is used to ensure that the pores of the membrane are not occluded. Therefore, endothelial cells attach to the coated membrane and freely migrate through the pores towards an appropriate chemoattractant in the lower chamber of the plate.

To measure cell migration, a bottom-reading fluorometer is used to quantitate the number of cells that have migrated through the pores and attached to the underside of the insert membrane[2]. The cells may be labeled with a fluorescent dye either pre- or post-migration. The pre-labeling technique enables real-time kinetic measurements of cell migration. Studies conducted using the post-labeling technique demonstrated that endothelial cells migrate towards VEGF in a concentration-dependent manner. Similar results were obtained when bFGF was used as a chemoattractant. Moreover, the BD BioCoat Angiogenesis System: Endothelial Cell Migration has been used in conjunction with the Cellomics HSC ArrayScan to examine endothelial cell migration in a quantitative high-throughput assay[3].



HUVEC Migration on Uncoated and HFN-Coated Inserts
Migration assays were conducted using HUVECs in the BD BioCoat Angiogenesis System: Endothelial Cell Migration and compared with uncoated BD FluoroBlok 24-Multiwell Inserts (Cat. No. 351155) using both FBS (5%) and VEGF (10 ng/ml) as chemoattractants. The cells were allowed to migrate for 22±1 hour. Cells were labeled post-migration with Calcein AM (4 µg/ml) and measured by detecting the fluorescence of the cells that migrated through the fibronectin-coated BD FluoroBlok membrane using an Applied Biosystems CytoFluor® 4000 plate reader [485/530 nm (Ex/Em) wavelengths]. The data showed a significant increase in migration in response to VEGF when the assay was performed on the fibronectin-coated inserts included in the system. Data represents the mean of n=3 inserts ± S.D.

REFERENCES:
1. Harris, S.R., et al., *In Vivo*, **12**:563 (1998).
2. Goldberger, A. and Septak, M., BD Biosciences Discovery Labware, Technical Bulletin #428, (1998).
3. Mastyugin, V., et al., J. Biomol Screening, Vol. **9**:712 (2004).



BD HUVEC-2 cells assayed in the BD BioCoat™ Angiogenesis System: Endothelial Cell Migration (96-Multiwell format) in response to increasing concentrations of VEGF. Samples were incubated for 22 hours. Cells were labeled post-migration with Calcein AM and measured by detecting the fluorescence of cells that migrated through the fibronectin-coated BD FluoroBlok™ membrane with the Victor 2 plate reader (Perkin Elmer) at 485 nm emission. Data represents the mean of four inserts ± SD.

Description	Qty.	Cat. No.
BD BioCoat™ Angiogenesis System: Endothelial Cell Migration		
24-Multiwell Insert System	1	**354143**
24-Multiwell Insert System	5	**354144**
96-Multiwell Insert System	1	**354147**
96-Multiwell Insert System	5	**354148**

TIP

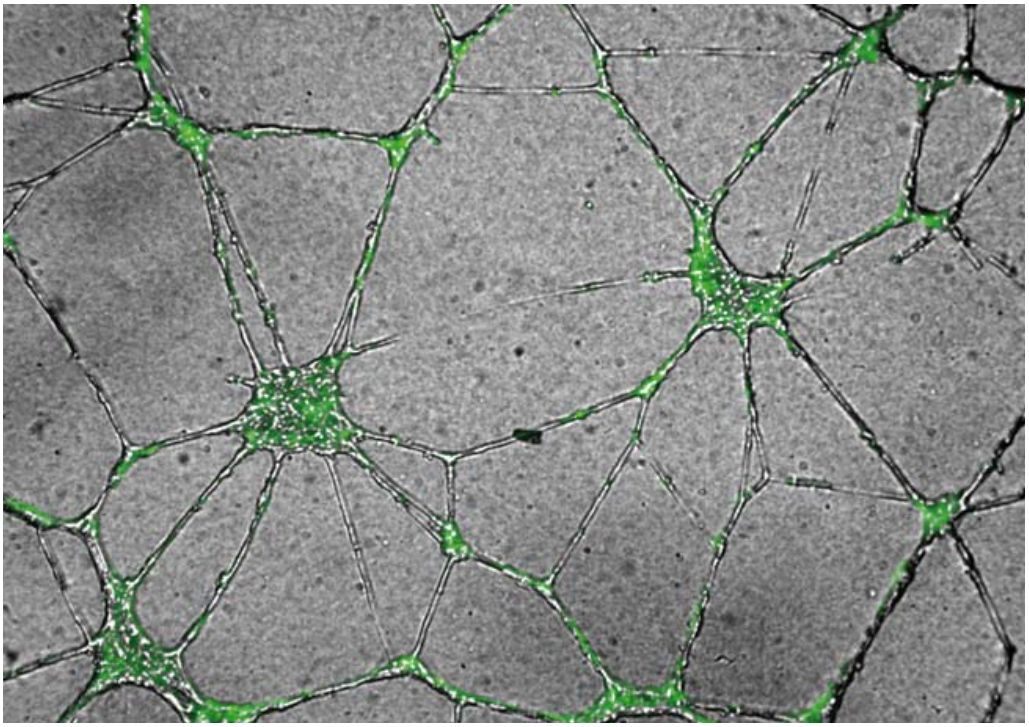
Remember to order the respective BD Falcon™ FluoroBlok™ Multiwell Insert System as control plates when purchasing the BD BioCoat Angiogenesis System: Endothelial Cell Migration.

RELATED PRODUCTS

More BD BioCoat™ Angiogenesis Systems..... this chapter
BD™ HUVEC-2 Cells 154
BD BioCoat Endothelial Cell Growth Environment 68
BD Vascular Endothelial Growth Factor 194

BD BioCoat™ Angiogenesis System: Endothelial Cell Tube Formation

- Save time and improve reproducibility with optimized system for screening compounds that modulate endothelial cell tubulogenesis



Confocal Imaging of BD™ HUVEC-2 Cell
BD HUVEC-2 cells (Cat. No. 354151) were assayed using the BD BioCoat™ Angiogenesis System: Endothelial Cell Tube Formation (Cat. No. 354149). Cells were stained using the fluorogenic esterase substrate Calcein AM (Molecular Probes C1430). Confocal images were captured using the BD Pathway™ Bioimager equipped with a 4 X Olympus objective.

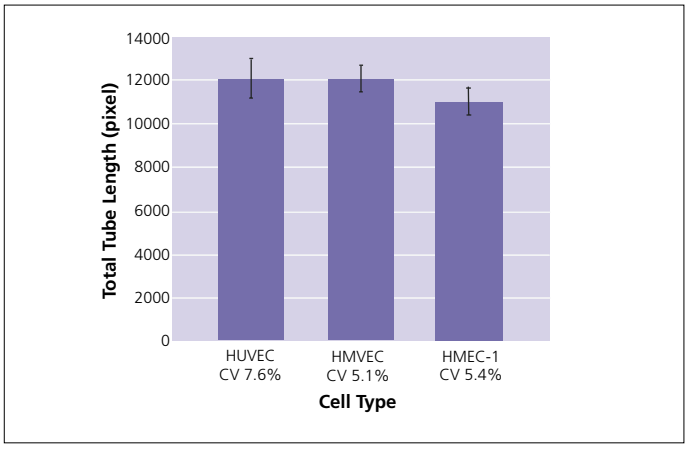
Endothelial cells are capable of differentiating *in vitro* to form capillary-like structures (also referred to as tubes)[1,2]. Cross section analyses of tubes formed in extracellular matrices such as laminin[3], collagen[2], fibrin, and BD Matrigel™ Matrix[3] revealed the presence of a lumen surrounded by cells. When BD Matrigel Matrix is used to promote endothelial cell tube formation, the lumen forming cells interact with each other via interdigitating junctional complexes[3]. This property is indicative of *in vivo*-like capillary formation. Since BD Matrigel Matrix has been found to induce endothelial cell tubulogenesis and lumen formation in a timeframe of 18 hours, this matrix is suitable for high throughput assays that target this critical angiogenesis pathway.

The BD BioCoat Angiogenesis System: Endothelial Cell Tube Formation is an *in vitro* assay system composed of a BD Falcon™ 96-well black plate with clear bottom uniformly coated with BD Matrigel Matrix. To insure reproducibility when using this assay system, different preparations of BD Matrigel Matrix are screened for the ability to promote optimal tube formation under standardized conditions. In addition to the coating material, the manufacturing process has been optimized to the highest standards. Assay performance is further enhanced by the inclusion of our specially treated 96-well microplate, which has specific surface properties that assure even coating and minimize meniscus formation.

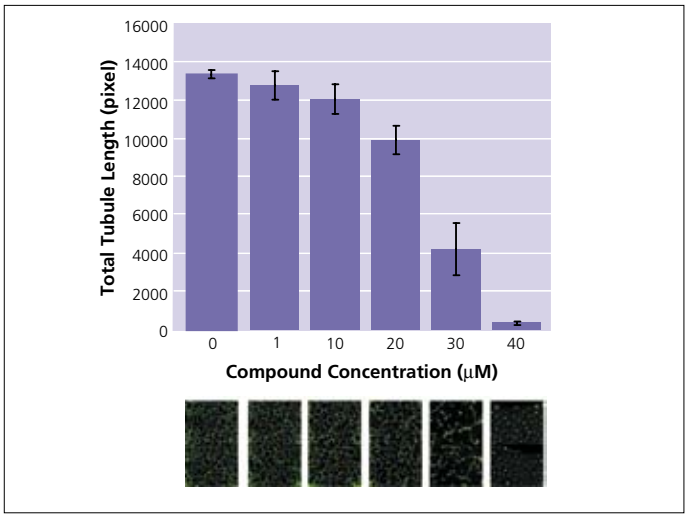
The 96-well format allows for increased productivity in this traditionally low throughput assay. Throughput can be further augmented through the use of automated imaging instrumentation to obtain optimal microscopic images for rapid quantification of tube formation. A number of human endothelial cell types have been shown to form tubes in the BD BioCoat Angiogenesis System: Endothelial Cell Tube Formation. Studies have demonstrated that endothelial cell tubulogenesis is inhibited by antagonists to integrin subunits α5ß1[4] and ß1[5] and the antibiotic fumagillin[6]. Using the BD BioCoat Tube Formation System, we have shown that suramin and antibodies directed against ß1-integrin inhibit endothelial cell tube formation *in vitro*.

REFERENCES

1. Folkman, J. and Haudenschild, C., Nature **288**:551 (1980).
2. Montesano, R ., Orci, L, and Vassalli, J., Cell. Biol. **97**:1648 (1983).
3. Kubota, Y., Kleinman, H.K., Martin G.R. and Lawley, T.J., J. Cell Biol. **107**:1589 (1988).
4. Kim, S., Bell, K., Mousa, S.A., and Varner, J.A., Am. J. Pathol. **156**:1345 (2000).
5. Kubota, Y., Kawa, Y., and Mizoguchi, M., J. Dermatol. Sci. **12**:36 (1996).
6. Ingber, D., et al., Nature **348**:555 (1990).



Human Endothelial Cell Types Exhibit Tube Formation on the BD BioCoat™ Angiogenesis System: Endothelial Cell Tube Formation
HUVEC, HMVEC, and the human endothelial cell line HMEC-1 exhibit tube formation. 20,000 cells of each cell type were added to wells containing pre-solidified BD Matrigel™ Matrix. The assay was incubated for 18 hours. Each bar represents the mean of n=32 wells ± S.D.



Suramin Inhibits HMEC-1 Tube Formation
HMEC-1 cells (40,000 cells/ml) were treated with Suramin at concentrations ranging from 0-40 μM and then analyzed for tube formation using the BD BioCoat Angiogenesis System: Endothelial Cell Tube Formation. 50 μl of cells plus compound were added to wells containing pre-solidified BD Matrigel Matrix. Samples were incubated at 37°C/5% $C0^2$ for 18 hours before staining with Calcein AM. Images were acquired with a 2x objective lens and the total tube length was measured using MetaMorph® (Universal Imaging Corporation™). Each bar represents mean of n=8 wells ± S.D.

Quality Control:

- Tested for its ability to support HMVEC tubule formation, determined by tubule length, and measured by automated image analysis
- All lots of this product are tested and found negative for bacteria and fungi

Storage and Stability:

Stable for at least three months from the date of shipping when stored at -20°C.

Description	Qty.	Cat. No.
BD BioCoat™ Angiogenesis System: Endothelial Cell Tube Formation		
96-well Black/Clear Bottom Optilux™ Microplate	1	**354149**
96-well Black/Clear Bottom Optilux Microplates	5	**354150**

RELATED PRODUCTS

More BD BioCoat Angiogenesis Systems..... this chapter
BD™ HUVEC-2 Cells 154
BD BioCoat Endothelial Cell Growth Environment 68
Vialed BD High Concentration ECMs 125,129,133
BD Pathway™ Bioimager..... 206

BD™ Human Umbilical Vein Endothelial Cells

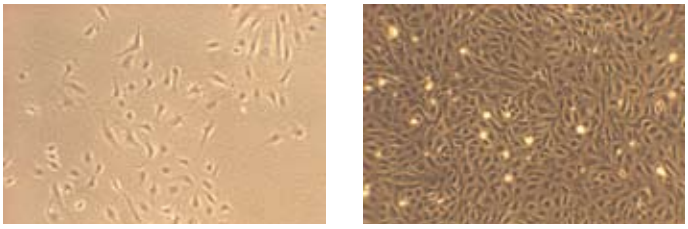
- Pre-qualified primary endothelial cells ensure assay performance and data reproducibility
- Qualified for use in BD BioCoat™ Angiogenesis System: Endothelial Cell Migration

Since commercially available primary endothelial cells exhibit inherent lot-to-lot variability, researchers are often burdened with the need to screen lots for performance in their cell-based assays. BD Biosciences - Discovery Labware has eliminated this difficult and expensive process by offering pre-qualified primary endothelial cells.

BD™ Human Umbilical Vein Endothelial Cells (HUVEC-2) are derived from single donors and cryopreserved at passage number 2. HUVEC-2 cells have been pre-qualified to assure a robust migratory response to angiogenic factors such as VEGF and FBS. Single donor primary HUVEC-2 cells are suitable for use in combination with BD BioCoat Angiogenesis Assay Systems to provide relevant models for angiogenesis (e.g., cardiovascular, vascular, and wound healing) and cancer research. Prequalified cells ensure assay performance and reproducibility. In addition to saving time and labor, this advance screening eliminates the uncertainty associated with the cell selection process.

BD™ HUVEC-2 Cells Offer:

- Cell viability ≥ 70%
- Each vial cells contains $5x10^5$ cells that were cryopreserved at passage number 2 in medium containing 10% DMSO.
- Lot-to-lot consistency
- Positive immunohistochemical staining for von Willebrand factor (vWf) and CD31 antigen
- Negative immunohistochemical staining to α-actin
- Positive Dil-Ac-LDL uptake
- Pre-qualified for responsiveness to VEGF
- Prescreened for Angiogenesis studies:
  - Qualified for use in BD BioCoat Angiogenesis Systems: Endothelial Cell Migration.
  - May be used in BD BioCoat Endothelial Cell Invasion and Tube Formation assays.



Phase constrast micrograph of BD™ HUVEC-2 Cells at day 3 (left) and day 7 (right) of secondary culture.

Technical Information

- Viability at least 70%
- Packaged in individual cryovials containing >5x10^5 cells
- Migratory performance at a minimum of eight population doublings
- Robust migratory response to angiogenic factors such as VEFG, bFGF, and serum
- Positive immunohistochemical staining for von Willebrand factor (vWf) and CD31 antigen
- Negative immunohistochemical staining to α-actin
- Positive Dil-Ac-LDL uptake
- Negative mycoplasma, HIV-1, hepatitis B and C, bacteria, yeast, and fungi

Storage and Stability:

Shipped on dry ice. Upon receipt, store immediately in liquid nitrogen.

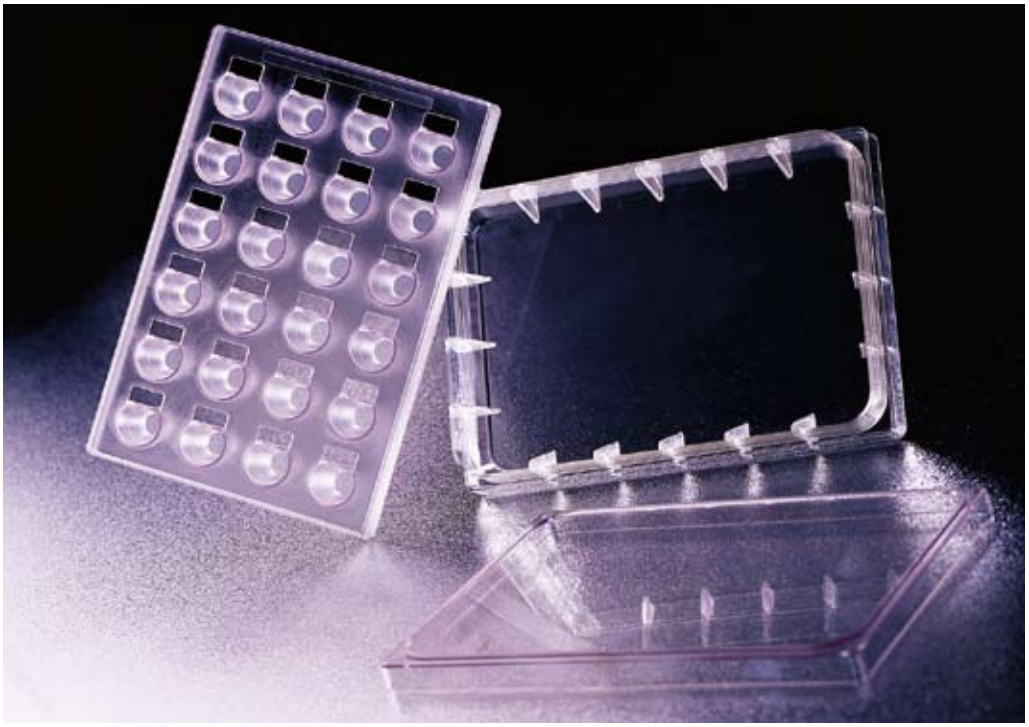
Description	Qty.	Cat. No.
BD™ Human Umbilical Vein Endothelial Cells		
BD HUVEC-2 Cells	1 cryovial	**354151**

RELATED PRODUCTS

BD BioCoat™ Angiogenesis Systems..... previous pages
BD BioCoat Endothelial Cell Growth Environment..... 68
Vialed BD High Concentration ECMs 125,129,133
BD Vascular Endothelial Growth Factor 194
BD Fibroblast Growth Factors..... 191

BD Falcon™ 24-Multiwell Insert System

- Automate and increase productivity and throughput of cell culture insert-based assays
- Designed for bioavailability, transport, permeability, cell migration and tumor invasion studies



BD Falcon™ 24-Multiwell Insert Systems
Free your lab from tedious manipulation of individual cell culture inserts with BD Falcon 24-Multiwell Insert Systems. Each system contains an automation-friendly 24-well cell culture membrane insert suitable for both manual and robotic screening of cells in bioavailability, toxicity, cell migration and tumor invasion assays.

BD Falcon 24-Multiwell Insert Systems are designed to automate many commonly used cell-based assays for drug discovery. Available in a choice of membrane pore sizes, 24-Multiwell inserts have been successfully used for a variety of applications including permeability studies for oral bioavailability (e.g., Caco-2 cells), chemotaxis, cell migration and invasion assays. These insert systems offer all the benefits of BD Falcon Individual Cell Culture Inserts in an automation-friendly format that is compatible with most robots and fluid handlers. The BD Falcon 24-Multiwell Insert Plate is a single unit that is compatible with all BD Falcon 24-well plates and Feeder Tray.

Typical Applications for BD Falcon™ 24-Multiwell Insert Systems include:

- Culture of intestinal epithelial cells (e.g., Caco-2 cells) for drug bioavailability and transport studies
- Barrier function [TEER] measurements of epithelial cells (i.e., MDCK cells)
- Epithelial polarity studies of protein sorting, receptor location, and vectorial transport
- Hepatocyte cultures for drug toxicity and biotransformation
- Angiogenesis studies
- Tumor cell invasion and migration

Physical Specifications:
BD Falcon™ 24-Multiwell Insert Systems and Cell Culture Insert Companion Plates

Effective Diameter of Membrane	6.5 mm
Effective Growth Area of Membrane	0.3 cm^2
Distance of Membrane to Bottom of Well (24-well plate)	2.0 mm
Insert Height	18 mm
Suggested Media Volume in Insert	300-500 µl
Suggested Media Volume in Well	1000-1400 µl
Effective Growth Area in 24-well Plate (one well)	2.0 cm^2
Pore Density: 1.0 µm inserts	1.6 x 10^6 pores/cm^2
Pore Density: 3.0 µm inserts	8.0 x 10^5 pores/cm^2
Pore Density: 8.0 µm inserts	1.0 x 10^5 pores/cm^2

Description	Qty./Pk.	Cat. No.
BD Falcon™ 24-Multiwell Insert Systems		
with Feeder Tray and Lid		
1 µm pore size	1	**351180**
1 µm pore size	5	**351181**
with 24-well Plate and Lid		
3 µm pore size with	1	**351182**
3 µm pore size with	5	**351183**
8 µm pore size with	1	**351184**
8 µm pore size with	5	**351185**
BD Falcon™ 24-Well Feeder Tray		
Specifically designed for use with BD Falcon 24-Multiwell Insert Systems		
Feeder Tray with Lid	5	**351186**

Description	Qty./Pk.	Qty./Case	Cat. No.
BD Falcon™ 24-Well Plates			
For use with BD Falcon 24-Multiwell Insert Systems			
Standard Tissue Culture	1	50	**353047**
Standard Tissue Culture	6	36	**353226**
Standard Tissue Culture,	10	60	**353935**
Ready-Stack Tray BD Primaria™ Tissue Culture	1	50	**353847**
Non-Treated Surface	1	50	**351147**

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
415	A. Goldberger, et al. *Use of Automation-Compatible 24-well Insert Systems for Various Cell-Based Assays*
416	D. Asa and P. LaRocca *Comparison of the BD BioCoat™ Intestinal Epithelial Environment with the Conventional 21-Day Caco-2 System*
418	D. Asa and M. Timmins *Use of the Three-Day BD BioCoat™ HTS Caco-2 Assay System for Compound Permeability Measurements*
419	D. Henderson and D. Asa *Design and Evaluation of an Automation-Compatible Multiwell Insert for Cell-Based Assays*
435	L. Rubinstein and P. Weiland *BD Falcon™ and BD BioCoat™ Microplate Measurements and Plate Characteristics*

For additional references or for help with an application, please contact your local BD office.

TIP

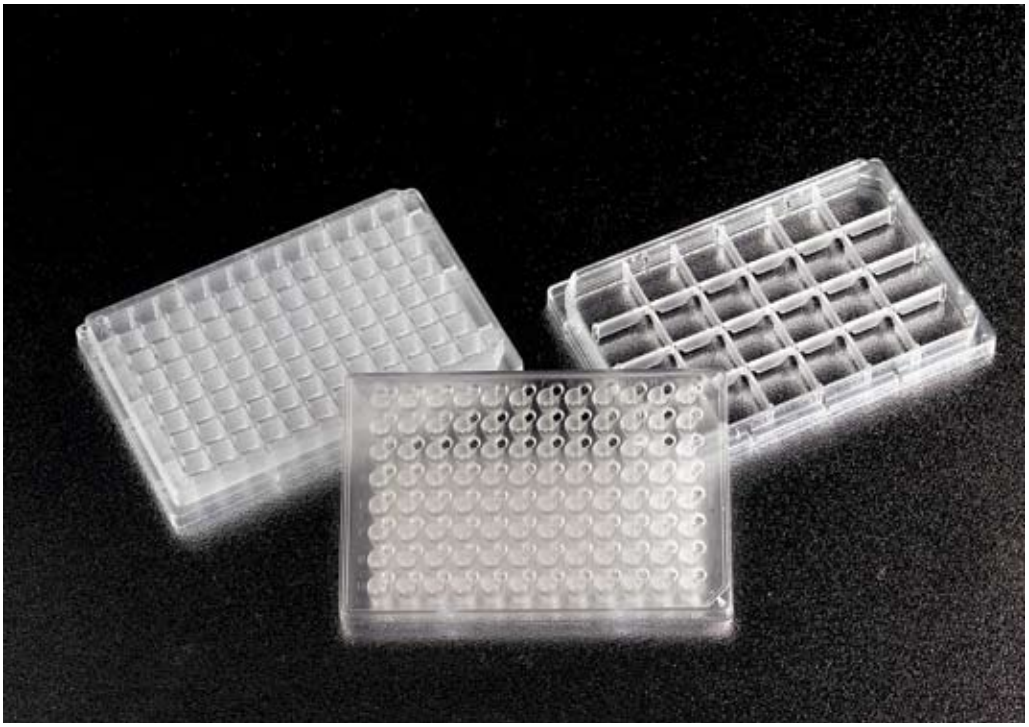
BD Gentest™ Enhanced Recovery Companion Plates are also available, Cat. No. 453600.

RELATED PRODUCTS

BD BioCoat™ HTS Caco-2 Assay System 160
BD BioCoat Fibronectin 24-Multiwell Insert System 113
BD BioCoat Collagen I 24-Multiwell Insert System 113
BD BioCoat Fibrillar Collagen 24-Multiwell Insert System 113
BD Falcon Cell Culture Inserts 52
BD BioCoat Cell Culture Inserts 110

BD Falcon™ 96-Multiwell Insert System

- Automate and miniaturize your xenobiotic permeability and transport studies



The BD Falcon™ 96-Multiwell Insert System Offers:

- **Automation compatible design**
  Format compatible with most robots and fluid handling instruments.
- **Complete sample recovery**
  The BD Falcon™ 96-Square Well, Angled-Bottom Plate features an angled bottom for more complete sample utilization.
- **Excellent reproducibility**
  One-piece feeder tray enhances consistency in well-to-well monolayer growth.
- **Total assay flexibility – ideal for transport studies**
  System can be used with many cell lines including Caco-2, MDCK, and LLC-PK1, for basal to apical or apical to basal measurements of drug transport.

The BD Falcon 96-Multiwell Insert System is a cell culture insert platform suitable for both manual and robotic screening of compounds in cell-based assays. The system has been tested for its ability to produce a differentiated monolayer of Caco-2, LLC-PK1, and MDCK cells making it an ideal platform for *in vitro* bioavailability and permeability studies.

This automation compatible platform is composed of a 1.0 µm pore size PET membrane-based 96-Multiwell Insert plate, a media feeder tray, and a lid. The newly designed drop-in baffle for the Feeder Tray mitigates media sloshing and lowers the risk of contamination. To analyze individual samples, simply transfer the insert plate into the BD Falcon 96-Square Well, Angled-Bottom Plate. If desired, the BD Falcon 96-Square Well, Angled-Bottom Plate may be used in conjunction with the insert for culturing the cells, eliminating the transfer step from the single-well feeder tray for sample analysis.

Intra-Plate Reproducibility of the BD Falcon™ 96-Multiwell Insert System

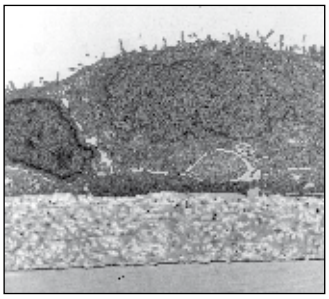
Format Used to Culture Monolayers	TEER (ohms cm^2)	Mannitol P_{app} (x 10^{-6} cm/sec)	Ritonavir P_{ap} (x 10^{-6} cm/sec)
BD Falcon™ 96-Square Well, Angled-Bottom Plate	272 (CV=26%)	0.72 (CV=22%)	9.0 (CV=13%)
BD Falcon™ Feeder Tray for 96-Multiwell Insert	420 (CV=16%)	0.70 (CV=13%)	11.0 (CV=2.5%)

Permeability measured in Caco-2 cell monolayers cultured for 21-days in the BD Falcon™ Feeder Tray or BD Falcon 96-Square Well, Angled-Bottom Plate. While the newly designed Feeder Tray with drop-in baffle facilitates medium renewal, comparable results can be obtained in either format. Culturing cells in the BD Falcon Feeder Tray enhances consistency in well-to-well monolayer growth (TEER values) and function (P^{app} values).

Description	Qty./Pk.	Cat. No.
BD Falcon™ 96-Multiwell Insert Systems		
one insert plate with feeder tray and lid	1	**351130**
five insert plates with feeder trays and lids	5	**351131**
five insert plates with 96-square well, angled-bottom plates and lids	5	**353938**
BD Falcon™ 96-Square Well, Angled-Bottom Plate and Lid		
non-treated polystyrene, non-pyrogenic	5	**353925**
BD Falcon™ 96-Well Feeder Tray and Lid		
non-treated polystyrene, non-pyrogenic	5	**353924**

BD BioCoat™ HTS Caco-2 Assay System

- Promotes the rapid differentiation of Caco-2 cells *in vitro* - saving both time and labor
- Permits testing for intestinal permeability, including bioavailability, with Caco-2 cells in three days instead of three weeks



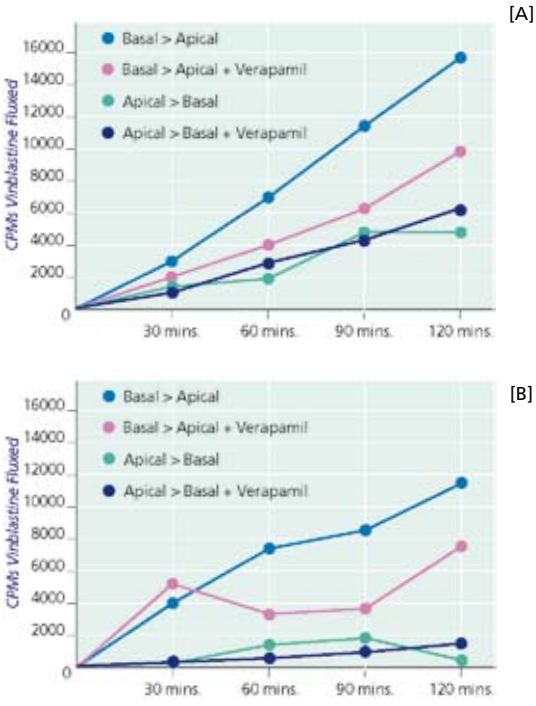
Transmission electron micrograph (TEM) of Caco-2 cells cultured three days using the BD BioCoat™ HTS Caco-2 Assay System. Several morphological markers of Caco-2 cell differentiation are visible. Microvilli, desmosomes (indicative of tight junction formation) and cellular interdigitation are readily apparent. These morphological features are indicative of differentiated Caco-2 cells capable of forming a functional barrier for compound permeability assays.

An *in vitro* system optimized for rapid differentiation of Caco-2 cells in an automation-friendly format.

By combining the benefits of the BD BioCoat Intestinal Epithelial Environment (Cat. No. 355057) with the automation-friendly BD Falcon™ 24-Multiwell Insert System (Cat. Nos. 351180 and 351181), the BD BioCoat HTS Caco-2 Assay System is an integrated, robotics-compatible cell environment designed to promote the rapid differentiation of Caco-2 cells in vitro. The specialized media included with the BD BioCoat HTS Caco-2 Assay System have been formulated to produce differentiated monolayers in just three days. Each system contains a fibrillar collagen-coated 24-Multiwell Insert Plate suitable for robotic screening of prospective pharmaceuticals for oral bioavailability and absorption.

The BD BioCoat™ Caco-2 Assay System offers:

- **Time Saving**
  Unique fibrillar collagen-coated inserts used with our specialized media promotes rapid differentiation of Caco-2 cells in three days.
- **Labor Saving and Increased Productivity**
  The accelerated three-day protocol along with an automation-friendly format saves considerable labor over traditional 21-day differentiation protocols. The large volume Feeder Tray reduces the need for frequent media changes.
- **Maximum Convenience**
  Each system includes a custom-designed Feeder Tray and automation-friendly lid. In use, the unique media Feeder Tray enhances well-to-well uniformity by bathing all 24 inserts in the same medium.
- **Automation Compatible**
  The system is designed for use with most robotics that accept BD Falcon 24-well plates. The system may also be used manually with individual or multichannel pipetters.
- **Greater Reliability and Uniform Assay Conditions**
  The entire system is tested for lot-to-lot consistency and qualified for use in Caco-2 screening assays. Therefore, this system can be used with complete confidence.



P-Glycoprotein Function in Caco-2 Cells
Caco-2 cells were cultured using the [A] three-day BD BioCoat™ HTS Caco-2 Assay System supplemented with BD™ Mito+ Serum Extender or [B] the traditional 21-day System. P-Glycoprotein function was assessed by placing 10 nm vinblastine solution in PBS at 22°C both above and below the insert. A small amount of ^{3}H-Labeled Vinblastine was added to either the apical or basal side of the insert and samples were withdrawn from the non-labeled side of the insert and counted by scintillation counting. To inhibit P-Glycoprotein function, 100 µm verapamil was added to the insert chambers. Data shown is mean of n=2.

Quality Control:

- Tested for ability to promote formation of a differentiated monolayer of Caco-2 cells with barrier function within 72 hours of cell seeding (measured by TEER and mannitol permeability)
- BD Intestinal Epithelium Seeding and Differentiation Media, and BD Mito+ Serum Extender tested for myoplasma
- BD Intestinal Epithelium Differentiation Medium tested for endotoxin (LAL assay)
- All components tested and found negative for the presence of bacteria and fungi

Storage and Stability:

All components stable for at least three months when stored at 2° to 8°C. Upon supplementation with BD Mito+ Serum Extender, both the BD Intestinal Epithelium Seeding and Differentiation Media are stable for 21 days under subdued lighting at 2-8°C.

REFERENCES:
1. Maheshwari, A., et al., Pediatric Research **56**:240 (2004).

BD BioCoat™ HTS Caco-2 Assay System

An integrated cell environment system designed to create in vitro intestinal models. Contains a specially formulated serum-free medium, culture supplements, sodium butyrate, and BD BioCoat Fibrillar Collagen 24-Multiwell Insert System.

Description	Qty.	Cat. No.
BD BioCoat™ HTS Caco-2 Assay System		
BD BioCoat HTS Caco-2 Assay System contains:	1 plate kit	**354801**
	5 plate kit	**354802**

- BD BioCoat Fibrillar Collagen 24-Multiwell Insert Plate
- BD Intestinal Epithelium Seeding Medium – 250 ml
- BD Intestinal Epithelium Differentiation Medium – 250 ml
- BD Mito+ Serum Extender – 0.5 ml
- Complete Protocol

BD BioCoat™ Fibrillar Collagen 24-Multiwell Insert Plate		
24-Multiwell Insert Plate 1 µm pore size	1 plate kit	**354803**
	5 plate kit	**354804**

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
415	A. Goldberger, et al. *Use of Automation-Compatible 24-Multiwell Insert System for Various Cell-Based Assays*
416	D. Asa and P. LaRocca *Comparison of the BD BioCoat™ Intestinal Epithelial Environment with the Conventional 21-Day Caco-2 System*
418	D. Asa and M. Timmins *Use of the Three-Day BD BioCoat™ HTS Caco-2 Assay System for Compound Permeability Measurement*
426	W.J. Woods and D. Asa *Morphological Comparison of Caco-2 Cells in the BD BioCoat™ Intestinal Epithelial Cell Environment and the Traditional 21-Day Caco-2*

RELATED PRODUCTS

BD BioCoat Intestinal Epithelium Differentiation Environment..... 72
BD Falcon™ 24-Multiwell Insert System 156


354407
Store at 4-30°C
BD BioCoat™
CELL ENVIRONMENTS
Collagen I Cellware
96-well Plates
354720
Store at 2 to 8°C
BD BioCoat™
CELL ENVIRONMENTS
Anti-Mouse CD3
T Cell Activation Plate
96-well clear
Store at 4-30°C
BD BioCoat™
CELL ENVIRONMENTS
Poly-D-Lysine Cellware
384-well Black/Clear Plates

BD BioCoat™ Microplates

BD BioCoat™ Cellware

A variety of assays are used in conjunction with high throughput screening (HTS) to identify drug candidates that exhibit a desired effect upon target function. A number of transfected cell lines used in these assays have been shown to exhibit reduced adherence to standard tissue culture plates following DNA transfection, especially when subjected to standard washing protocols during sample processing. As cell-based assays are an integral part of the drug discovery process, the need for optimal culture conditions exists to assure the acquisition of reliable data. BD BioCoat™ Cellware provides optimal conditions for cell attachment and growth and has been shown to dramatically improve cell adherence during high throughput sample processing.

BD BioCoat™ Assay Plates

BD Biosciences offers coatings for non-cell-based assays (or capture assays as they are sometimes referred). Capture coatings for non-cell-based assays include popular ones like secondary antibodies. In addition other coatings such as Protein A or Wheat Germ Agglutinin are available through our custom offering. Typical applications include ELISA, immunoassays, receptor binding, and IgG titer levels.

Table of Contents

BD BioCoat™ Microplates

BD BioCoat™ Cellware: 96- and 384-well Microplates

- Available with barcoding and bulk packaging
- Improve attachment of transfected cell lines and increase assay reproducibility

BD BioCoat™ 96- and 384-well Microplates
BD BioCoat Microplates are coated in a highly controlled manufacturing environment.

BD BioCoat™ Microplates

BD Biosciences offers a wide selection of microplates for cell-based fluorescence, luminescence, colorimetric, and radiometric assays. BD BioCoat Cellware has been found to dramatically improve cell adherence when transfected cells are subjected to high throughput sample processing. BD BioCoat Collagen I and Poly-Lysine microplates contribute to the reliability of high throughput transfection analyses by providing optimal conditions for cell attachment and growth. Depending on cell types used in the assay special biological effects can be achieved by the use of Collagen IV, Fibronectin, Laminin and Laminin/Fibronectin coatings. Plates are coated in a highly controlled, asceptic manufacturing environment to ensure lot-to-lot consistency, assay reproducibility, and contamination control.

BD BioCoat™ Microplates feature:

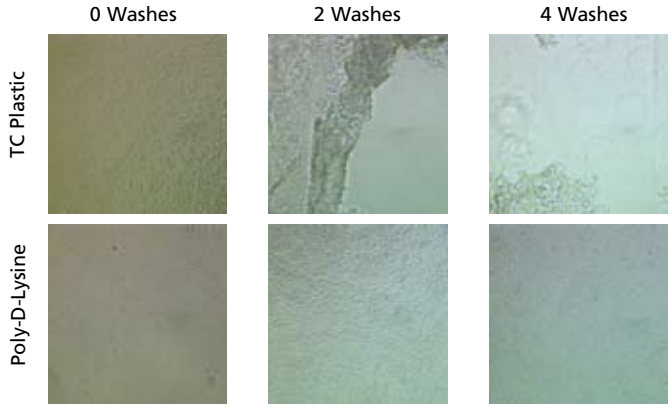
- Room temperature stability (Collagen I, Gelatin, and Poly-Lysine coatings)
- Ready-to-use convenience
- Quality assurance testing
- Lot-to-lot consistency

Culture Substrates for Transfected Cells

Cell Attachment Substrate	Cell Type
BD BioCoat Poly-D-Lysine	HEK-293 293 EBNA Cardiomyocyte Human Astrocytoma (1321N1) Mouse Pituitary (AtT-20) Pancreatic Islet (RIN-m) COS-7
BD BioCoat Poly-L-Lysine	HEK-293 PC12
BD BioCoat Collagen I	HEK-293 PC12 CHO SR-3T3
BD BioCoat Fibronectin	Pancreatic Tumor (AR42J) COS-7
BD Cell-Tak™ Cell and Tissue Adhesive	HEK-293 L9 Mouse Fibroblasts

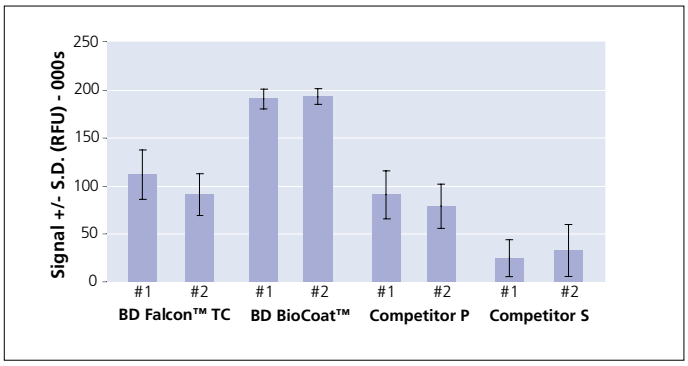
* *For more information on BD BioCoat products, please visit our catalog chapter 6.*

Improved HEK-293 Cell Adhesion Post-Transfection with BD BioCoat™ Assay Plates



Transfected HEK-293 cells exhibit poor adhesion to tissue culture-treated 96-well assay plates following multiple washes (top row). In contrast, these cells exhibit strong attachment to BD BioCoat™ Poly-D-Lysine 96-well assay plateS following vigorous washing (bottom row).

Convenient 80 plates/case and 20 plates/sleeve Bulk Packaging



Mean Signal Comparison of Cells Seeded on Various Collagen I Coatings
A signal comparison of BD BioCoat versus competitor plates on Collagen I 96-well Clear plates show that BD BioCoat plates exhibit better cell attachment, demonstrating performance quality and consistency. The collagen plates were tested for signal from Calcein AM-labeled HT-1080 cells seeded at 50,000 cells/well one hour after seeding in serum-free medium and hand-washing.

Applications Include

- Calcium flux assays
- Reporter gene assays
- Ion channel activity
- Receptor binding
- Neurite outgrowth
- Cytotoxicity testing
- Apoptosis assays
- Cell adhesion kinetics
- Cell proliferation assays

RELATED PRODUCTS

BD Cell Tak™ Cell and Tissue Adhesive 127
Full selection of BD BioCoat Cellware 78

BD BioCoat™ 96-well Microplates

Description	Coating	Lid	Working Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
Clear	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354407
Clear	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356407
Clear	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	20	80	356698
Clear	Collagen IV	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354429
Clear	Fibronectin	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354409
Clear	Gelatin	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354689
Clear	Gelatin	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356689
Clear	Laminin	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354410
Clear	Laminin/Fibronectin	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354670
Clear	Laminin/Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354596
Clear	Laminin/Poly-L-Ornithine	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354657
Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354461
Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356461
Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	20	80	356690
Clear	Poly-L-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354516
Clear	Poly-L-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356516
White	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354519
White	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356519
White	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	20	80	356699
White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354620
White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356620
White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	20	80	356691
Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	5	5	354649
Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	5	50	356649
Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	20	80	356700
Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	5	5	354640
Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	5	50	356640
Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	20	80	356692
White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	5	5	354650
White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	5	50	356650
White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	20	80	356701
White/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	5	5	354651
White/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	5	50	356651

Description	Coating	Lid	Working Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD BioCoat™ 384-well Microplates								
Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354666
Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356666
Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356704*
Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354662
Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356662
Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356696*
White	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354665
White	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356665
White	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356703*
White	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354661
White	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356661
White	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356695*
Black/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354667
Black/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356667
Black/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356705
Black/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354663
Black/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356663
Black/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356697
White/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354664
White/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356664
White/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356702*
White/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354660
White/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356660
White/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356694*

*Note: * Please call your local BD office for shipping schedules on these products.*

- Available with bar coding and bulk packaging. Please contact your local BD office for more information.
- If we do not offer the format or coating you are looking for, please inquire about our BD BioCoat™ Custom Coating Service. To determine the optimal coating for your cell type, contact your local BD office.

The following Technical Bulletin is available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
454	BD BioCoat™ Plates for High Throughput Screening (HTS)

BD BioCoat™ Secondary Antibody Assay Plates: 96- and 384-well Microplates

- Available with barcoding through custom barcoding service

BD BioCoat™ Secondary Antibody Assay Plates
BD BioCoat Microplates are coated in highly controlled manufacturing environments.

Product Specifications

	BD BioCoat™ 96-well Secondary Antibody Assay Plates	BD BioCoat™ 384-well Secondary Antibody Assay Plates
% CV between wells	< 7.5%	< 10%
Antibody Specificity	Anti-mouse IgG: recognizes H&L regions of rat IgG and all mouse isotypes, including IgM	Anti-mouse IgG: recognizes H&L regions of rat IgG and all mouse isotypes, including IgM
	Anti-human IgG: recognizes H&L regions of human IgG	
	Anti-rabbit IgG: recognizes H&L regions of rabbit IgG	
Coating volume/well	120 µl	80 µl
Blocking volume/well	180 µl	100 µl
Binding Capacity	0.3 - 0.6 µg/well	0.06 - 0.12 µl/well

Note: BD BioCoat Secondary Antibody Plates are non-sterile and are intended for use with endpoint or kinetic assays.

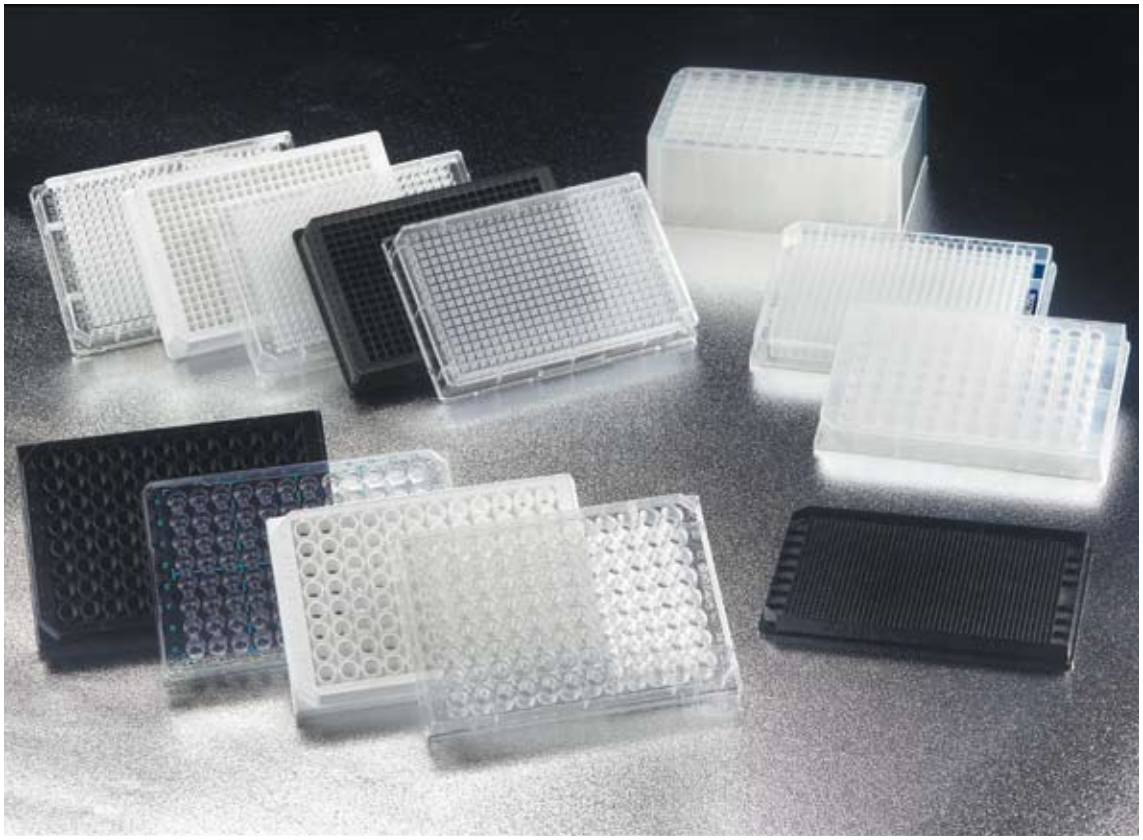
BD BioCoat™ Secondary Antibody Assay Plates*

BD BioCoat Secondary Antibody Assay Plates are packaged ready-to-use, with pre-coated anti-mouse IgG, anti-rabbit IgG, or anti-human IgG. All plates are pre-blocked with protease-free blocking agent and screened for low background.

- Save valuable time on plate preparation
- Allows precious capture antibodies to be used in smaller quantities
- Lot-to-lot consistency
- Automation-friendly
- Ideal for sandwich ELISA, competitive ELISA, and IgG titer levels

** For more information on BD BioCoat products, please visit our catalog page 104.*

Description	Assay Coating	Lid	Coating Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD BioCoat™ Secondary Antibody Assay Plates								
96-well Clear	Goat Anti-Mouse IgG	No	120 µl	Flat-Bottom	A12/H12	25	50	356170
96-well Clear	Goat Anti-Human IgG	No	120 µl	Flat-Bottom	A12/H12	25	50	356180
96-well Clear	Goat Anti-Rabbit IgG	No	120 µl	Flat-Bottom	A12/H12	25	50	356190
384-well Black	Goat Anti-Mouse IgG	No	80 µl	Flat-Bottom	A1/P1	25	50	356176
384-well White	Goat Anti-Mouse IgG	No	80 µl	Flat-Bottom	A1/P1	25	50	356177



BD Falcon™ Polystyrene Microplates

As large dedicated libraries of chemical compounds are screened against an increasing number of genomic targets, the necessity for robust microplate vessels intensifies. As the first company to provide sterile disposable labware, BD Biosciences continues to break barriers with its BD Falcon™ microplate line, now complete with well-characterized dimensions and surface chemistries.

Whether choosing between assays with fluorescent, luminescent or colorimetric endpoints, trust BD Falcon microplates for better discovery, better detection, and better decision-making tools.

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BD Falcon™ Polystyrene Microplates

BD Falcon™ 96-well Clear, Black, and White Microplates

- Available with barcoding through custom barcoding service

BD Falcon™ 96-well Microplates
BD Falcon 96-well Microplates feature standard microplate footprints.

BD Falcon 96-well Microplates are available in a wide variety of configurations and surface chemistries for applications with fluorescence, luminescence, radiometric or colorimetric endpoints. A bulk packaging option is available for use in high throughput, 25 plates/sleeve.
BD Falcon 96-well flexible polyvinyl chloride (PVC) assay plates can be cut to isolate individual wells and are light enough to use in water baths.

BD Falcon™ 96-well Clear Microplates feature:

- Crystal clear polystyrene for easy microscopic viewing
- Choice of tissue culture-treated, standard, enhanced, or BD Primaria™ surface chemistries*
- Available as BD BioCoat™ assay plates with Poly-Lysine, Collagen I, or secondary antibody coatings
- BD Falcon 96-well ELISA Plate exhibits consistent binding of immunoglobulins

TIP

BD Gentest™ Enhanced Recovery 96-well Plates are treated with an exclusive hydrophilic, covalent coating to resist non-specific absorption of lipophilic drug prospect. Enhanced compound recovery eliminates assay artifacts, avoids false negative conclusions and improves mass balance assessments in ADME studies.

BD Falcon™ 96-well White Microplates feature:

- Choice of tissue culture-treated or enhanced surface chemistries*
- Available as BD BioCoat microplates with Poly-Lysine and Collagen

BD Falcon™ 96-well Black Microplates feature:

- Choice of tissue culture-treated, standard, or enhanced surface chemistries*
- Available as BD BioCoat microplates with secondary antibody coatings
- Available in bulk packaging option

BD Falcon™ 96-well PVC Microplates feature:

- An alphanumeric identification system for easy well location and plate orientation
- An optional one-way PVC locking lid which minimizes evaporation
- Convenient upright dispensing cartons

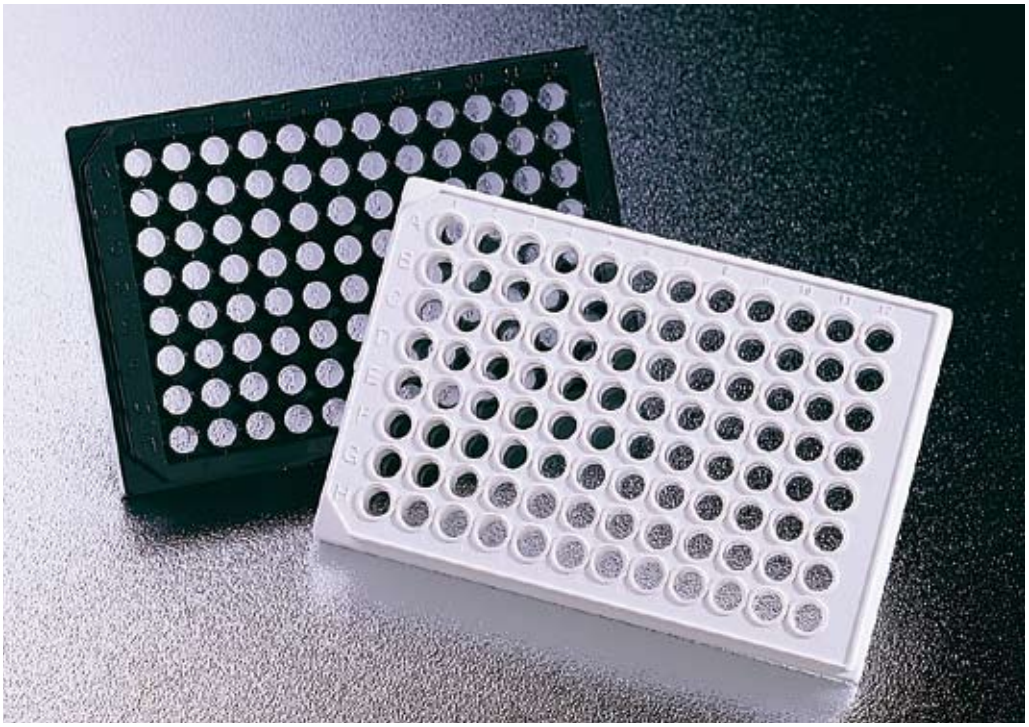
* *For more information on microplate surface chemistries, please consult our plate chemistries section on page 187. Additional coatings are available through our BD Custom Coating Service. Please call your local BD office.*

For more information on BD Falcon microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware

Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ 96-well Microplates								
Clear, Standard	Yes	Yes	320 µl	Round-Bottom	A12/H12	1	50	**351177**
Clear, Standard	Yes	Yes	370 µl	Flat-Bottom	A12/H12	1	50	**351172**
Clear, Standard	No	No	320 µl	Round-Bottom	A12/H12	5	50	**353910**
Clear, Standard	Yes	No	320 µl	Round-Bottom	A12/H12	5	50	**353918**
Clear, Standard	No	No	300 µl	Flat-Bottom	A12/H12	5	50	**353915**
Clear, Standard	No	No	300 µl	Flat-Bottom	A12/H12	10	60	**353228**
Clear, Enhanced, ELISA	No	No	300 µl	Flat-Bottom	A12/H12	25	100	**353279**
Clear, Tissue Culture	Yes	Yes	320 µl	Round-Bottom	A12/H12	5	50	**353227**
Clear ,Tissue Culture	Yes	Yes	320 µl	Round-Bottom	A12/H12	25	100	**353917**
Clear, Tissue Culture	Yes	No	320 µl	Round-Bottom	A12/H12	1	50	**353076**
Clear, Tissue Culture	Yes	No	370 µl	Flat-Bottom	A12/H12	1	50	**353070**
Clear, Tissue Culture	Yes	Yes	370 µl	Flat-Bottom	A12/H12	1	50	**353072**
Clear, Tissue Culture	Yes	Yes	370 µl	Flat-Bottom	A12/H12	5	50	**353075**
Clear, Tissue Culture	Yes	Yes	320 µl	Round-Bottom	A12/H12	1	50	**353077**
Clear, Tissue Culture	Yes	Yes	370 µl	Flat-Bottom	A12/H12	14	84*	**353936**
Clear ,Tissue Culture	Yes	Yes	370 µl	Flat Bottom	A12/H12	25	100	**353916**
Clear, BD Primaria™	Yes	Yes	370 µl	Flat-Bottom	A12/H12	1	50	**353872**
Black, Standard	No	No	340 µl	Flat-Bottom	A1/H1	25	100	**353241**
Black, Tissue Culture	Yes	Yes	340 µl	Flat-Bottom	A1/H1	5	50	**353945**
White, Tissue Culture	Yes	Yes	300 µl	Flat-Bottom	A12/H12	5	50	**353296**
* Ready-Stack Tray								
BD Falcon™ Microplate Lids								
Polystyrene Lid for 96-well Clear or White Microplates	Yes	Yes	–	–	–	1	50	**353071**
Polystyrene Lid for 96-well Black Microplates	No	Yes	–	–	–	5	50	**353958**
BD Falcon™ Microplate Sealing Film								
Acetate Sealing Film	No	–	–	–	–	200	200	**353073**
BD Falcon™ 96-well Flexible PVC Microplates								
Clear, Standard	No	No	200 µl	Round-Bottom	A12/H12	25	50	**353911**
Clear, Standard	No	No	200 µl	Flat-Bottom	A12/H12	25	50	**353912**
Lid	No	Yes	_	_	_	25	50	**353913**
BD Gentest™ Enhanced Recovery Plates								
96-well, Clear				Flat Bottom			5	**453601**
96-well, Clear				Round Bottom			5	**453603**

BD Falcon™ 96-well Clear-Bottom Microplates

- Available with barcoding through custom barcoding service



BD Falcon™ 96-well Clear-Bottom Microplates
BD Falcon 96-well Clear-Bottom microplates feature crystal-clear polystyrene for easy microscopic viewing.

BD Falcon 96-well Clear-Bottom Microplates are available in either standard or tissue culture-treated surface chemistries. The clear bottom allows for microscopic viewing of cells and enables detection by bottom-reading instruments.

BD™ Optilux™ Microplates have a thin, single transparent sheet covering their base.

BD Falcon™ 96-well Optilux™ Microplates feature:

- Crystal clear polystyrene for easy microscopic viewing
- Tissue culture-treated and standard surface chemistries*
- Available with BD BioCoat™ Poly-D-Lysine, Collagen I coatings*

Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ 96-well Microplates								
Black/Clear Optilux™, Standard	No	No	340 µl	Flat-Bottom	A1/H1	25	100	**353293**
Black/Clear Optilux™, Tissue Culture	Yes	Yes	340 µl	Flat-Bottom	A1/H1	5	50	**353948**
Black/Clear Optilux™, Tissue Culture	Yes	Yes	340 µl	Flat-Bottom	A1/H1	20	80	**353220**
White/Clear Optilux, Tissue Culture	Yes	Yes	340 µl	Flat-Bottom	A1/H1	5	50	**353947**
BD Falcon™ 96-well Imaging Plate								
Black/Clear, Tissue Culture	Yes	Yes	390 µl	Flat-Bottom	A1/H1	8	32	**353219**
BD Falcon™ Microplate Lid								
Polystyrene Lid for 96-well Optilux™ Microplates	No	–	–	–	–	5	50	**353958**
BD Falcon™ Microplate Sealing Film								
Acetate Sealing Film	No	–	–	–	–	200	200	**353073**

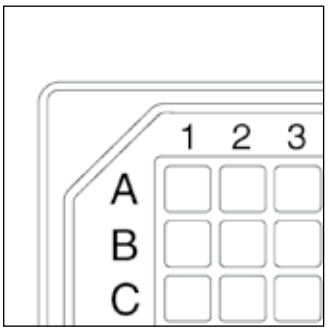
* *For more information on microplate surface chemistries, please consult our plate chemistries section on page 187. Additional coatings are available through our BD Custom Coating Service. Please call your local BD office.*

For more information on BD Falcon microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware

BD Falcon™ 384-well Clear, Black, and White Microplates

- Available with barcoding through custom barcoding service

BD Falcon™ 384-well Assay Plates are available in a number of configurations and surface chemistries to meet a wide variety of applications. A bulk packaging option is available for use in high throughput, 25 plates/sleeve.



BD Falcon 384-well Microplates feature a rounded, square-well design to prevent wicking.

BD Falcon 384-well Microplates
BD Falcon 384-well Microplates are available in tissue culture, standard surface chemistries.

BD Falcon™ 384-well Microplates feature:

- Choice of tissue culture-treated and standard surface chemistries*
- Available with BD BioCoat™ Poly-Lysine, Collagen or secondary antibody coatings*
- Standard microplate footprint meets ANSI/SBS specifications**

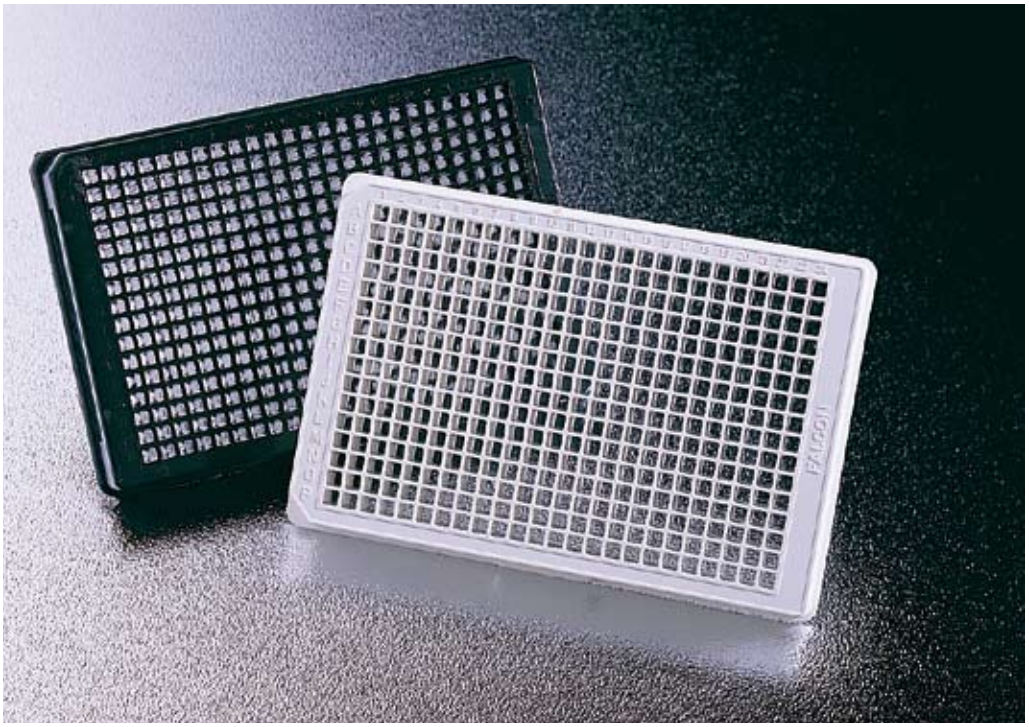
Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ 384-well Microplates								
Clear, Standard	No	No	120 µl	Flat-Bottom	A1/P1	25	100	**353233**
Clear, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1/P1	5	50	**353961**
Black, Standard	No	No	120 µl	Flat-Bottom	A1/P1	25	100	**353231**
White, Standard	No	No	120 µl	Flat-Bottom	A1/P1	25	100	**353232**
White, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1/P1	5	50	**353988**
BD Falcon™ Microplate Lid								
Polystyrene Lid for 384-well 120 µl Plates	No	–	–	–	–	5	50	**353958**

* *For more information on microplate surface chemistries, please consult our plate chemistries section on page 187. Additional coatings are available through our BD Custom Coating Service. Please call your local BD office.*

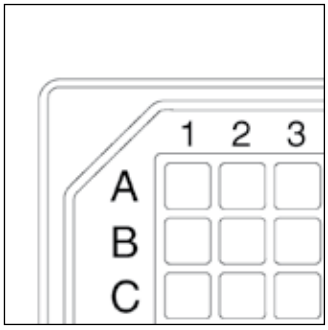
***For more information on BD Falcon microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware*

BD Falcon™ 384-well Clear-Bottom Microplates

- Available with barcoding through custom barcoding service



BD Falcon™ 384-well Optilux™ Microplates are available in a variety of configurations and surface chemistries to meet a wide variety of applications. A bulk packaging option is available for use in high throughput (25 plates/sleeve).



Well drawing of 120 µl plate
Rounded square well geometry reduces wicking.

BD Falcon™ 384-well Optilux 120 µl Microplates feature:

- Choice of tissue culture-treated and standard surface chemistries*
- Available with BD BioCoat™ Poly-Lysine and Collagen coatings*
- Standard microplate footprint meets ANSI/SBS specifications**

Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat.No.
BD Falcon™ 384-well Microplates								
Black/Clear Optilux, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1/P1	5	50	**353962**
Black/Clear Optilux, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1/P1	20	80	**353221**
White/Clear, Standard	No	No	120 µl	Flat-Bottom	A1/P1	25	100	**353235**
White/Clear Optilux, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1/P1	5	50	**353963**
BD Falcon™ Microplate Lid								
Polystyrene Lid for 384-well 120 µl Plates	No	–	–	–	–	5	50	**353958**
BD Falcon™ Microplate Sealing Film								
Acetate Sealing Film	No	–	–	–	–	200	200	**353073**

* *For more information on microplate surface chemistries, please consult our plate chemistries section on page 187. Additional coatings are available through our BD Custom Coating Service. Please call your local BD office.*

***For more information on BD Falcon microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware.*

BD Falcon™ 384-well Small Volume Microplates

- Standard microplate footprint meets ANSI/SBS specifications

BD Falcon™ 384-well Small Volume Microplates provide a novel approach for reducing reagent cost in the 384-well format. Designed for top-reading instruments, the shallow well plate exhibits the same height as traditional 384-well formats while enabling working reagent volumes in the 5-20 µl range. Maximum volume is 30 µl.

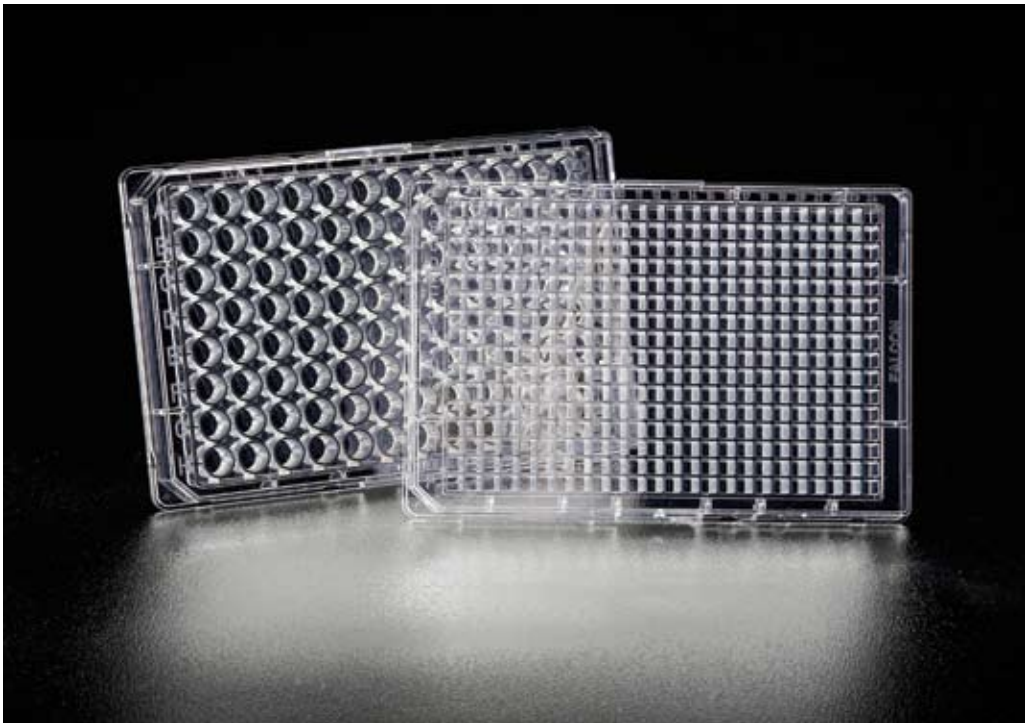
BD Falcon™ 384-well Small Volume Microplates feature:

- Standard Microplate footprint meets ANSI/SBS specifications
- Raised well design prevents cross-contamination and provides an optimal sealing surface

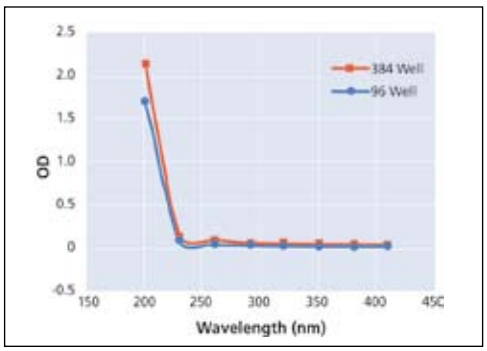
Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./Pk.	Qty./Case	Cat. No.
BD Falcon™ 384-well Small Volume Microplates								
Clear, Standard	No	No	30 µl	Flat-Bottom	A1/P1	25	100	**353972**
Black, Standard	No	No	30 µl	Flat-Bottom	A1/P1	25	100	**353246**

BD Falcon™ 96- and 384-well UV-Transparent Microplates

- Low UV absorbance in the 260-280 nm range



BD Falcon™ 96- and 384-well UV-Transparent Microplates
BD Falcon 96- and 384-well UV-Transparent Microplates feature standard microplate footprints.



BD Falcon 96- and 384-well UV-Transparent Microplates are comprised of a proprietary resin with low UV absorbance in the 260-280 nm range. The rigid microplate construction ensures that plates are automation-friendly for use in 96- and 384-well UV spectrophotometers.

UV-Transparent Microplates feature:

- Low UV absorbance for DNA, RNA, and protein quantitation applications
- 384-well standard microplate footprint meets ANSI/SBS specifications*

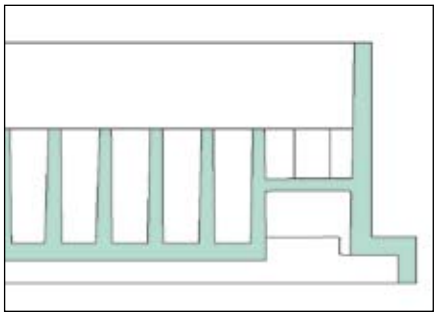
Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ 96- and 384-well UV-Transparent Microplates								
96-well	No	No	370 µl	Flat-Bottom	A1/H1	10	40	**353261**
384-well	No	No	120 µl	Flat-Bottom	A1/P1	10	40	**353262**

* *For more information on BD Falcon microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware*

BD Falcon™ 1536-well Microplates

- Low-base design for bottom imaging applications

BD Falcon™ 1536-well Microplates
BD Falcon 1536-well Microplates are available in standard, surface chemistries.*



Well design of 1536-well plate
Well design enables working volumes of 2-10 µl.

BD Falcon 1536-well Microplates are available for HTS assays optimized for small volume handling.

Total well volume is 12 µl with typical working volumes ranging from 2-10 µl.

BD Falcon™ 1536-well Microplates feature:

- Rigidity and flatness for better imaging
- Low base design enables imaging instrumentation to make closer contact to bottom of wells
- Standard microplate footprint meets ANSI/SBS specifications**

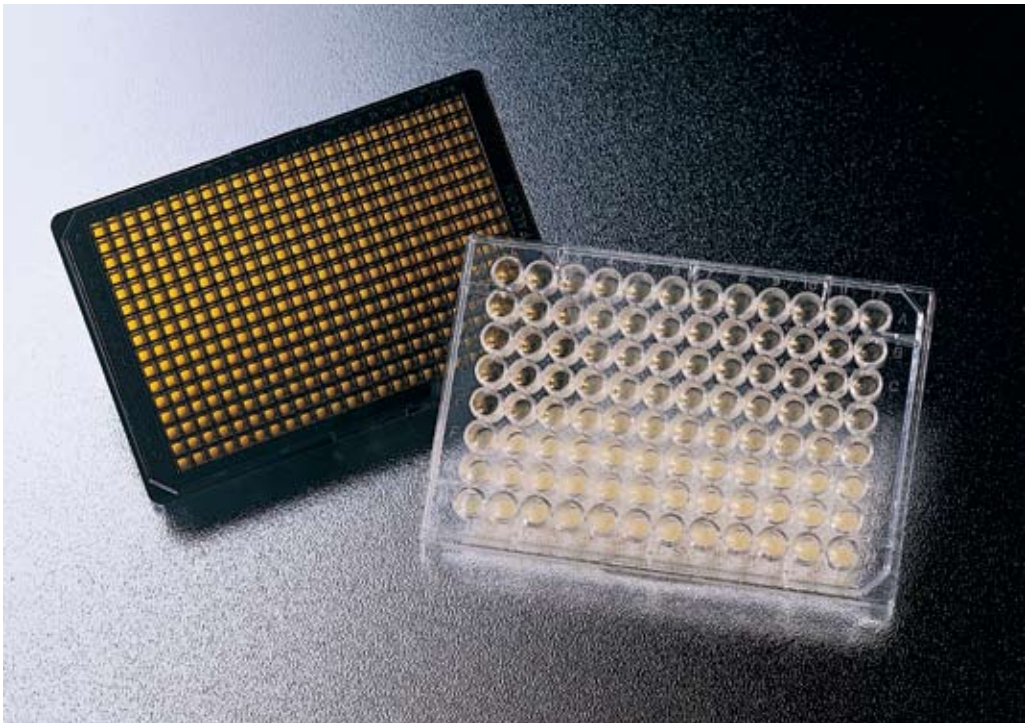
Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ 1536-well Microplates								
Black, Standard	No	No	12 µl	Flat-Bottom	A1/H1	15	60	**353249**
Black/Clear, Standard	No	No	12 µl	Flat-Bottom	A1/H1	15	60	**353255**

* *For more information on microplate surface chemistries, please consult our plate chemistries section on page 187. Additional coatings are available through our BD Custom Coating Service. Please call your local BD office.*

** *For more information on BD Falcon microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware.*

BD™ Oxygen Biosensor System

- Ideal for use in High Throughput screens for cytotoxicity, cell viability and proliferation



BD™ Oxygen Biosensor System
The unique BD Oxygen Biosensor System is adaptable to most platforms and applicable to many HTS strategies.

BD Oxygen Biosensor Systems are novel detectors adaptable to a variety of user-defined cell-based drug discovery applications. Available in 96- and 384-well microplate formats. As oxygen becomes depleted, the biosensor fluoresces, providing a linear signal that can be directly correlated to cell growth. BD Oxygen Biosensor Systems are ideal for use in primary, secondary, and cell-based screens, and for measuring antibiotic resistance,.

The following Technical Bulletins are available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
438	Mark Timmins and Tariq Haq *Use of the BD™ Oxygen Biosensor System to Determine Doubling Time*
443	Mark Timmins and Tariq Haq *Calculating Oxygen Concentration from Fluorescence Data on the BD™ Oxygen Biosensor System*
447	Mark Timmins *Monitoring Adherent Cell Proliferation on BD™ Oxygen Biosensor Systems*
448	Mark Timmins *BD™ Oxygen Biosensor System Data Collection and Normalization*
449	Mark Timmins *BD™ Oxygen Biosensor System vs. Existing Methods of Measuring Toxicology*

Applications:

- Cytotoxicity, cell growth and viability (IC_{50} determinations)
- Microplate-based growth selection
- Antibiotic screening
- Metabolism assays
- High density arrays and customized formats

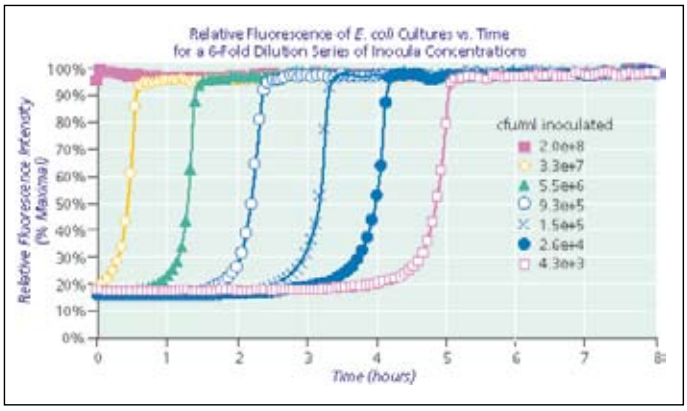
Quality Control:

All products are sterilized by gamma radiation and intended for single use only.

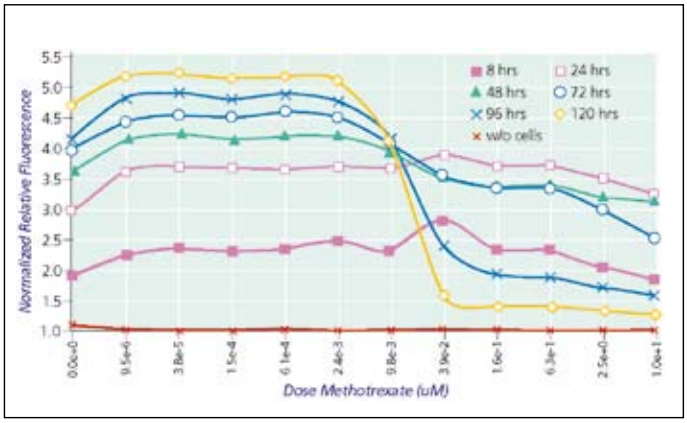
Storage and Stability:

Store at room temperature, out of sunlight. Stable for 24 months from manufacturing date. Expiration date printed on label.

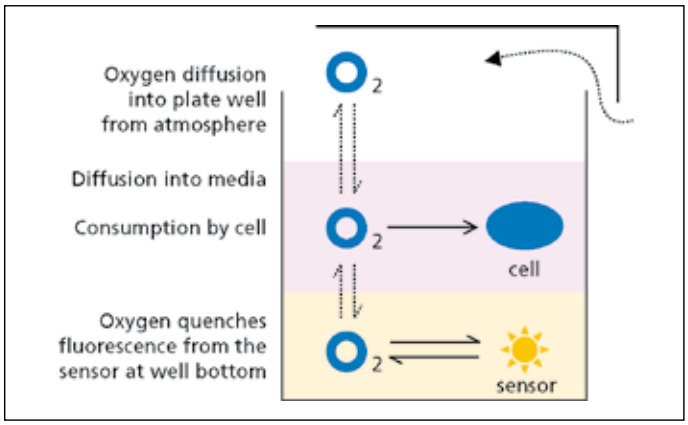
Description	Qty./Pk.	Qty./Case	Cat. No.
BD™ Oxygen Biosensor System Polystyrene, non-sterile, lid			
96-well Clear/Round-Bottom	5	5	**353830**
384-well Black/Clear-Bottom	5	5	**353834**



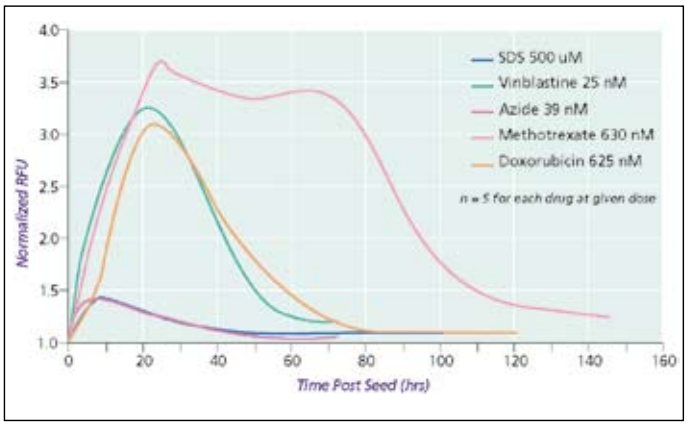
Relative fluorescence of e. coli cultures vs. time for a six-fold dilution series of inocula concentrations.



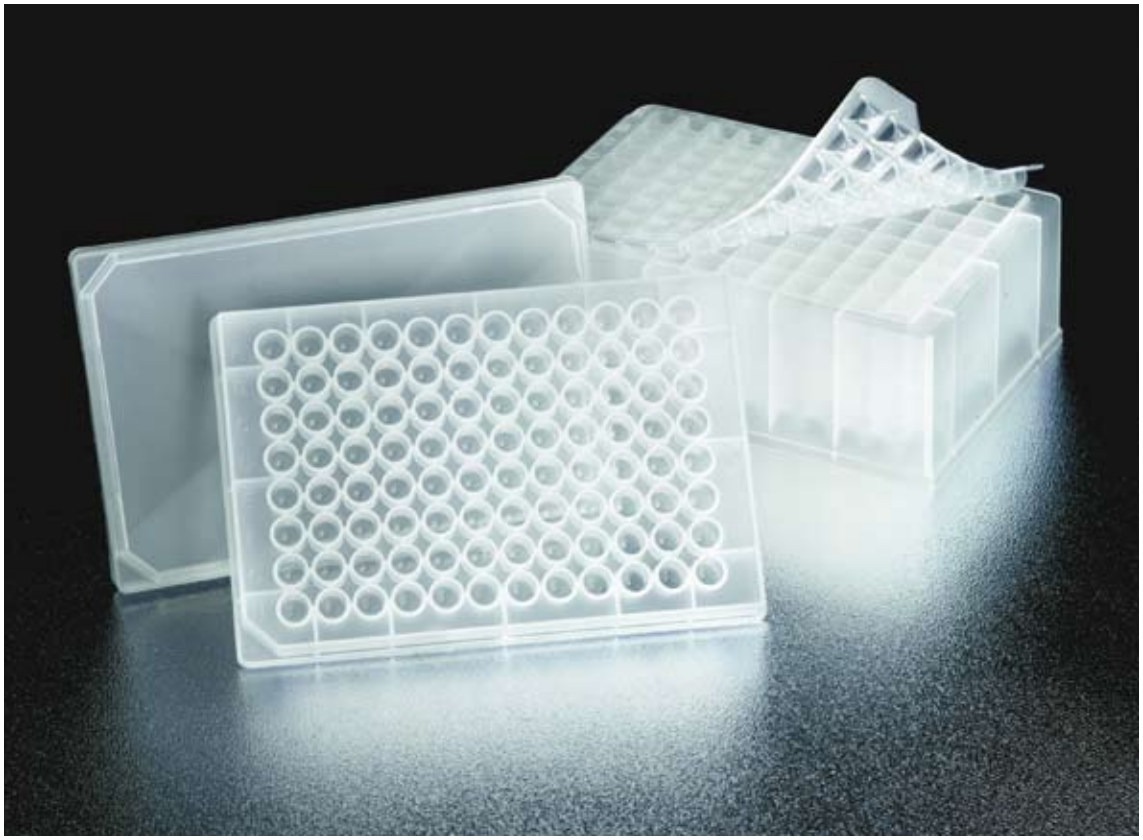
Quickly measure the toxicity of compounds at multiple concentrations and time points using one 96-well plate (400,000 HL-60 cells/well).



Schematic of system design - open platform allows real-time detection of oxygen consumption/deletion - and is reversible.



BD™ Oxygen Biosensor Systems make it easy to compare kinetic profiles of multiple drugs on the same microplate (400,000 HL-60 cells/well).



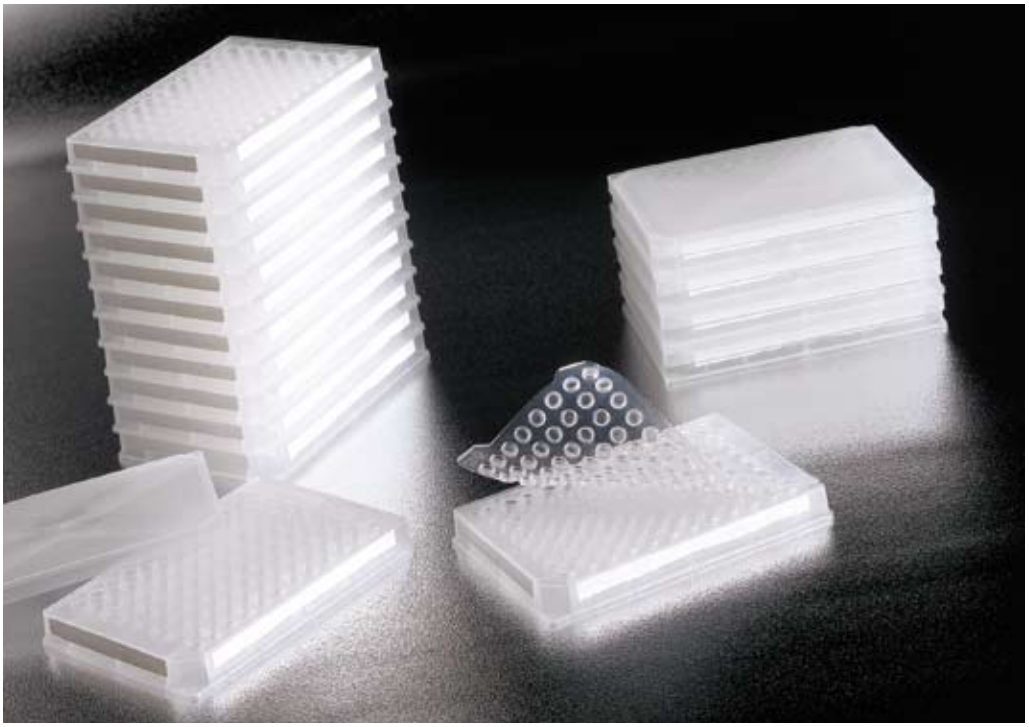
BD Falcon™ Compound Storage Systems

Convenient systems for short- and long-term compound storage. BD Falcon Polypropylene Microplates are made from virgin polypropylene resin.

Table of Contents

BD Falcon™ 96-well Polypropylene Library Storage System

- Raised well edges and flatness for heat or adhesive sealing



BD Falcon™ 96-well Deep-Well Plates
The BD Falcon Deep-Well Plates feature square wells with conical bottoms and are available in 1 and 2 ml working volumes.

BD Falcon™ 96-well Library Storage System
The BD Falcon Library Storage System features a round-bottom plate, lid, and mat cover (ordered separately).

BD Falcon™ 96-well Polypropylene Library Storage System

The BD Falcon 96-well Polypropylene Library Storage System is a convenient compound storage system featuring a 96-well polypropylene plate, polypropylene lid, and mat cover.

- Exceedingly rigid and flat plate for consistent automated handling
- Solvent-resistant polypropylene and EVA materials well-characterized by mass spectrometry
- Plate withstands repeated freeze-thaws down to -20°C
- Low retention polypropylene and round-well design give low residual volumes after pipetting (< 0.1 µl)
- Polypropylene lid compatible with automated lidding and de-lidding devices
- Raised well edges and flatness for heat or adhesive sealing
- Mat Cover significantly reduces cross-contamination from well-to-well for convenient long-term storage*

BD Falcon™ 96-well Polypropylene Deep-Well Plates

BD Falcon 96-well Deep-Well Polypropylene Plates feature equivalent plate heights with a choice of two working volumes: 1 ml and 2 ml. A 2 ml well volume is available in sterile version. A pierceable mat cover is available for sampling by HPLC or MS.

- Standard microplate footprints meet SBS specifications**
- Conical bottoms minimize residual volumes
- Polypropylene well-characterized by mass spectrometry ensures low extractables

BD Falcon™ 96-well Polypropylene V-Bottom Plate and Mat Cover

In addition to the round-bottom BD Falcon 96-well Library Storage Plate, V-Bottom formats are also available. Note: This plate is not intended for use with the BD Falcon Library Storage Lid and comes with its own specified mat cover.

- Standard microplate footprint meets ANSI/SBS specifications**
- Mat cover significantly reduces cross-contamination from well-to-well for convenient long-term storage

* *Note: Mat cover working volumes are 160 µl with dimethyl sulfoxide (DMSO); 200 µl with aqueous solutions.*

** *For more information on BD Falcon Microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware.*

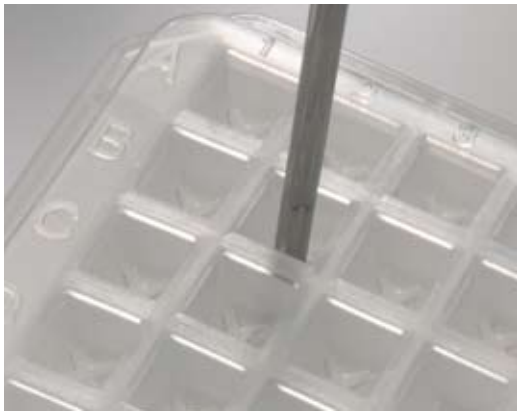
Chart of water absorption

BD Falcon™ Mat cover (Cat. No. 351192) provides comparable performance to leading competitors.

Absorption

	Water Content Detected in DMSO
BD Falcon Cat. No. 351192	
Mean:	0.60%
Range:	0.29-0.98%

Karl-Fischer testing performed on polypropylene microplates with mat cover containing 100% DMSO after four freeze-thaw cycles from -20°C to room temperature over an eight-day period.



Pierceable Mat Cover
Mat cover for deep-well plates can be pierced for automated sampling applications.

Description	Sterile	Notch	Qty./Pk.	Qty./Case	Cat. No.
BD Falcon™ 96-well Polypropylene Library Storage System					
96-well Library Storage Plate, 340 µl Total Volume, Round Well	No	H12	25	100	**351190**
96-well Library Storage Lid,	No	–	25	100	**351191**
96-well Mat cover for Cat. No. 351190, EVA	No	–	25	100	**351192**
BD Falcon™ 96-well Polypropylene V-Bottom Plate and Mat Cover					
96 Round well plate, 340 µl Total Volume, V-Bottom Well	No	A1-H1	25	100	**353263**
BD Falcon™ 96-well Polypropylene Deep-Well Plates					
96-well Deep-Well Plate, 1 ml Total Volume, Conical-bottom Well	No	A1/H1	50	50	**353964**
96-well Deep-Well Plate, 2 ml Total Volume, Conical-bottom Well	No	A1/H1	50	50	**353966**
96-well Deep-Well Plate, 2 ml Total Volume, Conical-bottom Well	Yes	A1/H1	5	50	**358087**
96-well Mat cover, EVA, pierceable	No	–	1	50	**353971**

* *For more information on BD Falcon Microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware.*

BD Falcon™ 384-well Polypropylene Plates

- Available with barcoding through custom barcoding service

BD Falcon™ 384-well Polypropylene Plates
BD Falcon 384-well Polypropylene Plates feature raised well edges for heat or adhesive sealing.

BD Falcon™ 384-well Polypropylene Plates

BD Falcon 384-well Polypropylene Plates are available in a 140 µl-well format with rounded square wells. Made of chemically resistant inert polypropylene material, the BD Falcon 384-well Polypropylene Plates are heat- and solvent-resistant.

BD Falcon 384-well Polypropylene Plates feature:

- Rounded-well corners to prevent sample precipitation
- Raised-well rims to facilitate thermal, adhesive, or mat cap sealing
- Standard microplate footprint meets ANSI/SBS specifications for automation compatibility

Description	Sterile	Notch	Qty./Pk	Qty./Case	Cat. No.
BD Falcon™ 384-well Shallow-Well Polypropylene Plates					
384-well Plate, 120 µl Working Volume, Flat-Bottom Well	No	A1/P1	25	100	**353265**

* *For more information on BD Falcon microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware.*

Surface Chemistries and Coatings

Polystyrene Surfaces

BD Falcon™ Standard Surface

BD Falcon™ standard surface microplates are injection-molded polystyrene products exposed to no further surface treatment. Standard surfaces are generally hydrophobic and bind proteins, such as immunoglobulins (IgG), with low to moderate binding affinity.

BD Falcon™ Enhanced Surface

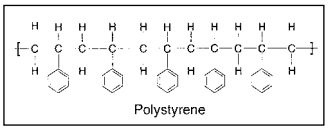
BD Falcon enhanced surface microplates are modified using well-validated treatment processes that change the polystyrene surface, causing it to be more hydrophilic. Enhanced surfaces generally exhibit moderate to high binding affinities for proteins like immunoglobulins and are recommended for immunoassays.

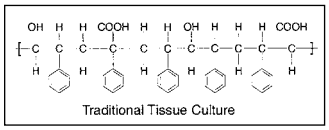
BD Falcon™ Standard Tissue Culture (TC) Surface

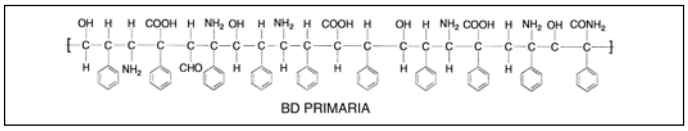
BD Falcon standard tissue culture treatment is produced by a vacuum gas-plasma treatment performed in a highly controlled, enclosed environment to ensure a pure and consistent surface treatment. The vacuum gas-plasma treatment creates a number of negatively charged functional groups on the polystyrene surface. TC surfaces are generally hydrophilic and are believed to facilitate direct cell attachment and indirectly support attachment, spreading, and growth through the binding of serum proteins to the plastic surface. Each lot is irradiated by either gamma or e-beam to produce a sterile product.

BD Primaria™ Surface

BD Primaria™ surface microplates have been exposed to a gas plasma to create a mixture of negative and positive functional groups on the polystyrene surface. The surface has been shown to support certain types of neuronal cells, tumor cells, and hepatocytes, which attach poorly to standard TC surfaces. Each lot is gamma-irradiated to produce a sterile product.







__Note:__ At pH 7, carboxy groups may be slightly dissociated and assume a negative (anionic) charge. Amine groups may protonate and assume a positive charge (cationic).

BD BioCoat™ Cellware

BD BioCoat™ Cellware is a unique line of TC vessels that combine BD Falcon Cellware with a variety of extracellular matrix proteins and attachment factors. BD BioCoat Cellware promotes cell attachment, spreading, growth, and differentiation of a variety of primary cells and cell lines in serum-free or serum-containing cultures.

BD BioCoat™ Collagen I Microplates

BD BioCoat Collagen I microplates are pre-coated with Collagen I derived from rat tail tendon. Each lot is tested for the ability to promote attachment and spreading of HT-1080 human fibrosarcoma cells and is tested and found negative for the presence of bacteria and fungi.

BD BioCoat™ Poly-Lysine Microplates

BD BioCoat Poly-Lysine microplates are pre-coated with poly-D-lysine (or poly-L-lysine, where specified), a synthetic molecule with a molecular weight of 75-150 kD, used to enhance cell attachment to plastic and glass surfaces. Each lot is tested for the ability to promote firm attachment of rat cerebellar granule (RCG) cells and is tested and found negative for the presence of bacteria and fungi.

Additional BD BioCoat™ Microplates

Different cell types require different attachment factors on the TC surface. In addition to Collagen I and Poly-Lysine coated microplates, BD Biosciences offers a wide variety of microplates coated with other extracellular matrices (ECMs) and attachment factors to enhance the attachment and growth of fastidious cell types. Microplates are available with Collagen IV, Fibronectin, Gelatin, Laminin, BD Matrigel™ Matrix, or a combination of Poly-D-Lysine/Laminin, Poly-Ornithine/Laminin, or Laminin/Fibronectin. Each lot is tested for its ability to promote the growth and spreading of a cell type appropriate to the ECM or attachment factor and is tested and found negative for the presence of bacteria and fungi.


BD
35 5100
NU-SERUM
BD
35 5006
BD MITO
BD
2.5S-NERVE

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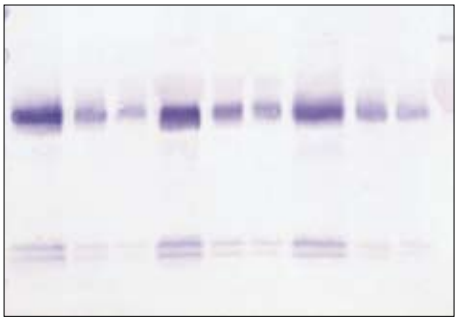
Cytokines and Media Additives

Growth Factors

From purified growth factors to enriched culture supplements to speciality media, these products all allow you to propagate your cells under more defined serum-reduced or serum-free conditions.

BD Biosciences supplies a comprehensive, economical line of high-quality cytokines and media additives to meet your individual needs for culturing animal or human cells *in vitro*:

- Vialed, highly purified growth factors with high biological activity
- Enriched culture supplements to be reconstituted in the medium of your choice



Protein gel analysis of 2.5S NGF using a 4-20% Novex Gel (tris-glycin gel under denaturing conditions).

Epidermal Growth Factors

Epidermal Growth Factor (EGF) is a low-molecular-weight mitogenic protein that stimulates proliferation of a wide variety of cell types *in vitro*. EGF can also be used for receptor, gene expression, wound healing studies, and to culture cells in reduced-serum or serum-free culture systems. Transforming Growth Factor-α (TGF-α) is structurally and functionally related to EGF.

BD™ EGF, mouse natural (culture grade)

	Qty.	Cat. No.
	100 µg	**354001**
(10 x 100 µg)	1 mg	**356001**

Formulation: Lyophilized from ammonium acetate, carrier-free; reconstitute in distilled water

Source: Male mouse submaxillary glands

Molecular Weight: 6.1 kD

Quality Control:

- Purity > 95% by SDS-PAGE and > 80% by pH 9.9 PAGE
- Tested for ability to stimulate proliferation of human foreskin fibroblasts in serum-containing medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 5-100 ng/ml medium depending on cell type

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ two months at -20°C (solubilized). Do not store in frost-free freezer. **Avoid multiple freeze-thaws.**

BD™ EGF, mouse natural (receptor grade)

	Qty.	Cat. No.
	100 µg	**354010**
(5 x 100 µg)	500 µg	**356010**

Formulation: Lyophilized from ammonium acetate, carrier-free; reconstitute in distilled water

Source: Male mouse submaxillary glands

Purification: Purified by BioGel® P10/DEAE chromatography

Molecular Weight: 6.1 kD

Quality Control:

- Purity > 98% by SDS-PAGE and pH 9.9 PAGE
- Tested for ability to stimulate proliferation of human foreskin fibroblasts in serum-containing medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:
Recommended concentration — Approximately 5 ng/ml medium depending on cell type

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ one month solubilized at -20°C . Do not store in frost-free freezer. **Avoid multiple freeze-thaws.**

BD™ EGF, human recombinant

	Qty.	Cat. No.
	100 µg	**354052**
(10 x 100 µg)	1 mg	**356052**

Formulation: Lyophilized from acetic acid, carrier-free; reconstitute in distilled water or aqueous buffer

Source: Recombinant, *E. coli*

Molecular Weight: 6.2 kD

Quality Control:

- Purity > 98% by SDS-PAGE and reverse phase HPLC
- Shown to stimulate proliferation of human foreskin fibroblasts in serum-containing medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 0.1-1.0 ng/ml medium depending on cell type

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ three months at -20°C (solubilized). Do not store in frost-free freezer. **Avoid multiple freeze-thaws.**

Fibroblast Growth Factors

Fibroblast Growth Factors (FGF) are heparin-binding mitogenic proteins that enhance proliferation of a wide variety of cell types under serum-free or serum-reduced conditions. FGF can also be used as a chemotactic or neurotrophic factor and to study wound healing, angiogenesis, and related processes.

BD™ FGF, bovine natural

	Qty.	Cat. No.
	10 µg	**354002**

Formulation: Lyophilized from phosphate buffered saline containing egg albumin; reconstitute in distilled water

Source: Bovine pituitary glands

Molecular Weight: 13 kD

Quality Control:

- Partially purified
- Tested for ability to promote proliferation of fetal bovine heart endothelial cells (FBHEC)
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 100 ng/ml of medium depending on cell type

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ one month solubilized at -20°C. Do not store in frost-free freezer. **Avoid multiple freeze-thaws.**

BD™ bFGF, human recombinant

	Qty.	Cat. No.
	10 µg	**354060**
(5 x 10 µg)	50 µg	**356060**
(10 x 10 µg)	100 µg	**356061**

Formulation: Lyophilized from phosphate buffered saline, carrier-free; reconstitute in distilled water or serum-free medium

Source: Recombinant, *E. coli*

Molecular Weight: 17 kD

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to promote proliferation of FBHEC
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instruction for Use:
Recommended concentration — 1-20 ng/ml of medium depending on cell type

Storage and Stability:
Stable for at least three months at -20°C (lyophilized) or ≥ one month solubilized at -20°C. Do not store in frost-free freezer. **Avoid multiple freeze-thaws.**

Hepatocyte Growth Factor/ Scatter Factor

Hepatocyte Growth Factor/Scatter Factor (HGF/SF) was originally identified and characterized as two different factors, one with growth-stimulating activity (HGF) and the other with scatter factor activity (SF). These two activities were subsequently ascribed to the same factor. HGF/SF is a mesenchymally derived, heparin-binding glycoprotein with mitogenic, motogenic, and morphogenic effects on a variety of cells[1]. *In vivo*, HGF/SF exists in two forms, a biologically inactive monomeric molecule (e.g., in human placenta) and a biologically active heterodimer (e.g., in human serum).

HGF/SF can be used in a variety of *in vitro* applications.

As a Mitogenic factor for:

- hepatocytes[2,3]
- epithelial cells[4,5], e.g., intestinal, mammary, kidney, and bronchial epithelial cells
- endothelial cells[6]
- dermal fibroblasts[7]
- melanocytes[8]
- hematopoietic precursor cells[9]

As a Motogenic factor for:

- endothelial cells and many epithelial cells, including hepatocytes[10,11]
- several tumor cells enhancing cellular invasiveness[12]

As a Cytotoxic or Cytostatic factor for:

- several tumor cell lines, including hepatocellular carcinomas[13-15]

As a Morphogenic factor to induce:

- tubule formation by kidney epithelial cells[16]
- ductule formation by mammary epithelial cells[17]
- cord formation by hepatocytes[18]

BD™ HGF/SF, human recombinant

Qty.	Cat. No.
5 µg	**354103**

Formulation: Lyophilized from 20 mM phosphate buffered saline containing 0.35 M NaCI, pH 7.0

Source: Recombinant, Sf9 insect cells

Molecular Weight: 60-65 kD (62 kD and 32 kD subunits)

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to stimulate DNA synthesis of primary rat hepatocytes and to induce scattering of epithelial cells (scatter factor activity)
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma
- Tested for endotoxin (LAL assay)

Instructions for Use:

Recommended concentration — 5-50 ng/ml medium depending on cell type

Storage and Stability:

Stable for at least three months at -70°C or ≥ three months solubilized at -20°C. **Avoid multiple freeze-thaws.**

REFERENCES:
1.Gherardi, E. and Stoker, M., Cancer Cells **3**:227 (1991).
2.Nakamura, T., Prog. in Growth Factor Res. **3**:67 (1991).
3.Zarnegar, R., et al., Proc. Natl. Acad. Sci. USA **87**:1252 (1990).
4.Dignass, A.U., et al., Biochem. Biophys. Res. Comm. **202**:701 (1994).
5.Miyazawa, K., et al., J. Biol. Chem. **269**:8966 (1994).
6.Bussolino, F., et al., J. Cell Biol. **119**:629 (1992).
7.Kataoka, H., et al., Cell Biol. Internat. **17**:65 (1993).
8.Matsumoto, K., et al., Biochem. Biophys. Res. Comm. **176**:45 (1991).
9.Kmiecik, T.E., et al., Blood **80**:2454 (1992).
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11.Gherardi, E. and Stoker, M.E., Nature **346**:228 (1990).
12.Weidner, K.M., et al., Proc. Natl. Acad. Sci. USA **88**:7001 (1991).
13.Higashio, K., et al., Biochem. Biophys. Res. Comm. **170**:397 (1990).
14.Tajima, H., et al., FEBS Let. **291**:229 (1991).
15.Shiota, G., et al., Proc. Natl. Acad. Sci. USA **89**:373 (1992).
16.Montesano, R., et al., Cell **67**:901 (1991).
17.Tsafarty, I., et al., Science **257**:1258 (1992).
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Insulin-like Growth Factor

Insulin-like Growth Factors (IGF) are plasma-derived mitogens that are similar to proinsulin. IGF-I and IGF-II both have mitogenic activity for several cell types, including malignant cells. IGF often acts in synergy with other growth factors.

BD™ IGF-I, human recombinant (culture)

Qty.	Cat. No.
10 µg	**354037**

Formulation: Lyophilized from sodium acetate, carrier-free; reconstitute in 10 mM sodium acetate (pH 6.0) or phosphate buffer (pH 7.6); do not agitate.

Source: Recombinant, *E. coli*

Molecular Weight: 7.7 kD

Quality Control:

- Purity > 95% by size exclusion HPLC
- Shown to promote proliferation of BALB/c-3T3 mouse cells
- Tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 5-20 ng/ml medium depending on cell type. Acts synergistically with PDGF, EGF, FGF, insulin and transferrin in low-serum medium.

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ three months at -70°C (solubilized). **Avoid multiple freeze-thaws.**

Nerve Growth Factors

Both 7S and 2.5S Nerve Growth Factors (NGF) are useful for maintenance and differentiation of sympathetic and sensory neurons, and neuronal cells *in vitro*. NGF also has wound healing activity and can be used in degenerative brain disease and nerve injury models.

BD™ 7S NGF, mouse natural

Qty.	Cat. No.
100 µg	**354009**

Formulation: Lyophilized from phosphate buffered saline, carrier-free; reconstitute in serum-containing medium.

Source: Mouse submaxillary glands

Molecular Weight: 130 kD

Quality Control:

- Partially purified
- Tested for ability to stimulate neurite outgrowth of chick dorsal root ganglia
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 5-10 ng/ml of medium depending on cell type and application.

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ one month at -20°C (solubilized). **Avoid multiple freeze-thaws.**

BD™ 2.5S NGF, mouse natural

	Qty.	Cat. No.
	10 µg	**354005**
	100 µg	**356004**
(2 x 500 µg)	1 mg	**356005**

Formulation: Lyophilized from phosphate buffered saline, carrier-free; reconstitute in serum-containing medium or aqueous buffer containing 2% BSA.

Source: Mouse submaxillary glands

Molecular Weight: 26 kD

Quality Control:

- Purity > 90% by 4-20% Tris Glycial gel electrophoresis
- Tested for ability to stimulate neurite outgrowth of chick dorsal root ganglia
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 5-10 ng/ml of medium depending on cell type and application.

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ one month at -20°C (solubilized). **Avoid multiple freeze-thaws.**

Platelet-Derived Growth Factor

Platelet-Derived Growth Factor (PDGF), a dimeric glycoprotein composed of two A and/or B chains, is the principal mitogen in serum for mesenchymal cells. Applications include culture of various cell types derived from connective tissue. It can also be used to study chemotaxis, wound healing, and bone repair.

BD™ PDGF-BB, human recombinant

	Qty.	Cat. No.
	10 µg	**354051**
(10 x 10 µg)	100 µg	**356051**

Formulation: Lyophilized from 10 mM acetic acid, carrier-free; reconstitute in 10 mM acetic acid or serum-free medium containing 0.2% BSA.

Source: Recombinant, *E. coli*

Molecular Weight: 25 kD

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to stimulate proliferation of Swiss albino mouse fibroblasts
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 0.5-4 ng/ml of medium depending on cell type.

Storage and Stability:

Stable for at least three months at 2-8°C (lyophilized) or ≥ three months at -20°C (solubilized). **Avoid multiple freeze-thaws.**

Transforming Growth Factor

Transforming Growth Factor-ß (TGF-ß) is a multifunctional protein that plays a central role in the regulation of cell growth and differentiation with either stimulatory or inhibitory effects, depending on the context of its action.

BD™ TGF-ß, human natural

	Qty.	Cat. No.
	1 µg	**354039**
(5 x 1 µg)	5 µg	**356039**
(5 x 2 µg)	10 µg	**356040**

Formulation: Frozen in 36% acetonitrile-0.1% trifluoroacetic acid. CAUTION: TGF-ß absorbs to glass and plastic surfaces (instructions for dilution are provided with the product).

Source: Human platelets. NOTE: Source material tested for hepatitis B antigen and HIV-1 antibody

Molecular Weight: 25 kD

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to inhibit DNA synthesis of Mv 1 Lu mink lung cells (ATCC CCL-64)

Instructions for Use:
Recommended concentration — 10-50 pg/ml of medium depending on cell type and application.

Storage and Stability:
Stable for at least three months at -70°C (if diluted according to instructions).

Vascular Endothelial Growth Factor

BD™ VEGF, human recombinant

	Qty.	Cat. No.
	10 µg	**354107**

Formulation: Lyophilized from distilled water, carrier-free; reconstitute in distilled water.

Source: Recombinant (human cDNA encoding the 165 aa isoform; expressed in *E. coli*)

Molecular Weight: 45 kD (dimer)

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to promote proliferation of HUVEC
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi, and mycoplasma
- Tested for endotoxin (LAL assay)

Instructions for Use:
Recommended concentration — 1-10 ng/ml of medium depending on cell type.

Storage and Stability:

Stable for at least three months at -20°C (lyophilized) and ≥ two months solubilized at -20°C.

Lymphokines

- Broad range of highly purified natural and recombinant lymphokines
- Membrane filtered (0.2 µm membrane) and tested for biological activity
- High specific activity
- Available as vialed pure factors or as enriched conditioned media

Interleukin-1

Interleukin-1 (IL-1), primarily produced by monocytes and macrophages, has a diverse range of uses including stimulation of lymphokine release from activated T-cells, activation of endothelial cells to induce transendothelial cell migration, and activation of NK cells.

BD™ IL-1β, human recombinant

	Qty.	Cat. No.
	2 µg	**354042**

Formulation: Frozen in sodium phosphate buffer, pH 7.2 containing 0.1% BSA

Source: Recombinant, *E. coli*

Molecular Weight: 17 kD

Quality Control:
- Purity > 95% by SDS-PAGE
- Tested for ability to activate primary mouse thymocytes
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma
- Tested for endotoxin (LAL assay)

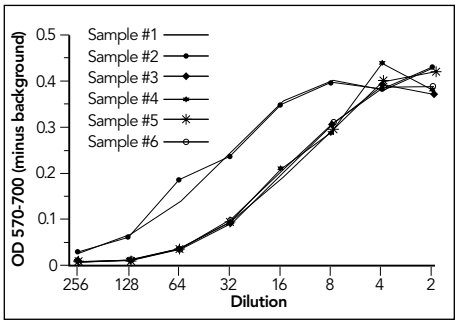
Instructions for Use:
Recommended concentration — 0.1-10 ng/ml of medium depending on cell type.

Storage and Stability:
Stable for at least three months at -70°C. **Avoid multiple freeze-thaws.**

Interleukin-2

Interleukin-2 (IL-2) plays a central role in cell-mediated immune response. IL-2, also known as T-cell growth factor, was first identified by its ability to promote the long-term proliferation of activated T-cells. IL-2 is produced by the helper/inducer subset of T-cells when activated by mitogens such as PHA, or by interaction with antigen/MHC complexes on antigen-presenting cells[1]. DNA sequencing data predict that the mature human molecule contains 133 amino acids (15.5 kD), the murine counterpart 149 amino acids (17 kD)[2]. Three classes of IL-2 receptors have been identified[3,4].

A broad selection of natural and recombinant IL-2 products from rodent and human species is available as highly purified vialed factors or as conditioned media. IL-2 products can be used to:
- Promote proliferation of activated T-lymphocytes[5,6]
- Activate B-cells[7]
- Increase cytotoxicity of natural killer (NK) cells[8]
- Generate lymphokine-activated killer cells[9]



Determination of IL-2 activity:
Serial dilutions of six samples of IL-2 are tested for their ability to induce proliferation of the mouse T-cell line CTLL.

BD™ IL-2, human recombinant

	Qty.	Cat. No.
BRMP* units	10,000	**354043**
BRMP* units	50,000	**356043**

Formulation: Frozen in 55 mM sodium phosphate buffer, containing 53 mM sucrose and 0.4% HSA.

Source: Recombinant, *E. coli*

Molecular Weight: 15.5 kD

Quality Control:
- Purity > 96% by SDS-PAGE
- Tested for ability to stimulate proliferation of the mouse T-cell line CTLL
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma
- Tested for endotoxin (LAL assay)

Instructions for Use:
Recommended concentration — 10 BRMP* units/ml of medium depending on cell type.

Storage and Stability:
Stable for at least three months at -70°C; ≥ one month solubilized at -70°C.

**Biological Response Modifiers Program Jurkat IL-2 reference reagent.*

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4. Mori, H., et al., Int. Immunol. **3**:149 (1991).
5. Morgan, D.A., et al., Science **193**:1007 (1976).
6. Smith, K.A., Science **240**:1169 (1988).
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8. Triachiesi, T., et al., J. Exp. Med. **16**:1147 (1984).
9. Grimm, E.A., et al., J. Exp. Med. **155**:1823 (1982).

BD™ IL-2, rat natural

	Qty.	Cat. No.
BRMP* units	4,000	**354110**

Formulation: Lyophilized from sodium phosphate buffer containing 0.25% BSA; reconstitute in serum-containing medium.

Source: Rat splenocyte cultures (ConA-stimulated)

Quality Control:

- Partially purified
- Tested for ability to stimulate proliferation of the mouse T-cell line CTLL
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma
- Tested for endotoxin (LAL assay)

Instructions for Use:
Recommended concentration — 10 BRMP units/ml of medium depending on cell type.

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ one month solubilized at -20°C.

BD™ IL-2, mouse recombinant

	Qty.	Cat. No.
BRMP* units	10,000	**356078**
BRMP* units	25,000	**354078**

Formulation: Frozen in Dulbecco's PBS, containing 0.1% BSA.

Source: Recombinant, murine T-cell line.

Molecular Weight: 17 kD.

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to stimulate proliferation of the mouse T-cell line CTLL
- Filtered (0.2 µm membrane) and tested for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 10 BRMP units/ml of medium depending on cell type.

Storage and Stability:
Stable for ≥ three months at -70°C. **Avoid multiple freeze-thaws.**

**Biological Response Modifiers Program Jurkat IL-2 reference reagent.*

Interleukin-3

Interleukin-3 (IL-3) is a glycoprotein that regulates differentiation and enhances proliferation of a variety of hematopoietic precursor cells, mast cells, basophils, and NK cells.

BD™ IL-3, mouse recombinant

	Qty.	Cat. No.
	10 µg	**354058**

Formulation: Lyophilized from distilled water, carrier-free; reconstitute in distilled water or aqueous buffer

Source: Recombinant, *E. coli*

Molecular Weight: 15 kD

Quality Control:

- Purity > 95% by SDS-PAGE
- Shown to stimulate proliferation of IL-3 dependent murine cells (FDC-P1)
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended dose — 0.1-10 ng/ml of medium depending on cell type.

Storage and Stability:
Stable for at least three months at -20°C (lyophilized or solubilized). **Avoid multiple freeze-thaws.**

Interleukin-4

Interleukin-4 (IL-4) modulates growth and differentiation of a variety of cell types, including B- and T-lymphocytes, NK cells, mast cells, and bone marrow mast cells.

BD™ IL-4, human recombinant

	Qty.	Cat. No.
	5 µg	**354068**

Formulation: Lyophilized from distilled water, carrier-free; reconstitute in distilled water or aqueous buffer.

Source: Recombinant, *E. coli*

Molecular Weight: 14 kD

Quality Control:

- Purity > 98% by SDS-PAGE
- Shown to stimulate DNA synthesis in human TF-1 cell line (dose-dependent stimulation)
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 0.4 - 2 ng/ml of medium depending on cell type.

Storage and Stability:
Stable for at least three months at -20°C or ≥ one month at 2-8°C (lyophilized or solubilized). **Avoid multiple freeze-thaws.**

Granulocyte-Macrophage Colony Stimulating Factor

Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF), a glycoprotein that is critical to hematopoiesis, induces bone marrow progenitor cells to proliferate and differentiate into granulocytes and macrophages. It is also involved in resistance to infection.

BD™ GM-CSF, human recombinant

	Qty.	Cat. No.
	1 µg	**354048**

Formulation: Lyophilized from distilled water or aqueous buffer.

Source: Recombinant, *E. coli*

Molecular Weight: 16 kD

Quality Control:

- Purity > 95% by SDS-PAGE
- Shown to stimulate proliferation of human TF-1 cells (dose-dependent stimulation)
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma
- Tested for endotoxin (LAL assay)

Instructions for Use:
Recommended concentration — 0.2-8 ng/ml of medium for colony formation depending on cell type.

Storage and Stability:
Stable for at least three months at -70°C (lyophilized or solubilized).
Avoid multiple freeze-thaws.

Stem Cell Factor

Stem Cell Factor (SCF) is a glycoprotein that plays a key role in hematopoiesis acting both as a positive and negative regulator, often in synergy with other cytokines. It also plays a key role in mast cell development, gametogenesis, and melanogenesis.

BD™ SCF, human recombinant

	Qty.	Cat. No.
	10 µg	**354105**

Formulation: Lyophilized from distilled water, carrier-free; reconstitute in distilled water.

Source: Recombinant, *E. coli* (human cDNA encoding the 165 aa soluble form)

Molecular Weight: 18.5 kD

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to promote proliferation of a human megakaryocytic leukemia cell line (Mo7e)
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma
- Tested for endotoxin (LAL assay)

Instructions for Use:
Recommended concentration — 0.2-20 ng/ml of medium depending on cell type and application.

Storage and Stability:
Stable for at least three months at -20°C (lyophilized or solubilized).

Tumor Necrosis Factor-α

Tumor Necrosis Factor-α (TNF-α) has growth-inhibitory effects on many tumor cells and nontumor cells, e.g., certain hematopoietic cells. It also has differentiation-inducing effects, e.g., on macrophages.

BD™ TNF-α, human recombinant

	Qty.	Cat. No.
	10 µg	**354066**
(5 x 10 µg)	50 µg	**356066**

Formulation: Lyophilized from acetic acid, carrier-free; reconstitute in distilled water or aqueous buffer.

Source: Recombinant, *E. coli*

Molecular Weight: 17.5 kD

Quality Control:

- Purity ≥ 97% by SDS-PAGE
- Tested for ability to cause cytolysis of murine L929 fibroblasts
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma
- Tested for endotoxin (LAL assay)

Instructions for Use:
Recommended concentration — 0.1-25 ng/ml of medium containing 10 µg/ml actinomycin D depending on cell type and application.

Storage and Stability:
Stable for at least three months at -20°C (lyophilized or solubilized).
Avoid multiple freeze-thaws. Desiccate lyophilized product.

Media Additives

- Serum-free or low-serum alternatives to routinely used high serum-containing media
- Supplements and essential components used as the basis of specialized serum-free media
- Membrane filtered (0.2 µm membrane) and tested for biological activity

BD Nu-Serum™ Serum Replacements

BD Nu-Serum™ growth medium supplements provide low-protein alternatives to newborn calf, fetal bovine, and other sera routinely used for cell culture. The low-protein content facilitates protein purification, virus production[1], monoclonal antibody production and screening[2], and increases the frequency of successful transfection of cells[3,4].

BD Nu-Serum Serum Replacements have been used successfully on a large variety of human and animal cell types, many of which were previously difficult to grow.

Examples include:

- Embryo fibroblasts[5]
- HeLa cells[6]
- Mouse L cells[7]
- BALB/c-3T3 cells[8]
- COS cells[9]
- Kidney epithelial cells[10]
- Respiratory epithelial cells[11]
- Neuronal cells[12]
- Osteoblasts and primary chondrocytes[13]
- Bladder and hepatocellular carcinoma cells[14,15]
- Pituitary cells[16]
- Schwann cells[17]

Quality Control:

- Tested at a concentration of 10% for the ability to stimulate a ≥ 100 fold increase in growth of BHK-21 and a ≥ 13-fold increase in growth of BALB/c-3T3 cells.
- Tested for total protein content, pH, and osmolarity (information included with product).
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi, mycoplasma, and viruses (bovine diarrhea virus, bovine parvovirus, bovine adenovirus, reovirus, and rabies virus); also tested for the absence of cytopathic effects (CPE), inclusion bodies and hemadsorption.
- Tested for endotoxin (LAL assay).

Instructions for Use:
Replaces fetal bovine and other sera on an equivalent volume basis.

Storage and Stability:
Stable for at least three months at -20°C.

REFERENCES:
1. Okada, M., et al., Microbiological Immunol. **31**:657 (1987).
2. Sjogren-Janssen, E., et al., J. Immunol. Meth. **84**:359 (1985).
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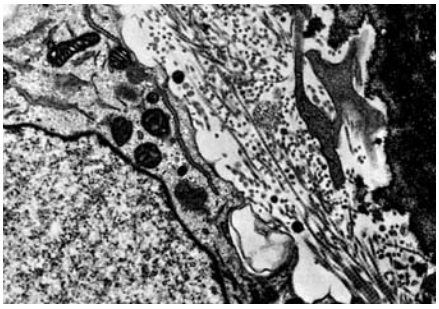


Osteoblast differentiation:
Transmission electron micrograph (TEM) of well-differentiated chick Calvarial cells grown for 10 days in BD Nu-Serum-supplemented medium.

BD Nu-Serum™

Qty.	Cat. No.
100 ml	**355100**
500 ml	**355500**

Formulation: Frozen solution containing 25% newborn calf serum, EGF, ECGS, insulin, human transferrin, triiodothyronine, progesterone, estradiol-17ß, testosterone, hydrocortisone, selenous acid, o-phosphorylethanolamine, glucose, amino acids, vitamins, and other trace elements and nutrients contained in the Ham's F12 medium base.

BD Nu-Serum™ IV

Qty.	Cat. No.
100 ml	**355104**
500 ml	**355504**

Formulation: Frozen solution containing 25% fetal bovine serum, EGF, ECGS, insulin, human transferrin, triiodothyronine, progesterone, estradiol-17ß, testosterone, hydrocortisone, selenous acid, o-phosphorylethanolamine, glucose, amino acids, vitamins, and other trace elements and nutrients contained in the Ham's F12 medium base.

BD Nu-Serum™ V

Qty.	Cat. No.
100 ml	**355105**
500 ml	**355505**

Formulation: Frozen solution containing 25% fetal bovine serum (gamma irradiated with 2.5-3.0 megarads Cobalt 60 to eliminate any virus contamination). EGF, ECGS, insulin, human transferrin, triiodothyronine, progesterone, estradiol-17ß, testosterone, hydrocortisone, selenous acid, o-phosphorylethanolamine, glucose, amino acids, vitamins, and other trace elements and nutrients contained in the Ham's F12 medium base.

T-Cell Culture Supplement

BD™ T-Cell Culture Media supplements are used to promote proliferation and activation (PHA or ConA Supplemented Media) of T-cells and support high-titer HIV production by leukocytes.

BD™ T-Cell Culture Supplement with PHA, human (IL-2 culture supplement)

	Qty.	Cat. No.
containing ≥ 10,000 BRMP* units	100 ml	**354045**

Formulation: Conditioned medium (DMEM) from PHA-stimulated human peripheral blood lymphocyte cultures containing 0.5% HSA and 50 µg/ml gentamicin. Maximal PHA content is 100 µg/ml of medium.

Source: Human lymphocyte culture.
NOTE: Source material tested for hepatitis B antigen and HIV-1 antibody

Quality Control:
- Tested for ability to promote proliferation of an IL-2 dependent mouse cell line (CTLL) in serum-containing medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended dilution — 1:10 to 1:20 depending on cell type (as low as 10 units/ml of medium; dilute in serum-containing medium).

Storage and Stability:
Stable for at least three months at 2-8°C. Do not freeze.

BD™ T-Cell Culture Supplement without PHA, human (IL-2 culture supplement)

	Qty.	Cat. No.
	50 ml	**354117**

Formulation: Conditioned medium (DMEM) from PHA-stimulated human peripheral blood lymphocyte cultures containing 0.5% HSA and 50 µg/ml gentamicin. PHA has been removed by immunoabsorption.

Source: Human lymphocyte culture. NOTE: Source material tested for hepatitis B antigen and HIV-1 antibody

Quality Control:
- Tested for ability to promote proliferation of an IL-2 dependent mouse cell line (CTLL) in serum-containing medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended dilution — 1:10 depending on cell type (dilute in serum-containing medium).

Storage and Stability:
Stable for at least three months at 2-8°C. Do not freeze.

BD™ T-Cell Culture Supplement with ConA, Rat (IL-2 culture supplement)

	Qty.	Cat. No.
	100 ml	354115

Formulation: Conditioned medium (RPMI 1640) from ConA-stimulated rat splenocyte cultures containing 10% fetal bovine serum and 10 mM HEPES. ConA content is 10 µg/ml of medium.

Source: Rat splenocyte culture

Quality Control:
- Tested for ability to promote growth of an IL-2 dependent mouse cell line (CTLL) in serum-containing medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended dilution — 1:20 depending on cell type (dilute in serum-containing medium).

Storage and Stability:
Stable for at least three months at 2-8°C.

BD™ T-Cell Culture Supplement without ConA, rat (IL-2 culture supplement)

	Qty.	Cat. No.
	100 ml	**354116**

Formulation: Conditioned medium (RPMI 1640) from ConA-stimulated, washed rat splenocyte cultures containing 10% fetal bovine serum and 10 mM HEPES. ConA content is ≤ 0.5 µg/ml of medium.

Source: Rat splenocyte culture

Quality Control:
- Tested for ability to promote growth of an IL-2 dependent mouse cell line (CTLL) in serum-containing medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended dilution — 1:10 depending on cell type (dilute in serum-containing medium).

Storage and Stability:
Stable for at least three months at 2-8°C. Do not freeze.

**Biological Response Modifiers Program Jurkat IL-2 reference reagent.*

IL-3 Culture Supplement

BD™ IL-3 Culture Supplements are used to culture a variety of IL-3 responsive cells, e.g., mast cells, basophils, natural killer cells, and several hematopoietic precursor cells.

BD™ IL-3 Culture Supplement, mouse

	Qty.	Cat. No.
	25 ml	**354040**

Formulation: Conditioned medium (DMEM) from IL-3 secreting mouse WEHI-3 cell cultures containing 0.5% fetal calf serum.

Source: Mouse cell cultures

Quality Control:

- Tested for ability to promote proliferation of an IL-3 dependent mouse cell line (32-DCL) in serum-containing medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended dilution — 1:10 depending on cell type (dilute in serum-containing medium).

Storage and Stability:
Stable for at least three months at 2-8°C. Do not freeze.

Endothelial Cell Growth Supplement

BD Endothelial Cell Growth Supplement (ECGS) is a broadly used supplement to culture a variety of cells, particularly endothelial cells. ECGS contains various growth factors (e.g., acidic FGF or ECGF-α).

BD™ ECGS

	Qty.	Cat. No.
	15 mg	354006
	100 mg	356006

Formulation: Lyophilized from NaCl-containing buffer with streptomycin sulfate; reconstitute in serum-free medium.

Source: Bovine brain

Quality Control:

- Tested for ability to promote proliferation of Fetal Bovine Heart Endothelial Cells (FBHEC) in medium containing 10% newborn calf serum
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 50-150 µg/ml of medium depending on cell type. Some primary cells require supplementation of 1-100 µg/ml heparin.

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ one month at -20°C (solubilized). **Avoid multiple freeze thaws.**

Bovine Pituitary Extract

BD Bovine Pituitary Extract (BPE) is a broadly used supplement to culture a variety of epithelial and endothelial cells. BPE contains growth factors (e.g., basic FGF) and hormones.

BD™ BPE

	Qty.	Cat. No.
	15 mg	**354123**
(5 x 15 mg)	75 mg	**356123**

Formulation: Lyophilized from NaCl-containing buffer; reconstitute in serum-free medium.

Source: Bovine pituitary glands

Quality Control:

- Tested for ability to promote proliferation of Fetal Bovine Heart Endothelial Cells (FBHEC) in medium containing 10% newborn calf serum
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 25-100 µg/ml of medium depending on cell type.

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ three months at -20°C (solubilized). **Avoid multiple freeze-thaws.**

Mito+ Serum Extender

BD Mito+ Serum Extender is a concentrated, fully defined formulation of hormones, growth factors (EGF and FGF), and other metabolites (insulin and steroid hormones). It can be used to culture a variety of cells under serum-free or serum-reduced conditions.

BD™ Mito+ Serum Extender

	Qty.	Cat. No.
(5 liter equivalent)	5 ml	**355006**

Formulation: Lyophilized from a solution of Dulbecco's Phosphate Buffered Saline (DPBS) containing ECGS, EGF, insulin, human transferrin, triiodothyronine, progesterone, estradiol-17ß, testosterone, hydrocortisone, selenous acid, and o-phosphorylethanolamine; reconstitute in 5 ml distilled water (stock solution).

Quality Control:

- Tested for ability to promote proliferation of BALB/c-3T3 cells in serum-reduced medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended concentration — 1:1000 (dilute stock solution in serum-reduced medium).

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ three months at -20°C (solubilized). **Avoid multiple freeze thaws.**

ITS Universal Culture Supplements

BD™ ITS Universal Culture Supplements contain insulin, human transferrin, and selenous acid, the three most universally essential components of defined culture media. They stimulate cell proliferation of a variety of cells under serum-reduced conditions.

BD™ ITS Premix

	Qty.	Cat. No.
(5 liter equivalent)*	5 ml	**354351**
(20 liter equivalent)**	20 ml	**354350**

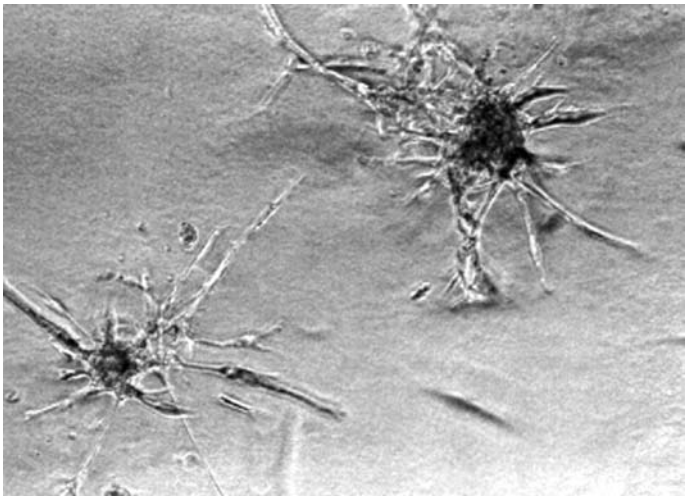
Formulation: Lyophilized from a water solution; reconstitute in 5 ml (cat. no. 354351) or 20 ml (cat. no. 354350) distilled water (stock solution).

Quality Control:

- Tested for ability to promote proliferation of HeLa cells in serum-free medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended dilution — 1:1000 (dilute stock solution in serum-free medium).

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or ≥ three months at -20°C (solubilized). **Avoid multiple freeze-thaws.**



Cell differentitation effect of BD™ ITS+ supplemented BD Smooth Muscle Cell Differentiation Medium on human smooth muscle cells cultured on BD BioCoat™ Growth Factor Reduced Matrigel™ plates. Nodular morphology is apparent after 5 days in vitro.

BD™ ITS+ Premix

	Qty.	Cat. No.
(2 liter equivalent)***	20 ml	**354352**

Formulation: As an aqueous solution containing human recombinant insulin, human transferrin (12.5 mg each), selenous acid (12.5 µg), BSA (2.5 g), and linoleic acid (10.7 mg).

Quality Control:

- Tested for ability to promote proliferation of HeLa cells in serum-free medium
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Instructions for Use:
Recommended dilution — 1:100 (dilute stock solution in serum-free medium).

Storage and Stability:
Stable for at least three months at 2-8°C. Do not freeze.

* 5 liter size vial contains:
25 mg Insulin
25 mg Transferrin
25 µg Selenous Acid

** 20 liter size vial contains:
100 mg Insulin
100 mg Transferrin
100 µg Selenous Acid

Final concentrations in medium when diluted and used as directed:
Insulin, 5 µg/ml
Transferrin, 5 µg/ml
Selenous Acid, 5 ng/ml

*** Final concentration in medium when diluted and used as directed:
Insulin, 6.25 µg/ml
Transferrin, 6.25 µg/ml
Selenous Acid, 6.25 ng/ml
Bovine Serum Albumin, 1.25 mg/ml
Linoleic Acid, 5.35 µg/ml

Other Media Additives

Essential components used as the basis of serum-free or serum-reduced defined media.

BD™ Albumin, bovine serum (BSA, delipidized)

Qty.	Cat. No.
10 g	**354331**

Formulation: Lyophilized from phosphate buffered saline; reconstitute in distilled water or serum-free medium.

Source: Bovine serum

Quality Control:

- Purity > 95% by cellulose acetate electrophoresis
- Non-sterile preparation
- Tested for endotoxin (LAL assay)

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or -20°C (solubilized).

BD™ Linoleic Acid/Albumin Complex

	Qty.	Cat. No.
Linoleic acid/BSA	2.5/500 mg	**354227**

Formulation: Lyophilized from an aqueous solution and packaged with argon gas to prevent oxidation; reconstitute in distilled water.

Quality Control:

- Purity > 95% by cellulose acetate electrophoresis
- Filtered (0.2 µm membrane) and tested and found negative for bacteria, fungi and mycoplasma

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or -20°C (solubilized).

BD™ Hydrocortisone

Qty.	Cat. No.
50 mg	**354203**

Formulation: Lyophilized; reconstitute in ethanol.

Quality Control:

- Shown to promote the proliferation of HeLa cells in serum-free medium
- Filtered (0.2µm membrane) and tested and found negative for bacteria, fungi, and mycoplasma

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or -20°C (solubilized).

BD™ Selenous Acid (sodium salt)

Qty.	Cat. No.
100 mg	**354201**

Formulation: Lyophilized from an aqueous solution and packaged with argon gas to prevent oxidation; reconstitute in distilled water.

Quality Control:

- Shown to promote the proliferation of MDCK cells in serum-free medium
- Filtered (0.2µm membrane) and tested and found negative for bacteria, fungi, and mycoplasma

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or -20°C (solubilized).

BD™ Transferrin, human (holo)

Qty.	Cat. No.
10 mg	**354204**
1 g	**354304**

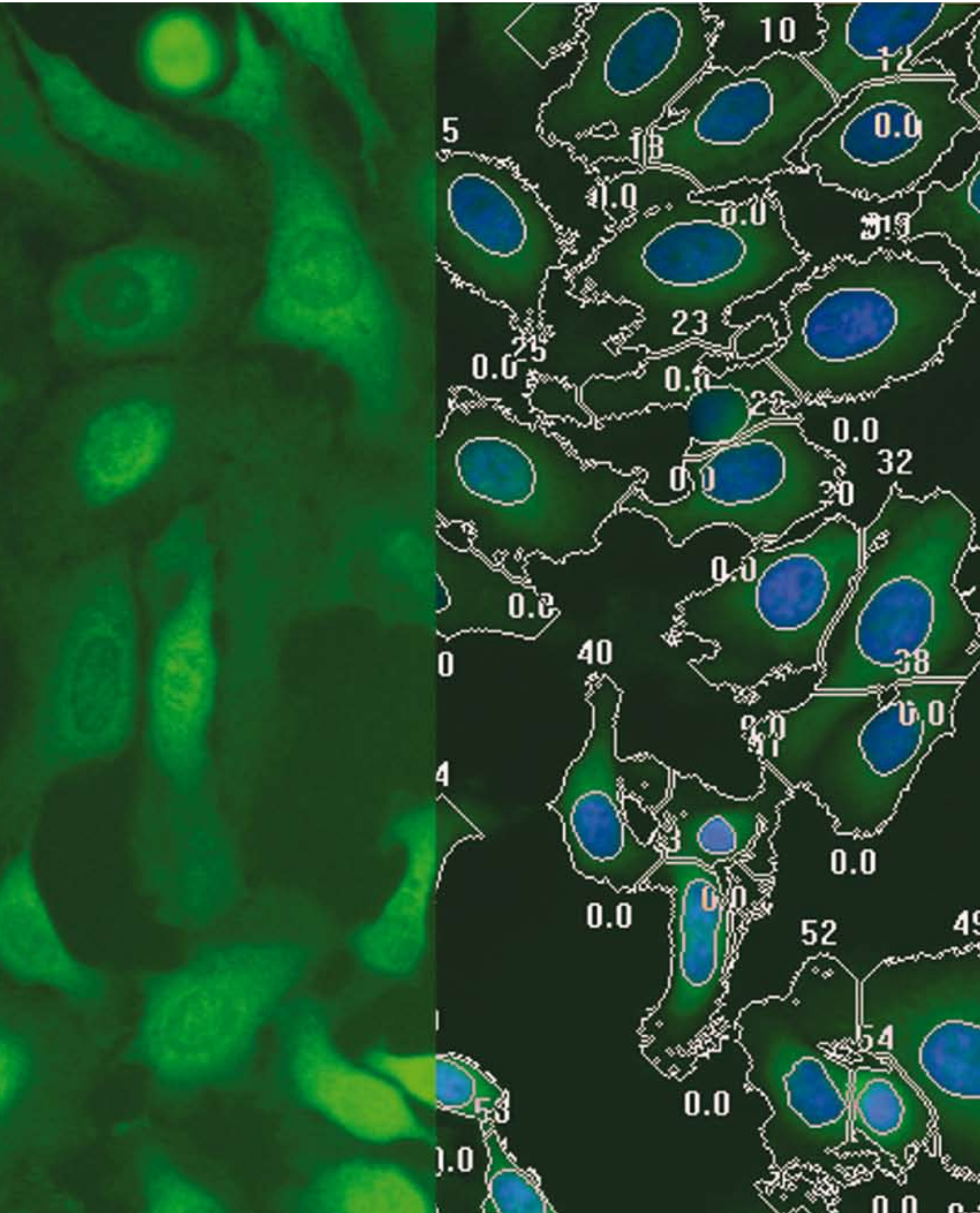
Formulation: Lyophilized from an aqueous sodium chloride solution.

Source: Human plasma.
NOTE: Source material tested for hepatitis B antigen and HIV-1 antibody.

Quality Control:

- Purity > 95% by SDS-PAGE
- Tested for ability to promote proliferation of MDCK cells in serum-free medium
- Filtered (0.2µm membrane) and tested and found negative for bacteria, fungi, and mycoplasma (Cat. No. 354204)
- Bulk (Cat. No. 354304) is non-sterile

Storage and Stability:
Stable for at least three months at 2-8°C (lyophilized) or -20°C (solubilized).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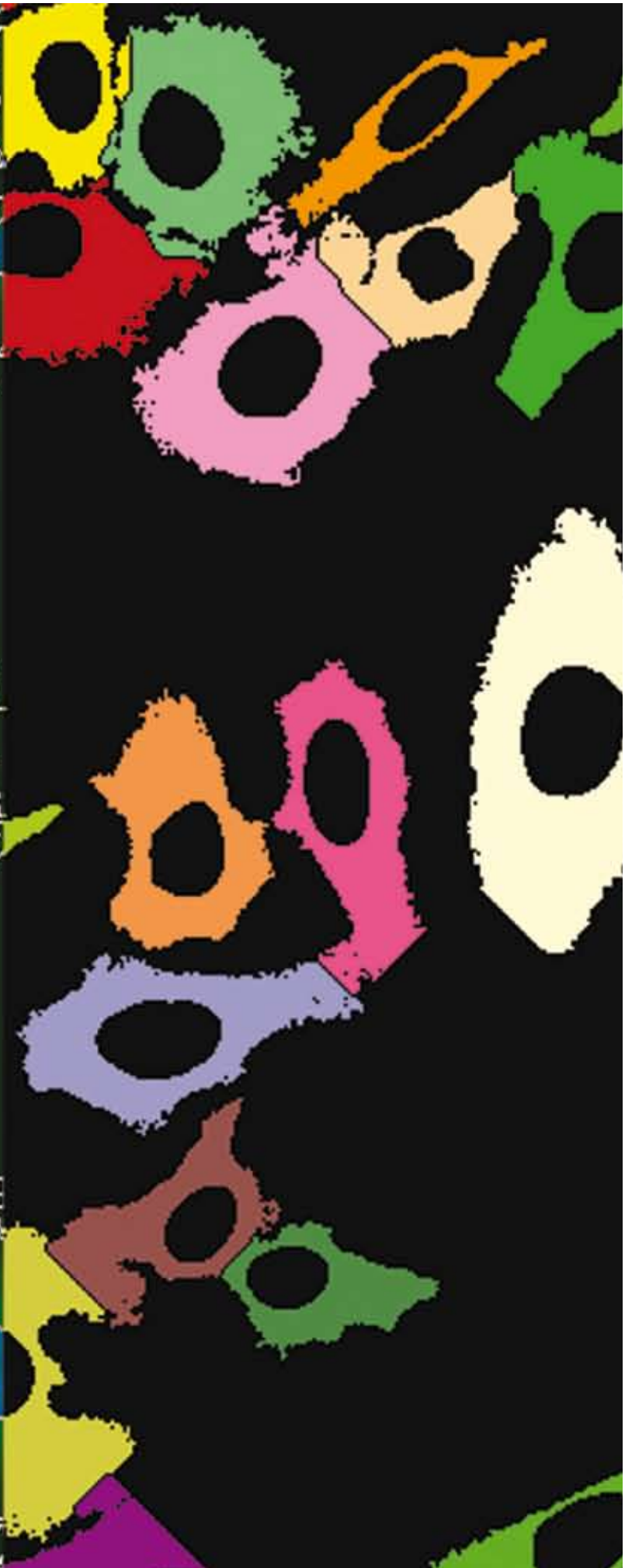

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Bioimaging Systems

Innovative technologies combining imaging, data analysis, and reagents

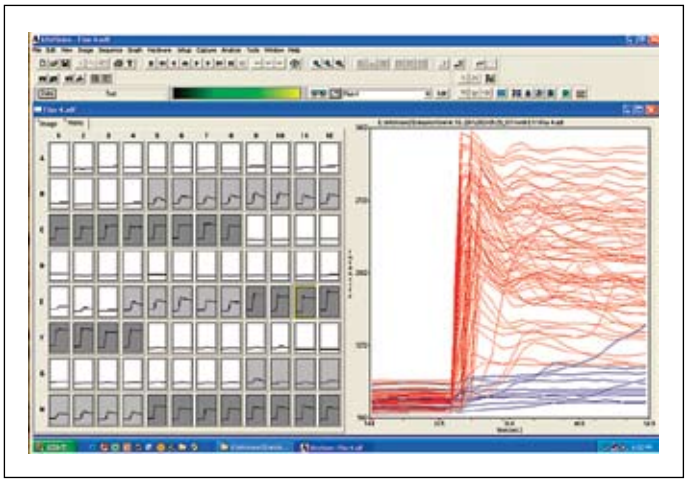
Living systems *in vitro* provide a unique opportunity to investigate biological pathways in the context of multiple events taking place within cells. This trend towards live, cell-based assays rather than biochemical assays is being driven by the availability of new tools and reagents. New fluorescent dyes, fluorescent proteins, and automated, high-resolution imaging technologies are increasing our understanding of the workings of the cell.

BD Biosciences' Bioimaging technologies provide a comprehensive solution for high-resolution, automated microscopy and fluorescence reading, offering:

- Confocal, high-resolution microscopy systems
- A proprietary biosensor technology signaling GPCR-transduced cAMP concentration changes
- High-performance kits for the detection of calcium flux in living cells

BD Pathway™ Bioimager

- Explore cells in real-time and develop assays faster with the power and flexibility of the BD Pathway Bioimager



With the BD Pathway Bioimager's software individual cells can be classified into different categories based on end-point or kinetic response profiles at the well or plate level.

The BD Pathway™ Bioimager is an automated, confocal, real-time, single-cell, kinetic, and endpoint imaging system that has been integrated into a single, compact unit. This system uses a proprietary confocal lightpath and automation to simplify the task of high-content analysis of living cells. High resolution, combined with sophisticated software, assist in developing better cell-based assays. The system allows the user to explore biological events without many of the restrictions of conventional microscope-based, high-content imaging systems.

The BD Pathway™ Bioimager offers:

- Ability to run kinetic and endpoint assay formats
- Integrated liquid handling with image-as-you-add capability
- True confocal real-time imaging
- Full-spectrum, laser-free illumination
- 96- and 384-multiwell plate and slide imaging
- Environment control for live cell experiments
- Flexible software for easy data navigation and classification
- Integrated binocular viewing
- High-precision linear x, y, and z motors
- Motionless stage allowing imaging of suspension or loosely adherent cells without agitating

Description	Cat. No.
BD Pathway™ Bioimager System	**640618**

BD CARV II™ Confocal Imager

- Full-spectrum confocal microscopy that is affordable and easy to use
- Upgrade your fluorescence microscope to a personal confocal system

The BD CARV II™ Confocal Imager delivers high-resolution CCD confocal imaging in an easy-to-use and cost-effective optical package that fits on an existing microscope. High-speed, multi-point confocal scanning, combined with high quantum efficiency CCD cameras, minimizes photobleaching and allows real-time imaging and recording at up to 100 fps. A long-life arc source coupled to the instrument via an alignment-free light guide allows for full-spectrum (360 nm - 700 nm) confocal imaging of virtually any fluorescent probe. Automation of internal multi-position excitation, dichroic, and emission filter wheels permits fast, multi-dimensional imaging of up to five or more fluorescent probes in the same sample.

The BD CARV II™ Confocal Imager offers:

- Multipoint confocal scanning
- Direct viewing and imaging of confocal and wide field
- Full spectrum confocal
- Automated filter selection
- Fluorescence recovery after photobleaching (FRAP) capabilities
- Microscope compatibility
- Application-specific cameras
- 3D software options

Description	Cat. No.
BD Carv II™ Confocal Imager System	**640736**

RELATED PRODUCTS

BD Falcon™ Imaging 96-well black/clear bottom assay plates 174
BD Falcon and BD BioCoat™ 96- and 384-well black/clear bottom assay plates .....Chapter 7
BD Falcon CultureSlides 43
BD BioCoat CultureSlides..... 83,87,97,99,103

BD ACT*One*™ GPCR Screening Assay

- Convenient, homogeneous assay format
- High sensitivity and excellent signal-to-noise ratio
- Live cell assay allows simultaneous screening of agonists and antagonists
- No special equipment required
- Z′ scores are consistently greater than 0.6

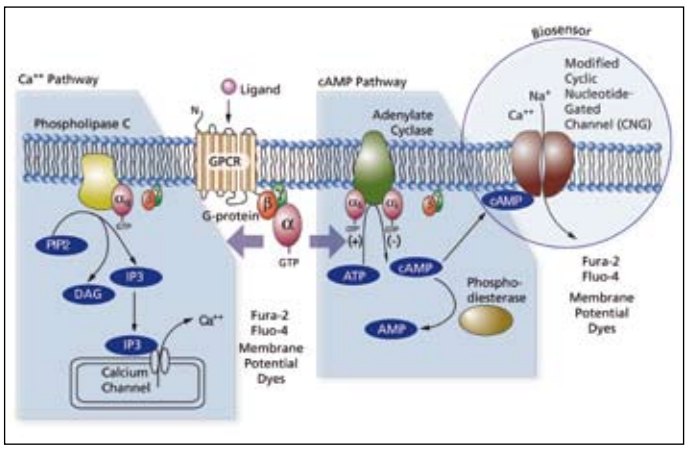


Diagram shows two pathways of GPCR signalling. The BD ACTOne™ Assay uses a proprietary method cyclic nucleotide gated channel (CNG) as a biosensor of cAMP activity.

The BD ACT*One* live cell cAMP assay is the only high-throughput screening (HTS) G-protein coupled receptor (GPCR) technology that directly measures the intracellular concentration of the secondary messenger cyclic AMP (cAMP) in living cells, in real-time. Because the biosensor is localized at the cell surface near the source of cAMP production, the assay provides exceptional sensitivity and response time.

Description	Cat. No.
Transduced Gs coupled Receptors – 2.5 x 10^6 cells each	
Adenosin A2a Receptor	341449
Adenylate Cyclase Activ. Polypept. 1 Receptor Type I (ADCY AP1R1)	341815
Arginine Vasopressin Receptor 2 (AVPR2)	345502
Calcitonin Receptor (CALCR)	341452
Calcitonin Receptor-like (CALCRL)	341450
Corticotropin Releasing Hormone Receptor 1 (CRHR1)	345505
Corticotropin Releasing Hormone Receptor 2 (CRHR2)	341816
Dopamine Receptor D1 (DRD1)	341459
Dopamine Receptor D5 (DRD5)	341817
Follicle Stimulating Hormone Receptor (FSHR)	341818
Glucagon Receptor (GCGR)	341471
Glucagon-like peptide 1 Receptor (GLP1R)	345504
Glucagon-like peptide 2 Receptor (GLP2R)	344445
Gastric inhibitor polypeptide Receptor (GIPR)	341473
Melanocortin 1 Receptor (MC1R)	341457
Melanocortin 3 Receptor (MC3R)	344447
Melanocortin 4 Receptor (MC4R)	341469
Melanocortin Receptor 5 (MC5R)	341470
Parathyroid Hormone Receptor 1 (PTHR1)	341442
Parathyroid Hormone Receptor 2 (PTHR2)	341820
Prostaglandin D2 Receptor (PTGDR2)	341443
Prostaglandin E Receptor 4 (PTGER4)	341455
Prostaglandin I2 Receptor (PTGIR)	345503
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Serotonin Receptor 4 (5HT4)	344438
Serotonin Receptor 6 (5HT6)	344442
Serotonin Receptor 7 (5HT7)	344444
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Vasoactive Intestinal Peptide Receptor 1 (VIPR1)	341472
Vasoactive Intestinal Peptide Receptor 2 (VIPR2)	341468

Live cell assays

Traditional screening of Gs- and Gi-coupled GPCRs is based on endpoint assays that do not generate real-time kinetic data about Gs- and Gi-mediated cAMP activation. The cAMP assay from BD Biosciences allows high-throughput screening on industry standard platforms, providing results with greater accuracy at lower cost. The BD ACT*One* assay is also compatible with standard fluorescence plate readers. The figure shows how the assay uses a modified cyclic nucleotide gated channel (CNG) to monitor cAMP levels within cells.

The BD ACT*One* assay represents a major breakthrough in the ability to conduct HTS using fluorescence plate readers instead of slower, more costly alternatives. Real-time kinetic readouts minimize artifacts from prolonged incubations and decrease processing steps while providing higher statistical relevance. Kinetic traces also allow easy differentation between GPCR response patterns, making the BD ACT*One* assay ideal for receptor deorphanization.

BD ACT*One*™ Cell Lines

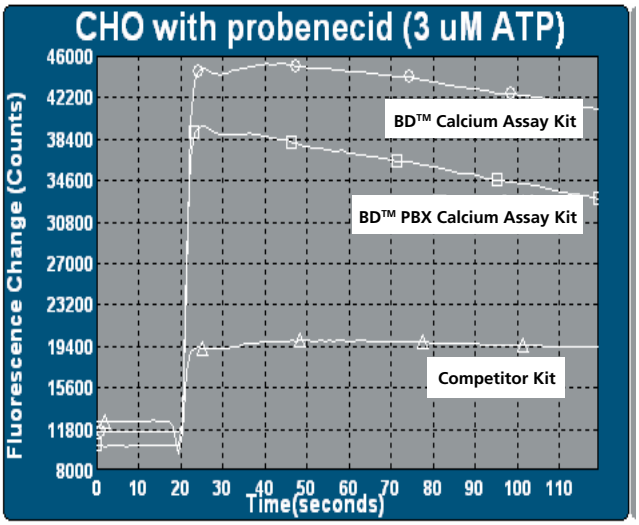
A patented CNG mutant gene was stably introduced into HEK-293 cells as a biosensor for intracellular cAMP in the presence of selected fluorescent dyes. The BD ACT*One* Cell Lines can be used to detect and quantitate free intracellular cAMP in real time, providing a kinetic or endpoint assay for both endogenous and exogenous GPCRs. BD Biosciences also offers a specially formulated fluorescent membrane potential dye that has been pharmacologically selected to minimize binding to a peptide or protein agonist. The dye can be used with the BD ACT*One* Assays or with other fluorescence-based membrane potential assays. Cell lines are available under an evaluation or screening license agreement.

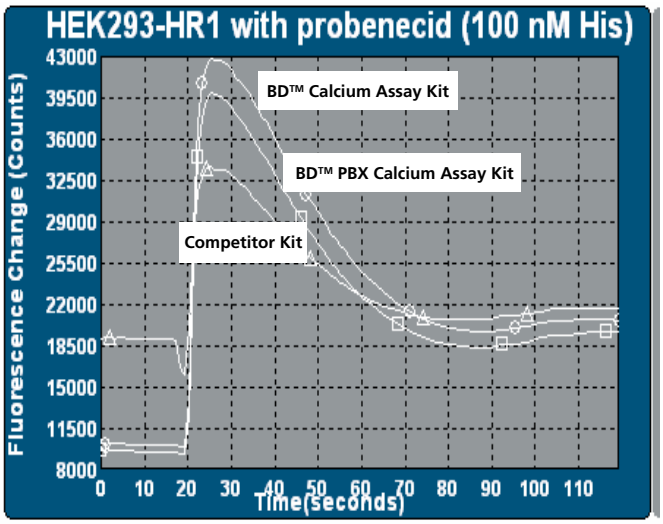
Description	Cat. No.
Endogenous Gs coupled Receptors – 2.5 x 10^6 cells each	
ß-adrenoreceptor (likely both ß1 & ß2)	341475
Adenosine A2b Receptor	341474
Prostaglandin E2 Receptor	341476
Transduced Gi-coupled Receptors – 2.5 x 10^6 cells each	
Adenosine A1 Receptor	341814
Adenosine A3 Receptor	341822
Cannabinoid Receptor 1 (CB1)	341811
Cannabinoid Receptor 2 (CB2)	344449
Chemokine (C-C motif) receptor 5 (CCR5)	344448
Dopamine Receptor D2 (DRD2)	341812
Glutamate Receptor, metabotropic 7 (mGluR7)	pls. inquire
Glutamate Receptor, metabotropic 8 (mGluR8)	344451
Melanin concentrating hormone Receptor 1 (MCHR1)	341823
Neuropeptide Y Receptor Y1 (NPY1R)	344869
Neuropeptide Y Receptor Y2 (NPY2R)	344870
Opioid Receptor, 1 (KOR)	344450
Somatostatin Receptor 5 (SSTR5)	341813
Sphingolipid GPCR 1	pls. inquire
Parental Cell line HEK-293 CNG	341467
GLAST (transfected with the GLAST gene, a glutamate/aspartate transporter) *	344443
BD ACT*One*™ Membrane Potential Dye Kits	
Volumes sufficient for 10 plates	341831
Volumes sufficient for 100 plates	341833

* *This cell line should be used as the parental control cell line for mGluR7 and mGluR8 cell lines.*

BD™ Calcium Dye Kits

- No-wash homogeneous assay format
- Higher signal over background compared to competitive kits
- PBX kit permits assays with reduced or no probenecid
- Ideal for all fluorescence-based calcium flux assays





Comparison of BD™ Calcium Assay kits with a competitive product used with CHO and HEK-293 cells in the presence of Probenecid. Both BD kits outperform a competitive product, providing significantly higher signal over background. The example on the right also shows the absence of an "addition artifact," a disadvantage seen using the competitive product.

BD Calcium Dye Kits have been optimized for detecting calcium flux in living cells. They provide increased signal-to-background in an easy-to-use no wash assay format. In most cases, the dye kits perform better than kits currently available on the market with no known interference to ligands (small molecules, peptide/proteins and lipids). Also, the "addition artifact" commonly seen in this application is significantly reduced with the new dye formulations. The BD kits can be used on different fluorescence-based readers for compound screening. In particular, the PBX-format is suitable for the BD ACTOne™ GPCR screening technology.

Some of the cell lines successfully used with the BD™ Calcium Dye Kits include:

- CHO cells
- HEK-293 cells
- Jurkat cells
- HeLa cells
- U2OS cells

Description	Cat. No.
For Standard Applications	
BD™ Calcium Assay Kit, volumes sufficient for 10 plates	640176
BD™ Calcium Assay Kit, volumes sufficient for 100 plates	640178
For Probenicid Sensitive Applications	
BD™ PBX Calcium Assay Kit, volumes sufficient for 10 plates	640175
BD™ PBX Calcium Assay Kit, volumes sufficient for 100 plates	640177

Plate formats can either be 96-, 384-, or 1536-well.

RELATED PRODUCTS

BD Falcon™ Black/Clear Bottom Assay Plates..... 174, 176
BD BioCoat™ Poly-Lysine Black/Clear Bottom Assay Plates..... 166

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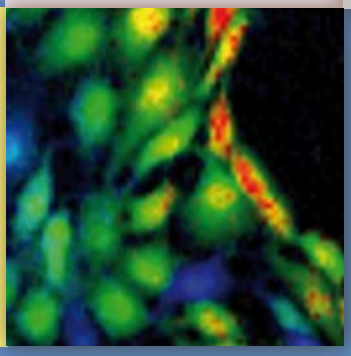
BD Biosciences



BD

Helping all people live healthy lives

Cell Biology & Drug Discovery
Product Catalog Supplement

Featuring the BD Falcon™, BD BioCoat™, and BD™ brand products

How to use this Catalog Supplement

BD Biosciences continuously releases new products. Since the printing of our latest "Cell Biology & Drug Discovery Product Catalog", several new BD Falcon™, BD BioCoat™ and BD Bioimaging Systems products have been introduced, while others were discontinued.

The BD Biosciences Cell Biology & Drug Discovery Product Catalog Supplement provides you with an overview of our latest product additions and information on product discontinuations.

At the beginning of this supplement you will find a list overview of all the changes (pages 6-8). The features of each of the new products are then described in more detail following the chapter structure of the existing catalog, which you are familiar with.

Page headlines and chapter color codes are the same as in the existing catalog, so that you can easily use the supplement in parallel with your existing product catalog.

Local contact information can be found on page 51 of this supplement.

BD Biosciences, August 2008.

Our Commitment to Quality

All BD Falcon™, BD BioCoat™ and BD™ Brand Reagent manufacturing sites are ISO 9000 registered. This certification verifies that our facilities meet international quality system standards. The quality system is routinely audited by a notified body to ensure a work environment that consistently maintains the highest standards. ISO compliance gives our customers an added level of assurance that BD Biosciences - Discovery Labware is totally committed to superior quality and continuous product improvement.

Copies of our certificates can be obtained by calling your local BD office.

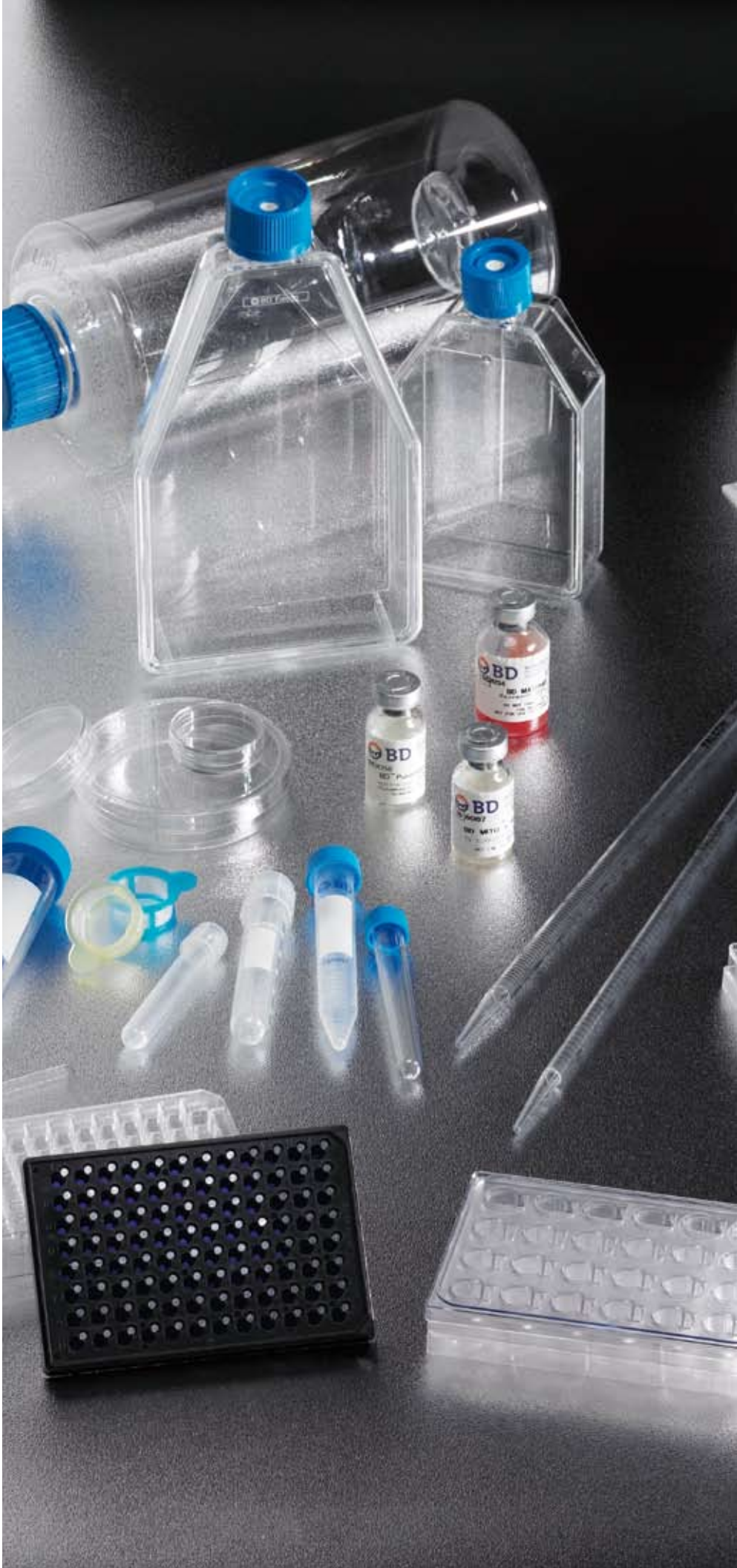
Trademarks

Cellerity and Tecan are trademarks of Tecan Group Ltd., Männedorf, Switzerland.
SelecT is a registered trademark of the Automation Partnership (Cambridge) Limited.

PRODUCTS ARE FOR RESEARCH USE ONLY. NOT INTENDED FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES.

BD Biosciences

BD Biosciences, a leading provider of products and services for researchers and laboratory scientists around the world, offers integrated solutions for supporting the life sciences and accelerating the pace of discovery, development, and diagnosis. BD Biosciences is a business segment of BD (Becton, Dickinson and Company) and is built on BD's 100-year foundation of quality, reliability, and commitment to customers and business partners around the world. The four business units of BD Biosciences–Advanced Bioprocessing, Bioimaging Systems, Cell Analysis, and Discovery Labware provide customers with the brands they have known and trusted for years. From genes to proteins to cells, BD Biosciences provides a comprehensive portfolio of consumables, reagents, systems, and technical expertise to support the life sciences industry.



BD Biosciences - Discovery Labware

BD Biosciences - Discovery Labware develops, manufactures, and markets innovative products for cell biology, fluid handling, drug discovery, and ADME/Tox. BD Falcon™ Cultureware was the first developed tissue culture-treated plasticware that enabled scientists to grow cells *in vitro*. BD BioCoat™ was the first commercial, pre-coated cell cultureware, combining plastics with extracellular matrix proteins and attachment factors. These technological breakthroughs marked a new era in cell culture research by making the process more efficient and convenient for researchers. Recognized for its outstanding quality, consistency, and value for more than 50 years, BD Biosciences - Discovery Labware is committed to advancing cell biology research worldwide through excellence and innovation.

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BD Falcon™ Conical Tubes

- Meet bioanalytical-grade requirements and provide unsurpassed performance in critical research applications
- Exceptionally strong
- Easy on/off caps
- Easy-to-read graduations
- Consistent biological and physical properties

BD Falcon™ high-clarity conical tubes feature blue printing: dark blue graduations to help avoid eye strain, and a white writing patch that allows sample identification. For large fluid samples, use convenient 175 ml and 225 ml sizes. Made of durable polypropylene, these tubes allow for efficient large-scale laboratory centrifugation.

The 15 ml and 50 ml conical tubes are available in either bulk- or rack-packaged configurations. For the convenience of oriented, sterile product presentation, choose the recyclable, expanded polystyrene foam rack option. For applications that do not require the convenience of tubes in racks, choose the bulk-package option with 40% less packaging material.

The Workhorse of the Life Sciences Lab

Conical centrifuge tubes often assume a workhorse role; that is, they are continually in use and are subjected to high-stress laboratory conditions. Many scientists have come to rely exclusively on BD Falcon Tubes to meet the demands of today's busy laboratories. To meet this intense challenge, our tubes are designed for:

- **High strength:** State-of-the-art mold design, coupled with advanced resin selection, create tube walls that are engineered to perform under high-stress situations
- **Non-toxicity**: Resins are selected via an intense array of U.S. Pharmacopoeia (USP) toxicity tests
- **Low protein binding:** Our engineers and scientists are continually searching for materials and processes that minimize labware-induced interference, such as protein binding
- **Quality packaging:** BD Falcon Tubes, in addition to offering bioanalytical-grade performance, use medical-style packaging to better assure sterile presentation

NEW BD Falcon™ Tubes with Flip-Top Cap

The BD Falcon 50 ml Conical Tube with Flip-Top Cap is ideal for any research applications requiring one-handed operations to open and close the cap.

It also allows researchers to avoid having to remove the cap and either hold it, or place it on a surface away from the tube, before dispensing the contents of the pipet. This novel design saves time and effort in applications requiring multiple aliquoting, storage, and pouring from the same tube, while maintaining the same superior quality and performance of our standard screw-cap closure.

- Hinged cap and thumb grip design enable simple, sterile one-hand manipulation
- Innovative splash guard eliminates risk of splatter
- Engineered to perform under high stress and a broad range of temperatures
- Novel click-bead feature ensures a tight seal every time

15 ml capacity tubes

- Approximate dimensions: 17 mm O.D.; 120 mm length
- Sterilized by gamma irradiation and non-pyrogenic
- Dark blue printed graduations and white writing patch
- Polyethylene dome-seal screw cap offers positive seal over full circumference
- Rack can be separated into two sections

Description	RCF Rating*	Qty./Pack	Qty./Case	Cat. No.
15 ml/High Clarity Polypropylene	6000	50/bag**	500	**352196**
	6000	125/bag	500	**352096**
	6000	50/rack	500	**352097**
15 ml/Polystyrene	1800	125/bag	500	**352095**
	1800	50/rack	500	**352099**

50 ml capacity tubes

- Approximate dimensions: 30 mm O.D.; 115 mm length
- Sterilized by gamma irradiation and non-pyrogenic
- Dark blue printed graduations and white writing patch
- Polyethylene flat-top screw cap allows one hand manipulation and provides a level writing area
- Modified polystyrene offers improved stress resistance

Description	RCF Rating*	Qty./Pack	Qty./Case	Cat. No.
50 ml/High Clarity Polypropylene	9400	25/bag	500	**352070**
NEW **50 ml/High Clarity Polypropylene with Flip-Top Cap**	9400	22/bag	440	**352077**
	9400	25/rack	500	**352098**
50 ml/Modified Polystyrene	2000	25/bag	500	**352073**
	2000	25/rack	500	**352074**
Screw caps for 50 ml tubes	-	50	1000	**358206**

175 ml and 225 ml capacity tubes

- 175 ml capacity: approximate dimensions are 61 mm O.D.; 118 mm length
- 225 ml capacity: approximate dimensions are 61 mm O.D.; 137 mm length
- Sterilized by gamma irradiation
- Molded graduations
- Polyethylene plug-seal screw cap

Description	RCF Rating*	Qty./Pack	Qty./Case	Cat. No.
175 ml/Polypropylene	7500	8/bag	48	**352076**
225 ml/Polypropylene	7500	8/bag	48	**352075**

Accessories for 175 ml and 225 ml capacity tubes

Description	Qty./Case	Cat. No.
Cushions for Cat. Nos. 352076, 352075 (with extractor), non-sterile	8	**352090**

* *RCF claims refer to Relative Centrifugal Force measured in g-force for materials with a specific gravity of 1.0, used in an appropriate rotor with correct cushion and safety precautions. Tubes used with organic solvents at temperatures below 0°C may have lower RCF ratings.*

** *Includes one free empty rack*

TIPS

- When marking all BD Falcon tubes, black ink Sharpie® pens are the most resistant to alcohol. Other colors tend to smudge.
- Racks for 15 and 50 ml BD Falcon™ Conical Tubes, including Flip-Top Cap Tubes are ideal for upright storage.
- Expanded polystyrene racks are not recommended for storage below 0°C.
- For overhead shaking on a special shaker, classical tubes should be preferred, while for repeated opening and closing, the Flip-Top Cap Tube is the tube of choice.

RELATED PRODUCTS

(pages of main catalog)

BD Falcon Cell Strainers 63
BD Falcon Round-Bottom Tubes 22

Page 36 of main catalog.

BD Falcon™ Cell Culture Flasks

- Vacuum-gas plasma tissue culture-treatment provides consistent cell attachment, spreading, and growth
- Choose standard tissue culture, BD Primaria,™ or non-treated polystyrene growth surfaces to meet your individual cell culture requirements

Tissue culture-friendly packaging

- Convenient reseal tab on the bag
- Innovative bag materials that will not scuff or scratch the flask's optical surface
- Double-wall bags provide increased sterility assurance
- Medical-style, peel-open bags guarantee that flask sterility is maintained
- Recyclable bag material (Low Density Polyethylene)
- Knife not required for case opening

225 cm² Flasks

- Innovative shape permits access to all corners with a pipet or scraper
- Patented Locking Incubation Position prevents caps from falling off or closing while in the open position
- Plug-seal or vented cap available
- Precision engineered cap spins on quickly
- Skirted, canted neck adds stability to neck area of flask
- Large frosted writing area
- Vertical graduations up to 400 ml
- 100 ml maximum horizontal working volume line

Low profile 150 cm² Flasks

- Low profile for efficient stacking and incubator utilization
- Patented Locking Incubation Position prevents caps from falling off or closing while in the open position
- Precision engineered cap spins on quickly
- Innovative shape permits access to all corners with a pipet or cell scraper

NEW BD Falcon™ Automated Cell Culture Flasks

- Designed for use with the Tecan® Cellerity™, providing an automated solution for cell culture

BD Biosciences offers the largest selection of flask sizes ranging from 12.5 cm² to 300 cm². Our newest addition, the BD Falcon™ Automated Cell Culture Flask, is validated for use with the Tecan® Cellerity™ Cell Maintenance and Assay System. By combining the reliability of BD Falcon with the Tecan Cellerity, BD Biosciences and Tecan now offer a high-quality, fully automated cell culture solution. As with all BD Falcon flasks, the BD Falcon Automated Cell Culture Flask is manufactured in an ISO 9000 certified facility and tested to rigorous specifications.

BD Falcon™ Automated Cell Culture Flask

- Sterile
- Non-pyrogenic
- Enables consistent cell attachment on vacuum gas plasma tissue culture treated surfaces
- Accurate volumetric graduation (±5% of volume)
- Meets stringent requirements for flatness of optical growth surface
- Optically clear virgin polystyrene, tested to USP Class VI
- Packaged in a double-wall, scratch resistant bag

Features and Benefits

- Standard, stocked item
- Unique bar code on every flask
- Removable septum cap for manual access
- Septum cap ensures sterility through over 10 piercings
- Supplied with a 0.2 µm membrane for consistent gas exchange and protection against contamination
- Total cell growth surface area: 94 cm²

BD Falcon™ Cell Culture Flasks

- Sterilized by gamma irradiation
- Non-pyrogenic
- Volumetric graduations and writing patch
- Vented caps incorporate a 0.2 µm hydrophobic membrane
- Phenolic caps contain non-toxic liners
- Manufactured under a registered ISO 9001 Quality System
- Growth area and volume are nominal

Description	Cap Style	Qty./Case	Cat. No.
12.5 cm² Canted Neck **Total Volume: 25 ml** **Qty.: 10/bag**			
Standard TC*	Plug-seal	100	**353018**
Standard TC	Vented	100	**353107**
25 cm² Canted Neck **Total Volume: 50 ml** **Qty.: 20/bag**			
Standard TC	Plug-seal	200	**353014**
Standard TC	Vented	100	**353108**
BD Primaria™ TC	Plug-seal	200	**353813**
BD Primaria TC	Vented	100	**353808**
25 cm² Canted Neck **Total Volume: 70 ml** **Qty.: 20/bag**			
Standard TC	Plug-seal	200	**353082**
Standard TC	Vented	100	**353109**
Standard TC	Phenolic	200	**353081**
Non-treated	Plug-seal	200	**353009**
75 cm² Straight Neck **Total Volume: 250 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	100	**353024**
Standard TC	Vented	100	**353110**
Standard TC	Phenolic	100	**353023**
BD Primaria TC	Plug-seal	100	**353824**
BD Primaria TC	Vented	100	**353810**

**TC = Tissue Culture*

Description	Cap Style	Qty./Case	Cat. No.
75 cm² Canted Neck **Total Volume: 250 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	60	**353135**
Standard TC	Vented	60	**353136**
Standard TC	Phenolic	60	**353134**
Non-treated	Plug-seal	60	**353133**
NEW 94 cm² Automated Cell Culture Flask **Compatible with robotic cultivation systems, e.g. the Tecan® Cellerity™ Cell Maintenance and Assay system.** **Total volume: 47 ml** **Qty.: 20/bag**			
Standard TC	Septum Cap	80	**353142**
150 cm² Canted Neck **Total Volume: 600 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	40	**355000**
Standard TC	Vented	40	**355001**
175 cm² Straight Neck **Total Volume: 750 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	40	**353028**
Standard TC	Vented	40	**353112**
Standard TC	Phenolic	40	**353045**
Bar-Coded 175 cm² Straight Neck **Compatible with robotic cultivation systems, e.g. the Automation Partnership's SelecT™** **Total Volume: 750 ml** **Qty.: 5/bag**			
Standard TC	Vented	40	**353118**
225 cm² Canted Neck **Total Volume: 800 ml** **Qty.: 5/bag**			
Standard TC	Plug-seal	30	**353139**
Standard TC	Vented	30	**353138**
300 cm² Straight Neck **Total Volume: 1900 ml** **Qty.: 1/bag**			
Standard TC	Plug-seal	12	**353099**
Standard TC	Vented	12	**353113**

TIPS

- Use BD Falcon™ non-treated cell culture flasks for suspension cultures.
- For enhanced cell performance, BD BioCoat™ Flasks are available with pre-applied matrix proteins. (*See Chapter 6*)

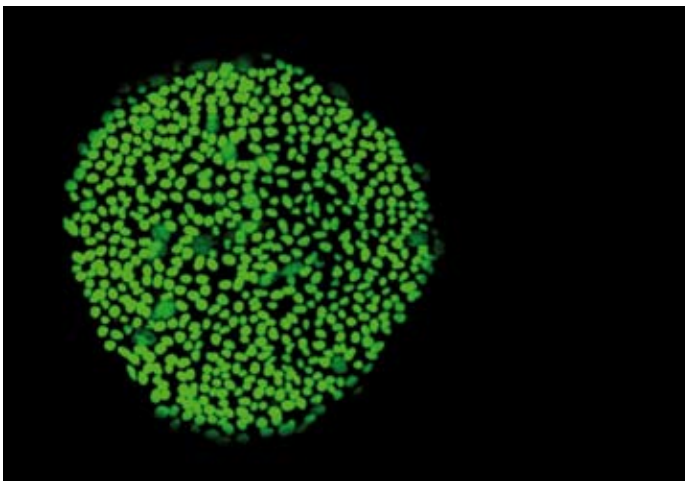
An additional new Cell Environment, to be inserted after page 77 of main catalog.

BD Biosciences Stem Cell Environment

BD Biosciences, StemCell Technologies, and the WiCell™ Research Institute have established a strategic collaboration to develop optimized, feeder-independent cell culture environments for human embryonic stem (hES) cell research, including serum-free defined media and qualified surfaces. Through the strength of this collaboration, BD Biosciences and StemCell Technologies will provide products that are superior in quality, performance and reliability in order to facilitate and standardize the field of hES cell research.

Starting in summer 2008, all vialed BD Matrigel™ Matrix products are derived from an LDEV-free source. For details see page 17.

mTeSR™1 and BD Matrigel™ hESC-qualified Matrix, a high quality medium and surface combination, create the first complete environment to support feeder-independent expansion of hES cells:



mTeSR1 Maintenance Medium for Human Embryonic Stem Cells

- Feeder-Independent
- WiCell Formulation
- Serum-Free
- Defined

NEW BD Matrigel™ hESC-qualified Matrix

- Qualified as mTeSR™1-Compatible
- No Pre-Screening Required

Together, mTeSR1 and BD Matrigel help researchers:

- Eliminate variability associated with feeder-dependent cultures
- Increase efficiency by avoiding the maintenance of feeder cells
- Reduce time and costs associated with screening medium components
- Ensure high quality, reliability, and reproducibility with defined, qualified components
- Culture hES cells under standardized conditions

Description	Qty.	Cat. No.
NEW BD Matrigel™ hESC-qualified Matrix		
	5 ml	**354277**

Quality Control:
Qualified for the use with StemCell Technologies, Inc. mTeSR™1 medium. Human embryonic stem cells were grown in mTeSR1 on BD Matrigel hESC-qualified Matrix-coated plates for five passages and remained undifferentiated (by standard criteria such as morphology and surface marker expression).
Tested for the absence of bacteria, fungi and mycoplasma.
0.03 endotoxin units/mL (by Limulus Amoebocyte Lysate Assay).
Tested for ability to gel quickly and maintain this form with culture medium for a period of 14 days at 37°C.
Biological activity is determined for each lot using a neurite outgrowth assay. Chick dorsal root ganglia are plated on a 1.0 mm layer of Matrigel matrix.

Storage and Stability:

Stable for a minimum of three months from day of shipment when stored at -20°C Stable for a minimum of six months when stored in aliquots at -70°C.

For information on LDEv-free Matrigel, please refer to page 17 of this supplement.

RELATED PRODUCTS

BD Matrigel Matrix 6-well plates for hESC Culture.....16 supplmt.

REFERENCES:
1. Ludwig T.E., et al., Feeder-independent culture of human embryonic stem cells, Nature Methods **3** (8):637-46 (2006).
2. Thomson, J.A., et al., Embryonic stem cell lines derived from human blastocysts, Science **282**:1145 (1998).
3. Xu, C., et al., Feeder-free growth of undifferentiated human embryonic stem cells, Nature Biotechnology **19**:971-4 (2001).
4. Xu, C., et al., Immortalized fibroblast-like cells derived from human embryonic stem cells support undifferentiated cell growth, Stem Cells **22**:972-80 (2004).
5. Ludwig, T.E., et al., Derivation of human embryonic stem cells in defined conditions, Nature Biotechnology, **24**:185-7 (2006).
6. Amit M., et al., Clonally derived human embryonic stem cell lines maintain pluripotency and proliferative potential for prolonged periods of culture, Dev Biol. **227**:271-8, (2000).
7. Draper, J.S., et al., Surface antigens of human embryonic stem cells: changes upon differentiation in culture, Journal of Anatomy, **200**:249-258.

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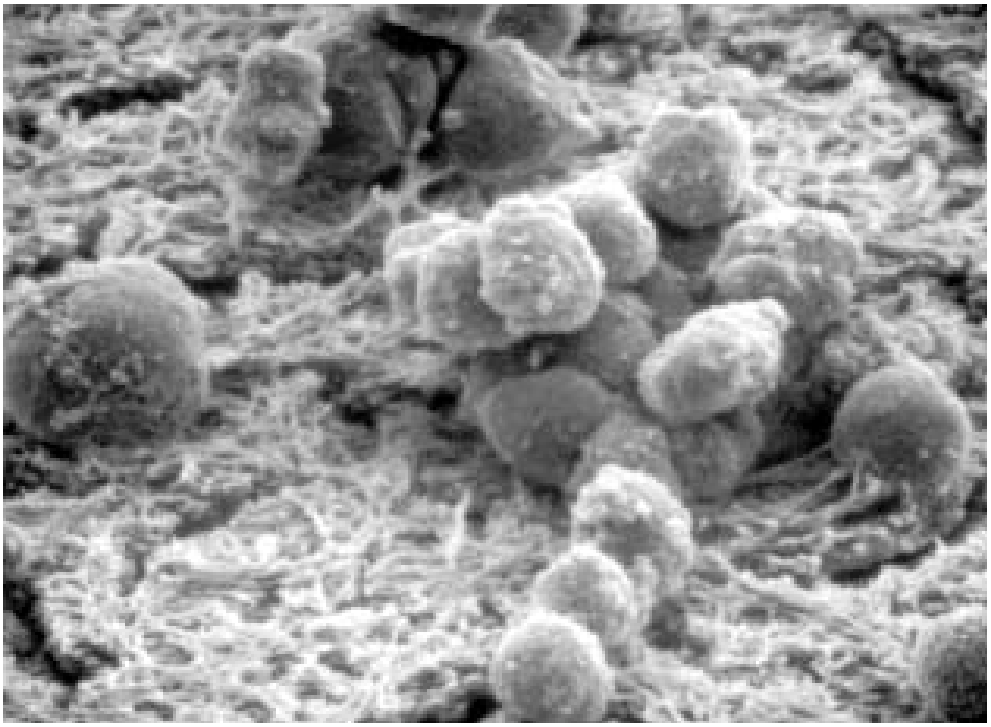
BD BioCoat™ Matrigel™ Matrix Cellware

- A three-dimensional model of basement membrane that promotes differentiation of a variety of cell types, especially epithelial, endothelial, muscle, and neuronal cells



BD Matrigel™ Basement Membrane Matrix
Scanning electron micrograph of hepatocytes cultured for two days on BD Matrigel Matrix.

BD Matrigel Matrix is a reconstituted basement membrane isolated from the Engelbreth-Holm-Swarm (EHS) mouse sarcoma, a tumor rich in extracellular matrix proteins. This matrix is composed of laminin, collagen IV, entactin (nidogen), and heparan sulfate proteoglycan (perlecan). Growth factors, collagenases, plasminogen activators, and other undefined components have also been reported to be found in BD Matrigel Matrix.[1]

Starting in summer 2008, all vialed and coated BD Matrigel Matrix products are derived from an LDEV-free source. For details see page 17.

BD BioCoat™ Matrigel™ Matrix Cellware applications include:

- Elicitation of tissue-specific cellular morphology and protein production in epithelial cells
- Differentiation of endothelial, muscle, and neuronal cells
- Development of three-dimensional matrix model systems

The following cell types have been cultured on BD BioCoat™ Matrigel™ Cultureware:

- Parotid acinar cells[2]
- Myogenic cells[3]
- Sertoli cells[4]
- Human umbilical vein endothelial cells (HUVECs)[5]
- Mammary epithelial cells[6]
- Hybrid eosinophil/basophil granulocytes[7]
- Rat hepatic sinusoidal endothelial cells[8]
- Lacrimal gland epithelial cells[9,10]
- Rat brain microvessels[11]
- Buccal epithelial cells[19]
- Hepatocytes[20]

The following cell types have been cultured on BD BioCoat™ Matrigel™ Thin-Layer Cultureware:

- Skeletal myotubes[12]
- Bile duct epithelial cells[13]
- Rat muscle cells[14]
- Rat uterine epithelium[15]
- NTera2 cells[16]
- Vascular smooth muscle cells[17]
- Aortic endothelial cells[18]

REFERENCES:
1. Vukicevic, S., et al., Exp. Cell Res. **202**:1 (1992).
2. Yeh, C-K., et al., In Vitro Cell. Dev. Biol. **27A**:707 (1991).
3. Hartley, R.S. and Yablonka-Reuveni, R., In Vitro Cell. Dev. Biol. **26**:955 (1990).
4. Dym, M., et al., Endocrin. **128**(2):1167 (1991).
5. Grant, D.S., et al., In Vitro Cell. Dev. Biol. **27A**:327 (1991).
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9. Yoshino, K., et al., Exp. Cell Res. **220**:138 (1995).
10. Sullivan, D.A., et al., J. Immun. **145**(12):4238 (1990).
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16. Younkin, D.P., et al., Proc Natl. Acad. Sci. USA **90**:2174 (1993).
17. Absher, M. and Baldor, L., In Vitro Cell. Dev. Biol. **27A**:25 (1991).
18. Diamond, L.E., et al., Transplantation **61**(8):1241 (1996).
19. Munro, C., et al., J. Biol. Chem. **280**(2):1051 (2005).
20. Fabrega, A., et al., Transplantation **62**(12):1866 (1996).

Further references for BD Matrigel Matrix are listed on page 125.

Source:

Engelbreth-Holm-Swarm (EHS) mouse tumor

Formulation:

Dulbecco's Modified Eagles' Medium with 50 µg/ml gentamycin. BD BioCoat™ Matrigel™ Matrix is compatible with all culture media.

Quality Control:

- BD BioCoat™ Matrigel™ Matrix Cellware is tested for ability to promote neurite outgrowth from chick dorsal root ganglia (in the absence of NGF)
- Tested and found negative for bacteria and fungi

Storage and Stability:

BD BioCoat Matrigel Matrix Cellware is stable for at least three months at –20°C. **Keep frozen until use.** BD BioCoat Matrigel Matrix Cellware, thin layer is stable for at least three months at 2-8°C.

NEW BD BioCoat™ Matrigel™ Matrix 6-Well Plates for hES Cell Culture

BD Biocoat™ Matrigel™ Matrix 6-well Plates for human Embryonic Stem Cell Culture offer an optimal surface for long-term propagation of human Embryonic Stem (ES) cells in the absence of feeder layers. A special coating of thin Matrigel combined with a suitable medium (e.g. mouse embryonic fibroblast conditioned medium) allows to propagate human ES cells while keeping them in an undifferentiated state. An optimized culture protocol together with pre-qualified reagents helps you to maintain highly standardized culture conditions and simultaneously save time compared to conventional feeder layer cultures.

The plate also works nicely for mouse ES cell culture.

For information on LDEV-free Matrigel Matrix, please refer to page 17 of this supplement.

REFERENCES for BD Matrigel Matrix 6-well plates for hES Cells:
1. Xu, C., et al., Nature Biotechnology **9**:971(2001).
2. Xu, C., et al., Stem Cells **22**:97 (2004).
3. Stojkovic, P., et al., Stem Cells **23**: 06(2005).
4. Sjögren-Jansson, E., et al., Developmental Dynamics **233**:1 04 (2005).
5. Xu, C., et al., Stem Cells **23**: 15 (2005a).
6. Wang, L., et al., Blood **105**:4598 (2005a).
7. Levenstein, M.E., et al., Stem Cells **24**:568 (2006).
8. Greenlee, A.R., et al., Toxicology In Vitro **19**: 89 (2005).
9. Lakshmipathy, U., et al., Stem Cells **22**:5 1 (2004).
10. Gerrard, L., et al., Stem Cells **23**:1 4 (2005).
11. Ren, C.P., et al., Acta Biochim Biophys Sin (Shanghai) **37**:68 (2005).
12. Zaehres, H., et al., Stem Cells **23**: 99 (2005).
13. Mallon, B.S., et al., Int. J. Biochem. & CellBiol. **38**:106 (2006).
14. Ludwig, T.E., et al., Nature Biotechnology, Brief Communications, January 2006.
15. Xu, R.H., et al., Nature Methods **2**:185 (2005b).
16. Wang, G., et al., Biochemical and Biophysical Communications **330**:9 4 (2005b).

Further references for BD Matrigel Matrix are listed on page 14 of the supplement.

BD BioCoat™ Matrigel™ Matrix Cellware

BD BioCoat Matrigel Matrix Cellware is a line of tissue culture vessels with a uniform application of BD Matrigel Matrix. This cellware is manufactured in a highly controlled environment and rigorously tested to assure product consistency and performance.

Description	Qty.	Cat. No.
NEW BD BioCoat™ Matrigel™ Matrix Plates for hES Cell Culture		
6-well	5	**354671**
BD BioCoat™ Matrigel™ Matrix Multiwell Plates		
6-well	2	**354432**
12-well	2	**354503**
24-well	2	**354433**
48-well	2	**354508**
BD BioCoat™ Matrigel™ Matrix Culture Dishes		
35 mm	8	**354460**
BD BioCoat™ Matrigel™ Matrix Thin-Layer Multiwell and Assay Plates		
6-well	5	**354603**
24-well	5	**354605**
96-well	5	**354607**
BD BioCoat™ Matrigel™ Matrix Thin-Layer Culture Dishes		
35 mm	20	**354602**
60 mm	20	**354601**
100 mm	10	**354600**
BD BioCoat™ Matrigel™ Matrix for Hepatocytes		
6-well plates	5	**354510**
100 mm culture dishes	5	**354634**

TIPS

SPECIAL HANDLING: Store BD BioCoat Matrigel Matrix Cellware at –20°C, thaw at 4°C overnight. Do not thaw in a warm waterbath. Plates must be thawed on a level surface in order for the BD BioCoat Matrigel Matrix to be evenly distributed. To form a stable gel, place the thawed plate at 35-37°C for 30 minutes. Do not refreeze plates.

Recover cells cultured on BD BioCoat Matrigel Matrix with BD™ Dispase (Cat. No. 354235) or BD Cell Recovery Solution (Cat. No. 354253).

RELATED PRODUCTS

(pages of main catalog)

BD BioCoat Matrigel Matrix Cell Culture Inserts 111
Vialed BD Matrigel Matrices 124
BD BioCoat Matrigel Invasion Chambers 74
BD BioCoat Angiogenesis Products 148
BD Dispase 126

Page 125 of main catalog.

For details on BD Matrigel™ hESC-qualified Matrix, please see page 14 of supplement.

NEW First BD Matrigel™ Matrix Products now LDEV-free

In 2007, BD Biosciences acknowledged the presence of lactate dehydrogenase elevating virus (LDEV) in several BD Matrigel™ products. After conducting a thorough investigation, we confirmed the presence of LDEV in the murine Engelbreth-Holm-Swarm (EHS) tumor from which the BD Matrigel products are derived.

It is important to note that LDEV is known to replicate only in a mouse macrophage subpopulation, that it cannot be practically cultured *in vitro*, and is not known to affect other species than mouse (cells or *in vivo*).

BD Biosciences immediately improved QC procedures to make sure that all products released for sales were tested negatively for LDEV (determined by PCR and infectivity testing).

Since mid-2008, BD Matrigel product is now derived from an EHS tumor source that has been tested and found negative not only for LDEV, but for a number of other pathogens as well. Our quality control testing has been expanded and is represented in a new Certificate of Analysis enclosed with every shipment.

The improved BD Matrigel product shows equivalent performance as our formerly offered BD Matrigel product. This was demonstrated by extensive functional validations. With improved raw material sourcing, manufacturing protocols have not been modified. The improved BD Matrigel is manufactured in an identical manner to the original product. The impact on your application is meant to be transparent and should not require any additional validation from end users.

Catalog numbers have not been changed.

Description	Qty.	Cat. No.
NEW BD Matrigel™ hESC-qualified Matrix		
	5 ml	**354277**

BD Matrigel™ Basement Membrane Matrix

Formulation: Dulbecco's Modified Eagle's Medium with 10 µg/ml gentamycin. Typical protein concentrations are between 9-12 mg/ml. BD Matrigel Matrix is compatible with all culture media.

	5 ml	**356234**
	10 ml	**354234**
	(5x10 ml) 50 ml	**356235**

BD Matrigel™ Matrix High Concentration (HC)

Formulation: Dulbecco´s Modified Eagle´s Medium with 10 µg/ml gentamycin. Typical protein concentrations are between 18-22 mg/ml. BD Matrigel Matrix HC is compatible with all culture media.

	10 ml	**354248**

BD Matrigel™ Matrix, Phenol Red-free

Formulation: Dulbecco's Modified Eagle's Medium (without phenol red) with 50 µg/ml gentamycin. Phenol Red-free BD Matrigel Matrix is compatible with all culture media.

Standard Concentration	10 ml	**356237**
High Concentration	10 ml	**354262**

Growth Factor Reduced (GFR) BD Matrigel™ Matrix

Formulation: Dulbecco's Modified Eagle's Medium with 50 µg/ml gentamycin. GFR BD Matrigel™ Matrix is compatible with all culture media.

Purification: Purified by the method of Taub, et al., reducing the level of heparan sulfate proteoglycan and several growth factors (e.g., EGF, bFGF, IGF-1, PDGF, and NGF, but not TGF-ß).

Standard Concentration	5 ml	**356230**
Standard Concentration	10 ml	**354230**
High Concentration	10 ml	**354263**

Growth Factor Reduced BD Matrigel™ Matrix, Phenol Red-free

Formulation: Dulbecco's Modified Eagle's Medium (without phenol red) with 50 µg/ml gentamycin. Phenol Red-free BD Matrigel Matrix is compatible with all culture media.

Purification: Purified by the method of Taub, et al., reducing the level of heparan sulfate proteoglycan and several growth factors (e.g., EGF, bFGF, IGF-1, PDGF, and NGF, but not TGF-ß).

	10 ml	**356231**

TIPS

BD™ Dispase (344235) is recommended to recover cells cultured on BD Matrigel Matrix; this also includes human embryonic stem cells, and other stem cell.

LDEV-free BD Matrigel Matrix products are safe to use for all experiments which require *in vivo* injection into mice.

Prior to preparation of gel, thaw BD Matrigel Matrix at 4°C overnight. Keep on ice until use. When preparing gel, use pre-cooled pipettes, plates, and tubes. BD Matrigel Matrix will gel rapidly at 22-35°C. (Caution: Gel may liquify if stored for several hours at 4°C).

RELATED PRODUCTS

(pages of main catalog)

BD BioCoat™ Matrigel™ Matrix Cellware 92
BD BioCoat Matrigel Matrix Cell Culture Inserts 111
BD BioCoat Matrigel Matrix Cell Environments 70,74,76
BD BioCoat Matrigel Matrix Plates for hES Cell Culture ..... 6 supplmt.

To be inserted on page 129 of main catalog.

BD Biosciences has introduced a new formulation of human Collagen I, offering a higher protein concentration and overall a higher amount of protein delivered. The new formulation shows excellent gelation properties, making it a reagent of choice for tissue culture coatings.

The product is delivered as a frozen liquid at low ionic strength.

Description	Qty.	Cat. No.
NEW BD™ Collagen I, human	10 mg	**354265**

Formulation:

Frozen in 2 mM hydrochloric acid.

Source:

Human placenta.

NOTE: Source material tested for hepatitis B antigen and HIV-1 antibody.

Quality Control:

- Electrophoretically homogeneous (SDS-PAGE)
- Shown to promote attachment and spreading of HT-1080 human fibrosarcoma cells
- Tested and found negative for bacteria, fungi, and mycoplasma

Instructions for Use:

Effective as a gel or thin coating at a recommended concentration of 0.2-2 µg/cm^2 of growth surface depending on cell type (guidelines for coating included with product).

Storage and Stability:

Stable for at least three months at -20°C. Avoid multiple freeze-thaws.

TIP

Human Collagen I 354265 is also avalaible for custom coating.

RELATED PRODUCTS

(pages of main catalog)

BD BioCoat™ Collagen I Cellware 84
BD BioCoat Collagen I Cell Culture Inserts 115,116
BD 3D Collagen Composite Scaffolds 118

RELATED PRODUCTS

(pages of main catalog)

BD 3D Calcium Phosphate Scaffolds 116
BD BioCoat Osteologic™ Bone Cell Culture System 94

To be inserted after page 133 of main catalog.

NEW Osteopontin

Osteopontin is found in a number of tissues, including bone, placenta, distal tubules of the kidney, and the central nervous system. Osteopontin is expressed in early bone development, at high levels at sites of bone remodeling, and has been implicated in the process of osteogenesis. Osteopontin is chemotactic for macrophages, smooth muscle cells, endothelial cells, and glial cells. In culture, osteopontin is used as an adhesive substrate for tumor cell lines and osteoclasts.

Description	Qty.	Cat. No.
NEW Osteopontin, human	50 µg	**354256**

Formulation:

Frozen in Dulbecco's PBS

Source:

Human breast milk

Quality Control:

Filtered (0.2 µm membrane), tested, and found negative for bacteria, fungi, and mycoplasma

Instructions for use:

Used as an adhesive substrate (guidelines for coating included with product)

Storage and Stability:

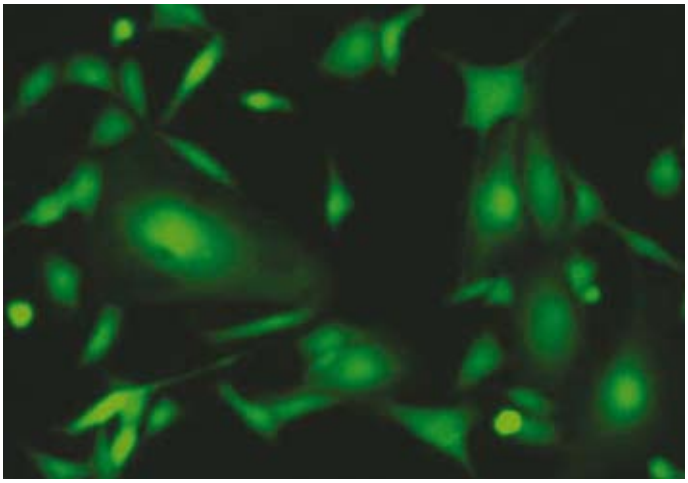
Stable for at least three months from date of shipment when stored at -70°C

REFERENCES for Osteopontin:
1. Rangaswami, H., et al., Trends in Cell Biol., **16**:79 (2006).
2. Johnson, G.A., et al., Biol. of Reprod., **69**:1458 (2003).
3. Yokosaki, Y., et al., Matrix Biol., **24**:418 (2005).
4. Denhardt, D.T., et al., J. Clinical Invest., **107**:1055 (2001).
5. Senger, D.R., et al., Am. J. Pathol., **149**:293 (1996).
6. Mazzali, M., et al., Q.J. Med., **95**:3 (2002).
7. Senger, D.R., et al., Biochim. Biophysics Acta, **996**:43 (1989).

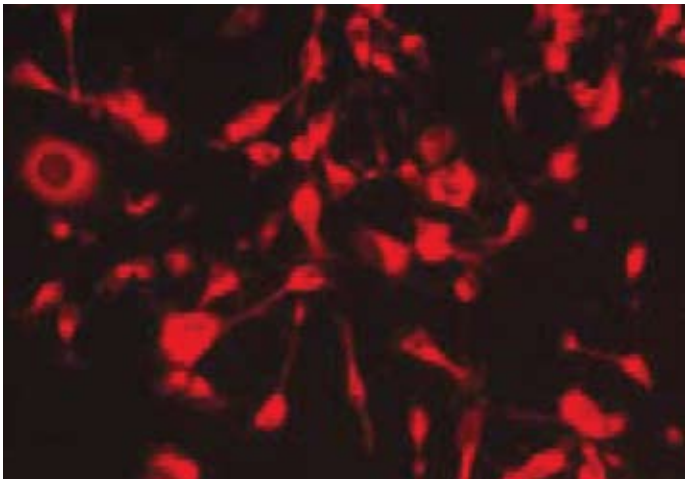
Accessory reagents for BD Falcon™ FluoroBlok™ insert Systems, BD BioCoat™ Angiogenis and Tumor Invasion Systems, to be added inserted page 155 of main catalog.

NEW BD™ Fluorescent Dyes

- Efficiently label your cells when performing cell migration, cell invasion, and endothelial cell tubulogenesis studies



MDA-MB-231 breast adenocarcinoma cells stained with BD™ Calcein AM Fluorescent Dye.



NG-108 neuroblastoma cells stained with BD™ $DiIC_{12}(3)$ Fluorescent Dye.

Fluorescent dyes are commonly used for the detection of live cells and key functional activities in a variety of cell-based assays. The fluorescent dyes, calcein acetoxymethylester (calcein AM) and $DiIC_{12}(3)$, can be used with BD Falcon™ FluoroBlok™ Cell Culture Inserts and Insert Systems to label cells when performing analyses such as tumor cell invasion, endothelial cell migration, endothelial cell tubulogenesis, and other cell-based assays.

The cell viability indicator calcein AM is a non-fluorescent, cell permeant compound that is hydrolyzed by intracellular esterases into the fluorescent anion calcein. BD™ Calcein AM Fluorescent Dye can be used to fluorescently pre- and post-label viable cells to perform kinetic and endpoint experiments, respectively. $DiIC_{12}(3)$ is a lipophilic neuronal tracer that is commonly used for the labeling of neuronal projections as well as lipid bilayers in other cell types. Since $DiIC_{12}(3)$ exhibits low toxicity and minimal effects on cell viability, this dye can be used to pre-label cells for a variety of applications. BD™ $DiIC_{12}(3)$ Fluorescent Dye can be used to fluorescently label viable cells for assays such as tumor cell invasion or endothelial cell migration. Moreover, cells are known to tolerate different fluorescent dyes for varying amounts of time in culture. While cells labeled with calcein AM should be exposed to the dye for less than eight hours, $DiIC_{12}(3)$ can be used for several days in culture without adversely affecting cells.

Description	Qty.	Cat. No.
BD™ Fluorescent Dyes		
NEW BD™ Calcein AM	50 µg	354216
NEW BD™ Calcein AM	1 mg	354217
NEW BD™ $DiIC_{12}(3)$	100 mg	354218

RELATED PRODUCTS

(pages of main catalog)

A new 96-well insert system for HTS permeability testing, to be inserted after page 161 of main catalog.

NEW BD Gentest™ Pre-Coated PAMPA Plate System

- A 96-well insert system with a filter plate pre-coated with structured layers of phospholipids

Features:

- Stable, pre-coated 96-well PAMPA plate is highly reproducible
- Ready to use
- Improved assay predictability over traditional PAMPA assays
- Reduced mass retention of compounds

Drug compounds are screened for their oral absorption potential early in the drug discovery process in order to eliminate poor performers and to identify candidates that need to be modified. Parallel artificial membrane permeability assays (PAMPA) have become a very useful tool for predicting *in vivo* drug permeability and are well-suited as a ranking tool for the assessment of compounds with passive transport mechanisms. Use of the PAMPA assay allows for ranking of compounds into a low or high classification, using UV VIS spectroscopy or LC/MS.

The BD Gentest™ Pre-Coated PAMPA Plate System is a 96-well insert system with a filter plate that has been pre-coated with structured layers of phospholipids and a matched receiver microplate. The BD Gentest Pre-coated PAMPA Plate System has been validated for use in PAMPA and comes ready to use in your assay.

Product Performance

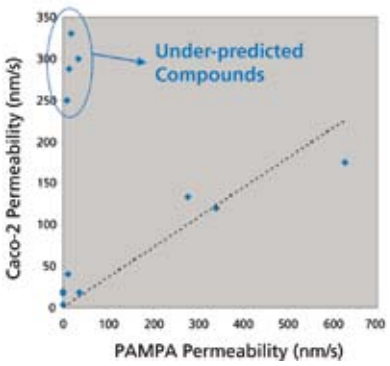
Studies of commercially available compounds demonstrated excellent correlation between permeability and human absorption. Highly absorbed compounds (i.e., antipyrine, caffeine, naproxen, ketoprofen), typically under-predicted by traditional PAMPA, demonstrated high permeability (better prediction) with the BD Gentest PAMPA Plate System.

Product Specifications

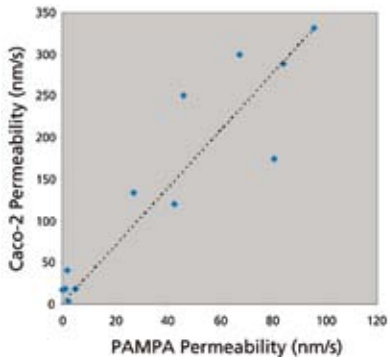
Design and Materials:

• Microplate type	96-well microplate configuration complies with ANSI standards
• Filter plate	Polystyrene with 0.4 µm Polyvinylidene fluoride (PVDF) membrane
• Filter plate lid	Polystyrene
• Receiver microplate	Polystyrene
Pre-coated filter plate compatibility:	Verified compatibility with 5% DMSO and 20% methanol
Automation compatibility:	Suitable for use with most liquid handling equipment
Quality control:	PAMPA assay performed using a set of standard compounds

Improved Correlation with Caco-2 Data



Traditional PAMPA Membrane

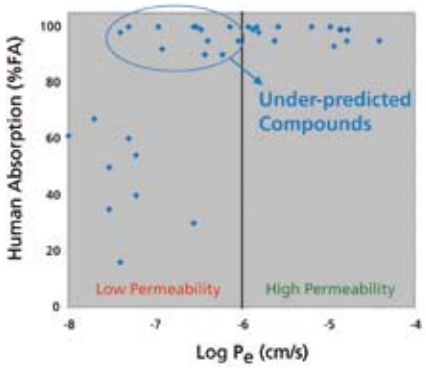


BD Gentest™ PAMPA Membrane

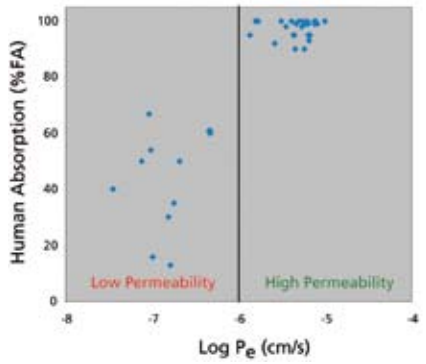
Comparison of the performance of the traditional PAMPA membrane and the BD Gentest™ PAMPA membrane by analyzing the correlation of the permeability data with the Caco-2 permeability data for a set of 11 compounds. The permeability data of the traditional PAMPA membrane and the Caco-2 permeability data were cited from *Balimane et al. Current Industrial Practices of Assessing Permeability and P-Glycoprotein Interaction. AAPS Journal. 2006; 8(1): E1-E13;* and other publications from the same laboratory. The permeability data of the new PAMPA membrane were obtained using UV VIS measurements; both donor and acceptor buffers were PBS, pH 7.4; and the PAMPA plate system was incubated at room temperature without agitation. The underpredicted compounds circled include: naproxen, antipyrine, caffeine, ketoprofen.

Description	Qty.	Cat. No.
NEW BD Gentest™ Pre-coated PAMPA Plate System		
96-well	5	**353015**

Improved Correlation with Human Absorption



Traditional PAMPA Membrane



BD Gentest™ PAMPA Membrane

Comparison of the performance of the traditional PAMPA membrane and the BD Gentest PAMPA membrane by analyzing the correlation of the permeability data with the human absorption data for a set of 38 compounds. The permeability data of the traditional PAMPA membrane and the human absorption data were cited from *Ruell et al., A Simple PAMPA Filter for Passively Absorbed Compounds, Poster, ACS National Meeting, Boston, August 2002.* The permeability data of the new PAMPA membrane were obtained using UV VIS measurements; both donor and acceptor buffers were PBS, pH 7.4; and the PAMPA plate system was incubated at room temperature without agitation.

Quality Control:

PAMPA assay performed using a set of standard compounds.

Storage and Stability:

Product is shipped on dry ice. Upon receipt, store immediately at -20°C. Stable for at least one year from date of shipment.

TIP

When using the BD Gentest Pre-Coated PAMPA Plate System, quickly remove the number of plates you need, and readily put the remaining ones at -20° C again.

RELATED PRODUCTS

(pages of main catalog)

BD BioCoat™ HTS Caco-2 Assay System 160

Page 164 of main catalog.

BD BioCoat™ Cellware 96-, 384- and 1536-well Microplates

- Available with bar coding and bulk packaging
- Improve attachment of transfected cell lines and increase assay reproducibility

BD BioCoat™ 96- and 384-well Microplates
BD BioCoat Microplates are coated in a highly controlled manufacturing environment.

BD BioCoat™ Microplates

BD Biosciences offers a wide selection of microplates for cell-based fluorescence, luminescence, colorimetric, and radiometric assays. BD BioCoat Cellware has been found to dramatically improve cell adherence when transfected cells are subjected to high throughput sample processing. BD BioCoat Collagen I and Poly-Lysine microplates contribute to the reliability of high throughput transfection analyses by providing optimal conditions for cell attachment and growth. Depending on cell types used in the assay, special biological effects can be achieved by the use of Collagen IV, Fibronectin, Laminin and Laminin/Fibronectin coatings. Plates are coated in a highly controlled, asceptic manufacturing environment to ensure lot-to-lot consistency, assay reproducibility, and contamination control.

BD BioCoat™ Microplates feature:

- Room temperature stability (Collagen I, Gelatin, and Poly-Lysine coatings)
- Ready-to-use convenience
- Quality assurance testing
- Lot-to-lot consistency

Culture Substrates for Transfected Cells

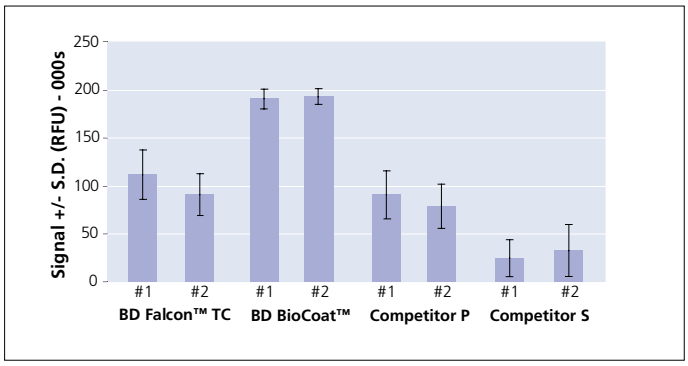
Cell Attachment Substrate	Cell Type
BD BioCoat Poly-D-Lysine	HEK-293 293 EBNA Cardiomyocyte Human Astrocytoma (1321N1) Mouse Pituitary (AtT-20) Pancreatic Islet (RIN-m) COS-7
BD BioCoat Poly-L-Lysine	HEK-293 PC12
BD BioCoat Collagen I	HEK-293 PC12 CHO SR-3T3
BD BioCoat Fibronectin	Pancreatic Tumor (AR42J) COS-7
BD Cell-Tak™ Cell and Tissue Adhesive	HEK-293 L9 Mouse Fibroblasts

* *For more information on BD BioCoat products, please visit our catalog chapter 6.*

Improved HEK-293 Cell Adhesion Post-Transfection with BD BioCoat™ Assay Plates

Transfected HEK-293 cells exhibit poor adhesion to tissue culture-treated 96-well assay plates following multiple washes (top row). In contrast, these cells exhibit strong attachment to BD BioCoat™ Poly-D-Lysine 96-well assay plates following vigorous washing (bottom row).

Convenient 80 plates/case and 20 plates/sleeve Bulk Packaging



Mean Signal Comparison of Cells Seeded on Various Collagen I Coatings
A signal comparison of BD BioCoat versus competitor plates on Collagen I 96-well Clear plates shows that BD BioCoat plates exhibit better cell attachment, demonstrating performance quality and consistency. The collagen plates were tested for signal from Calcein AM-labeled HT-1080 cells seeded at 50,000 cells/well one hour after seeding in serum-free medium and hand-washing.

Applications Include

- Calcium flux assays
- Reporter gene assays
- Ion channel activity
- Receptor binding
- Neurite outgrowth
- Cytotoxicity testing
- Apoptosis assays
- Cell adhesion kinetics
- Cell proliferation assays

RELATED PRODUCTS

(pages of main catalog)

BD Cell Tak™ Cell and Tissue Adhesive 127
Full selection of BD BioCoat Cellware 78

BD BioCoat™ 96-well Microplates

Description	Coating	Lid	Working Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
Clear	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354407
Clear	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356407
Clear	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	20	80	356698
Clear	Collagen IV	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354429
Clear	Fibronectin	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354409
Clear	Gelatin	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354689
Clear	Gelatin	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356689
Clear	Laminin	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354410
Clear	Laminin/Fibronectin	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354670
Clear	Laminin/Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354596
Clear	Laminin/Poly-L-Ornithine	Yes	120 µl	Flat-Bottom	A12/H12	1	5	354657
Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354461
Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356461
Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	20	80	356690
Clear	Poly-L-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354516
Clear	Poly-L-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356516
White	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354519
White	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356519
White	Collagen I	Yes	120 µl	Flat-Bottom	A12/H12	20	80	356699
White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	5	354620
White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	5	50	356620
White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A12/H12	20	80	356691
Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	5	5	354649
Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	5	50	356649
Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	20	80	356700
Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	5	5	354640
Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	5	50	356640
Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	20	80	356692
White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	5	5	354650
White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	5	50	356650
White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1/H1	20	80	356701
White/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	5	5	354651
White/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	5	50	356651
White/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1/H1	20	80	356693

The following Technical Bulletin is available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
454	BD BioCoat™ Plates for High Throughput Screening (HTS)

BD BioCoat™ 384-well Microplates

	Description	Coating	Lid	Working Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
	Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354666
NEW	Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	5	5	354831
	Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356666
NEW	Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	5	50	356831
	Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356704*
NEW	Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	20	80	356931*
	Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354662
NEW	Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	5	5	354835
	Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356662
NEW	Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	5	50	356835
	Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356696*
NEW	Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	20	80	356935*
	White	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354665
NEW	White	Collagen I	Yes	120 µl	Flat-Bottom	A1	5	5	354834
	White	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356665
NEW	White	Collagen I	Yes	120 µl	Flat-Bottom	A1	5	50	356834
	White	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356703*
NEW	White	Collagen I	Yes	120 µl	Flat-Bottom	A1	20	80	356934*
	White	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354661
NEW	White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	5	5	354838
	White	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356661
NEW	White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	5	50	356838
	White	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356695*
NEW	White	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	20	80	356938*
	Black/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354667
NEW	Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	5	5	354832
	Black/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356667
NEW	Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	5	50	356832
	Black/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356705
NEW	Black/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	20	80	356932
	Black/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354663
NEW	Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	5	5	354836
	Black/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356663
NEW	Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	5	50	356836
	Black/Clear	Poly-D-Lysine	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356697
NEW	Black/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	20	80	356936
	White/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354664
NEW	White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	5	5	354833
	White/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356664
NEW	White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	5	50	356833
	White/Clear	Collagen I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356702*
NEW	White/Clear	Collagen I	Yes	120 µl	Flat-Bottom	A1	20	80	356933*
	White/Clear	Poly-D-Lysine I	Yes	90 µl	Flat-Bottom	A1/P1	5	5	354660
NEW	White/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	5	5	354837
	White/Clear	Poly-D-Lysine I	Yes	90 µl	Flat-Bottom	A1/P1	5	50	356660
NEW	White/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	5	50	356837
	White/Clear	Poly-D-Lysine I	Yes	90 µl	Flat-Bottom	A1/P1	20	80	356694*
NEW	White/Clear	Poly-D-Lysine	Yes	120 µl	Flat-Bottom	A1	20	80	356937*

*Note: * Please call your local BD office for shipping schedules on these products.*

Description	Coating	Lid	Working Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
NEW BD BioCoat™ 384-well Small-Volume Microplates								
NEW Black/Clear	Collagen I	Yes	5-20 µl	Flat-Bottom	A1/P1	5	5	354397
NEW Black/Clear	Collagen I	Yes	5-20 µl	Flat-Bottom	A1/P1	5	50	356397
NEW Black/Clear	Poly-D-Lysine	Yes	5-20 µl	Flat-Bottom	A1/P1	5	5	354396
NEW Black/Clear	Poly-D-Lysine	Yes	5-20 µl	Flat-Bottom	A1/P1	5	50	356396

Description	Coating	Lid	Working Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
NEW BD BioCoat™ 1536-well Microplates								
NEW Black/Clear	Poly-D-Lysine	Yes	12 µl	Flat-Bottom	A1/H1	5	5	354022
NEW Black/Clear	Poly-D-Lysine	Yes	12 µl	Flat-Bottom	A1/H1	5	50	356022

- Available with bar coding and bulk packaging. Please contact your local BD office for more information.
- If we do not offer the format or coating you are looking for, please inquire about our BD BioCoat Custom Coating Service. To determine the optimal coating for your cell type, contact your local BD office.

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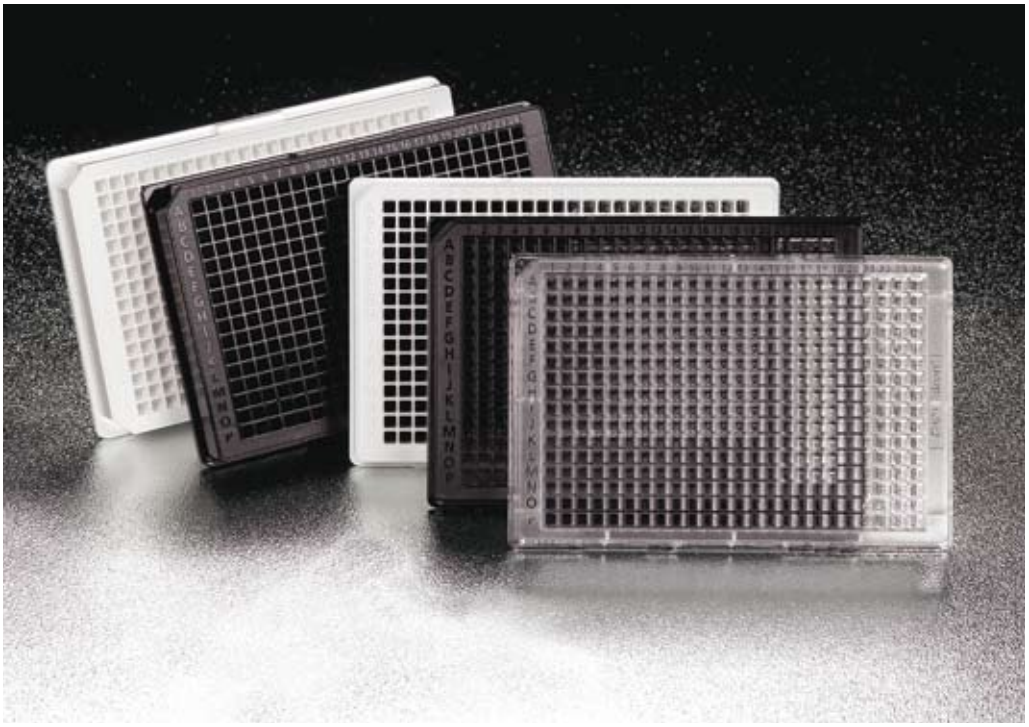
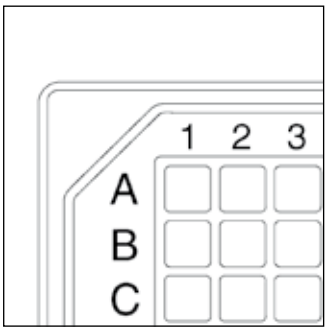
BD Falcon™ 384-well Clear, Black, and White Microplates

- Available with bar coding through custom bar coding service
- A variety of microplates suitable for a wide array of assay protocols



BD Falcon 384-well Assay Plates are available in a number of configurations and surface chemistries to meet a wide variety of applications. A bulk packaging option is available for use in high throughput, 25 plates/sleeve.



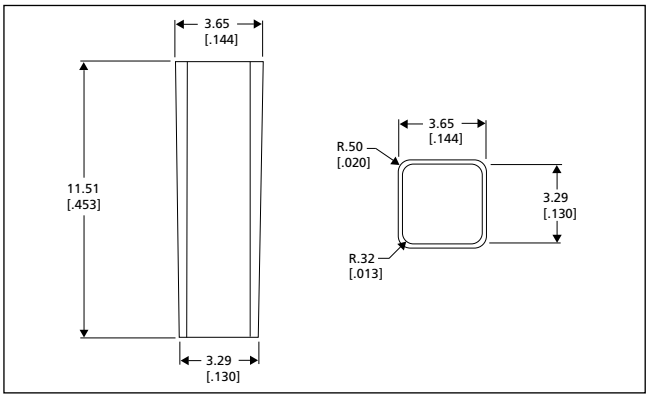
BD Falcon 384-well Microplates feature a rounded edge design to help minimize bubble formation.

BD Falcon 384-well Microplates
BD Falcon 384-well Microplates are available in tissue culture, standard surface chemistries.

BD Falcon™ 384-well 120 µl Microplates feature:

- Choice of tissue culture-treated and standard surface chemistries*
- Available with BD BioCoat™ Poly-Lysine, Collagen or secondary antibody coatings*
- Standard microplate footprint meets ANSI/SBS specifications**
- Square-well with round edges designed to help minimize bubble formation
- Low profile skirt for improved automation handling
- Long lid design for lower evaporation and improved gas exchange
- TC-treated plates provide highly reproducible cell adherence

The BD Falcon™ 384-well Microplate product line offers a variety of configurations and surface treatments to meet a wide array of assay needs. Products include clear, black with clear bottom, and black microplates, available with tissue culture (TC)-treated and non-treated surfaces. The 384-well format allows assay protocols to be run in a smaller volume, resulting in reagent cost savings. The plates may be used on a number of different automated instruments for both cell-based and biochemical assays. The A1 notch location enables easy plate orientation and clear alphanumerics provides better readability.



The BD Falcon 384-well Microplate design incorporates square wells for maximum surface area and rounded corners to minimize bubble formation and wicking.

* *For more information on microplate surface chemistries, please consult our plate chemistries section on page 187. Additional coatings are available through our BD Custom Coating Service. Please call your local BD office.*

***For more information on BD Falcon microplate measurements and plate characteristics, please visit our website: bdbiosciences.com/discovery_labware*

Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ 384-well Microplates								
NEW Clear, Standard	No	No	120 µl	Flat-Bottom	A1	25	100	353290
NEW Clear, Standard	Yes	Yes	120 µl	Flat-Bottom	A1	25	100	353300
NEW Clear, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1	5	50	353229
NEW Clear, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1	25	100	353289
NEW Black, Standard	No	No	120 µl	Flat-Bottom	A1	25	100	353285
NEW White, Standard	No	No	120 µl	Flat-Bottom	A1	25	100	353287
NEW White, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1	5	50	353276
NEW White, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1	25	100	353286

Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ 384-well Clear-Bottom Microplates								
NEW Black/clear, Standard	No	No	120 µl	Flat-Bottom	A1	25	100	353281
Black/clear, Optilux Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1/P1	5	50	353962
NEW Black/clear, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1	5	50	353270
Black/clear, Optilux Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1/P1	20	80	353221
NEW Black/clear, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1	25	100	353280
White/clear, Standard	No	No	120 µl	Flat-Bottom	A1/P1	25	100	353235
NEW White/clear, Standard	No	No	120 µl	Flat-Bottom	A1	25	100	353283
White/clear, Optilux, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1/P1	5	50	353963
NEW White/clear, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1	5	50	353274
NEW White/clear, Tissue Culture	Yes	Yes	120 µl	Flat-Bottom	A1	25	100	353284

Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ Microplates Lid								
Polystyrene Lid for 384-well plates	No	-	-	-	-	5	50	353958

Description	Sterile	Lid	Total Volume	Well Shape	Notch	Qty./ Pk.	Qty./ Case	Cat. No.
BD Falcon™ Microplate Sealing Film								
Acetate sealing Film	No	-	-	-	-	200	200	353073

A new 96-well plate with the capacity to bind Heparin, to be inserted after page 181 of main catalog.

NEW BD™ Heparin Binding Plate

- Ready-to-use heparin-binding plate for simple and efficient immobilization of heparin or heparan sulphate

BD Biosciences offers a new 96-well plate with a plasma-polymerized surface to which heparin binds. Heparin is a highly sulphated form of heparan sulphate, a ubiquitous proteoglycan of the extracellular matrix. These molecules are involved in a wide range of biological processes such as cell proliferation, differentiation, tissue homeostasis and viral pathogenesis.

Surface-immobilized heparin bound to these plates enables the study of a variety of heparin-binding and heparin-interacting proteins.

Description	Qty.	Cat. No.
NEW BD™ Heparin Binding Plate		
96-well	5	354676

Quality Control:

Uniform binding distribution of heparin to each well via labeled bioassay.

Storage and Stability:

Stable for at least 6 months from date of shipment when stored at 4-30°C under dry conditions.

The following Technical Bulletin is available at bdbiosciences.com/technical_resources/ or by calling your local BD office.

Bulletin No.	Author/Title
462	Christopher Novak/Heparin Preparations Immobilized to the BD™ Heparin Binding Plate

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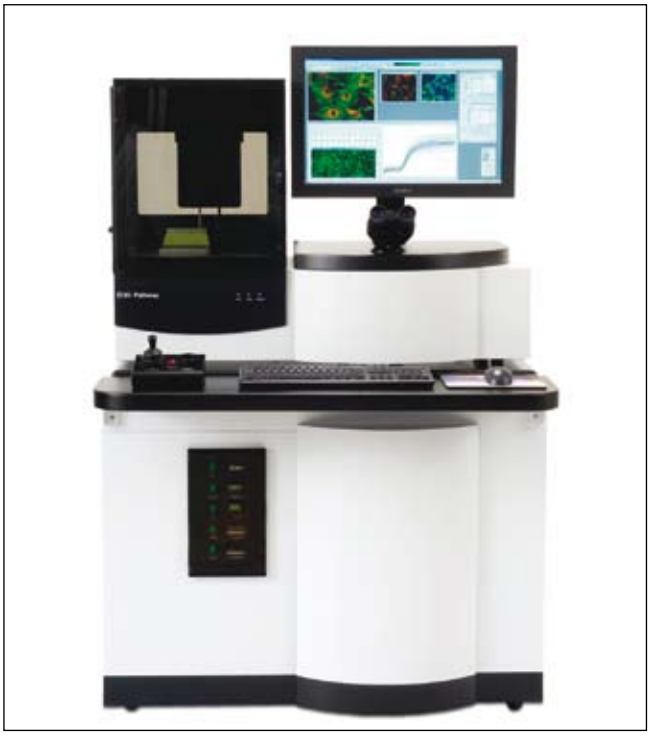
BD Pathway™ Bioimager

- Explore cells in real-time and develop assays faster with the power and flexibility of the BD Pathway Bioimager

BD Pathway™ 855 High Content Bioimager



The BD Pathway™ 855 system offers ultimate flexibility for high-content imaging of live and fixed cells.

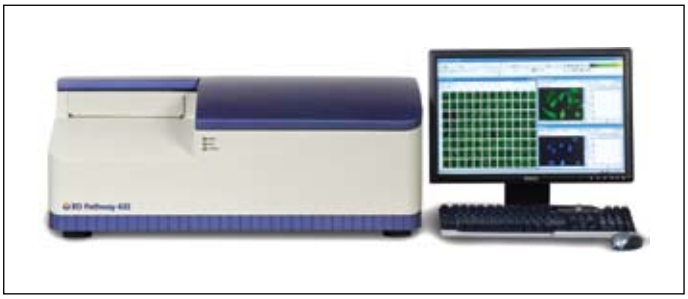
The system is suited for:

- Core facilities or labs needing a versatile solution for live cell and endpoint fluorescence imaging
- Researchers conducting live cell assay development for which viability of the cells is important
- Investigators requiring a variety of dynamic imaging modes on live cells with image-as-you-add capability

With the following features, the BD Pathway 855 system can rapidly record high-resolution fluorescence images from multiwell plates and slides:

- Environmental control
- Liquid handling
- Full-spectrum (340-700 nm) illumination
- Laser auto focus
- Fast filter changers
- Spinning disk confocal optics
- Cooled CCD camera
- The system comes with powerful imaging software to perform a broad range of fluorescence-based kinetic and endpoint biological assays

BD Pathway™ 435 High-Content Bioimager



The BD Pathway™ 435 system is a compact benchtop unit for high-content cellular imaging and is ideally suited for:

- Labs needing a dedicated high-content image acquisition and analysis workstation
- Researchers who primarily work on endpoint applications with fixed cells or tissues
- Labs that routinely conduct fluorescence image documentation and analysis

A transmitted light canopy provides the ability to capture bright-field images that can be overlaid onto fluorescence images. The system comes with powerful, flexible imaging processing and analysis software

Description	Cat. No.
NEW BD Pathway™ 855 High-Content Bioimager	341036
NEW BD Pathway™ 435 High-Content Bioimager	641250

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BD CARV II™ Confocal Imager

- Full-spectrum confocal microscopy that is affordable and easy to use
- Upgrade your fluorescence microscope to a personal confocal system

The BD CARV II™ Confocal Imager delivers high-resolution CCD confocal imaging in an easy-to-use and cost-effective optical package that fits on an existing microscope. High-speed, multi-point confocal scanning, combined with high quantum efficiency CCD cameras, minimizes photobleaching and allows real-time imaging and recording at up to 100 fps. A long-life arc source coupled to the instrument via an alignment-free light guide allows for full-spectrum (360 nm - 700 nm) confocal imaging of virtually any fluorescent probe. Automation of internal multi-position excitation, dichroic, and emission filter wheels permits fast, multi-dimensional imaging of up to five or more fluorescent probes in the same sample.

The BD CARV II™ Confocal Imager offers:

- Multipoint confocal scanning
- Direct viewing and imaging of confocal and wide field
- Full spectrum confocal
- Automated filter selection
- Fluorescence recovery after photobleaching (FRAP) capabilities
- Microscope compatibility
- Application-specific cameras
- 3D software options

Description	Cat. No.
BD CARV II™ Confocal Imager System (inverted microscope)	640736
NEW BD CARV II™ Confocal Imager System (upright and inverted microscope, w/o binocular)	641449
NEW BD CARV II™ LX (offering white light and laser option)	pls. inquire

RELATED PRODUCTS

(pages of main catalog)

BD Falcon™ Imaging 96-well black/clear bottom assay plates 174
BD Falcon and BD BioCoat™ 96- and 384-well black/clear bottom assay plates .....Chapter 7
BD Falcon CultureSlides 43
BD BioCoat CultureSlides 83,87,97,99,103

BD ACT*One*™ GPCR Screening Assay

- Convenient, homogeneous assay format
- High sensitivity and excellent signal-to-noise ratio
- Live cell assay allows simultaneous screening of agonists and antagonists
- No special equipment required
- Z′ scores are consistently greater than 0.6

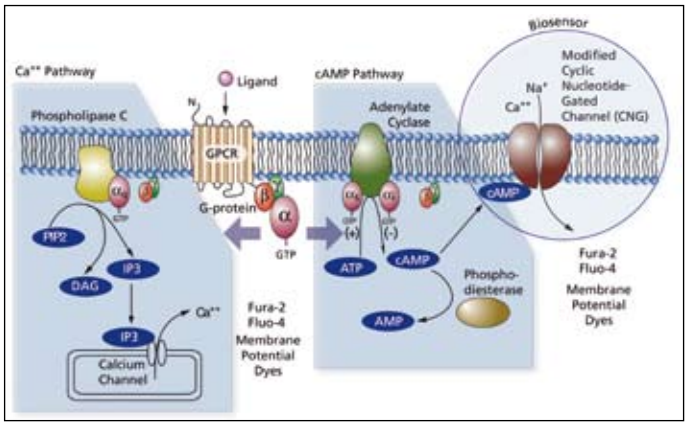

Diagram shows two pathways of GPCR signalling. The BD ACTOne™ Assay uses a proprietary method cyclic nucleotide gated channel (CNG) as a biosensor of cAMP activity.

The BD ACT*One* live cell cAMP assay is the only high-throughput screening (HTS) G-protein coupled receptor (GPCR) technology that directly measures the intracellular concentration of the secondary messenger cyclic AMP (cAMP) in living cells, in real-time. Because the biosensor is localized at the cell surface near the source of cAMP production, the assay provides exceptional sensitivity and response time.

Description	Cat. No.
Transduced Gs coupled Receptors	
Adenosin A2a Receptor	341449
Adenylate Cyclase Activ. Polypept. 1 Receptor Type I (ADCY AP1R1)	341815
Arginine Vasopressin Receptor 2 (AVPR2)	345502
Calcitonin Receptor (CALCR)	341452
Calcitonin receptor-like (CALCRL)	341450
Corticotropin Releasing Hormone Receptor 1 (CRHR1)	345505
Corticotropin Releasing Hormone Receptor 2 (CRHR2)	341816
Dopamine Receptor D1 (DRD1)	341459
Dopamine Receptor D5 (DRD5)	341817
Follicle Stimulating Hormone Receptor (FSHR)	341818
Glucagon Receptor (GCGR)	341471
Glucagon-like peptide 1 Receptor (GLP1R)	345504
Glucagon-like peptide 2 Receptor (GLP2R)	344445
Gastric inhibitor polypeptide Receptor (GIPR)	341473
Melanocortin 1 Receptor (MC1R)	341457
Melanocortin 3 Receptor (MC3R)	344447
Melanocortin 4 Receptor (MC4R)	341469
Melanocortin 5 Receptor (MC5R)	341470
Parathyroid Hormone Receptor 1 (PTHR1)	341442
Parathyroid Hormone Receptor 2 (PTHR2)	341820
Prostaglandin D2 Receptor (PTGDR2)	341443
Prostaglandin E Receptor 4 (PTGER4)	341455
Prostaglandin I2 Receptor (PTGIR)	345503
Secretin Receptor (SCTR)	344439
Serotonin Receptor 4 (5HT4)	344438
Serotonin Receptor 6 (5HT6)	344442
Serotonin Receptor 7 (5HT7)	344444
Thyroid Stimulating Hormone Receptor (TSHR)	344446
Vasoactive Intestinal Peptide Receptor 1 (VIPR1)	341472
Vasoactive Intestinal Peptide Receptor 2 (VIPR2)	341468

Live cell assays

Traditional screening of Gs- and Gi-coupled GPCRs is based on endpoint assays that do not generate real-time kinetic data about Gs- and Gi-mediated cAMP activation. The cAMP assay from BD Biosciences allows high-throughput screening on industry standard platforms, providing results with greater accuracy at lower cost. The BD ACT*One* assay is also compatible with standard fluorescence plate readers. The figure shows how the assay uses a modified cyclic nucleotide gated channel (CNG) to monitor cAMP levels within cells.

The BD ACT*One* assay represents a major breakthrough in the ability to conduct HTS using fluorescence plate readers instead of slower, more costly alternatives. Real-time kinetic readouts minimize artifacts from prolonged incubations and decrease processing steps while providing higher statistical relevance. Kinetic traces also allow easy differentation between GPCR response patterns, making the BD ACT*One* assay ideal for receptor deorphanization.

BD ACT*One*™ Cell Lines

A patented CNG mutant gene was stably introduced into HEK-293 cells as a biosensor for intracellular cAMP in the presence of selected fluorescent dyes. The BD ACT*One* Cell Lines can be used to detect and quantitate free intracellular cAMP in real time, providing a kinetic or endpoint assay for both endogenous and exogenous GPCRs. BD Biosciences also offers a specially formulated fluorescent membrane potential dye that has been pharmacologically selected to minimize binding to a peptide or protein agonist. The dye can be used with the BD ACT*One* Assays or with other fluorescence-based membrane potential assays. Cell lines are available under an evaluation or screening license agreement.

Description	Cat. No.
Endogenous Gs-coupled Receptors	
β-adrenoreceptor (likely both β 1 & β 2)	341475
Adenosine A2b Receptor	341474
Prostaglandin E2 Receptor	341476
Adenosine A1 Receptor	341814
Adenosine A3 Receptor	341822
NEW Angiotensin receptor-like 1	644564
Cannabinoid Receptor 1 (CB1)	341811
Cannabinoid Receptor 2 (CB2)	344449
Chemokine (C-C motif) receptor 5 (CCR5)	344448
NEW Chemokine (C-X-C motif) receptor 4 (CXCR 4)	644562
Dopamine Receptor D2 (DRD2)	341812
NEW Glutamate Receptor, metabotropic 2 (mGluR2)	644561
NEW Glutamate Receptor, metabotropic 4 (mGluR4)	644565
NEW Glutamate Receptor, metabotropic 7 (mGluR7)	644560
Glutamate Receptor, metabotropic 8 (mGluR8)	344451
Melanin concentrating hormone Receptor 1 (MCHR1)	341823
Neuropeptide Y Receptor Y1 (NPY1R)	344869
Neuropeptide Y Receptor Y2 (NPY2R)	344870
NEW Neuropeptide Y Receptor Y4 (NPY4R) (PPYR1)	644009
Opioid Receptor, b β1 (KOR)	344450
NEW Opiate Receptor-like Receptor 1 (ORL-1)	644563
Somatostatin Receptor 5 (SSTR5)	341813
NEW Sphingolipid GPCR 1	640236
Parental Cell Lines	
Parental Cell line HEK-293 CNG	341467
GLAST (transfected with the GLAST gene, a glutamate/ aspartate transporter) *	344443
BD ACT*One*™ Membrane Potential Dye Kits	
10 plates	341831
100 plates	341833

** this cell line should be used as the parental control cell line for mGluR7 and mGluR8 cell lines*

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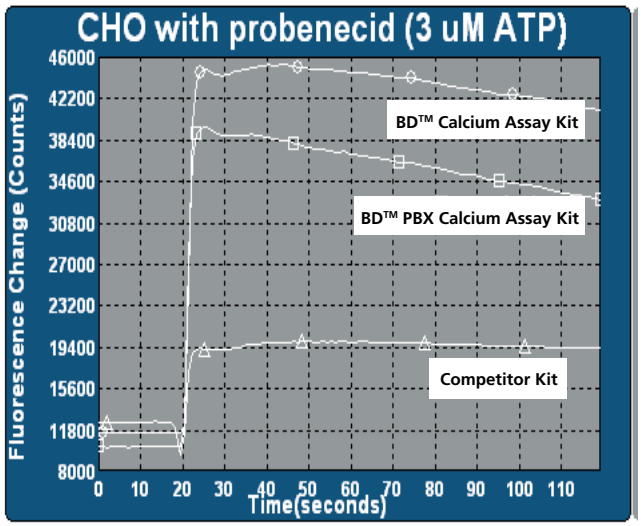
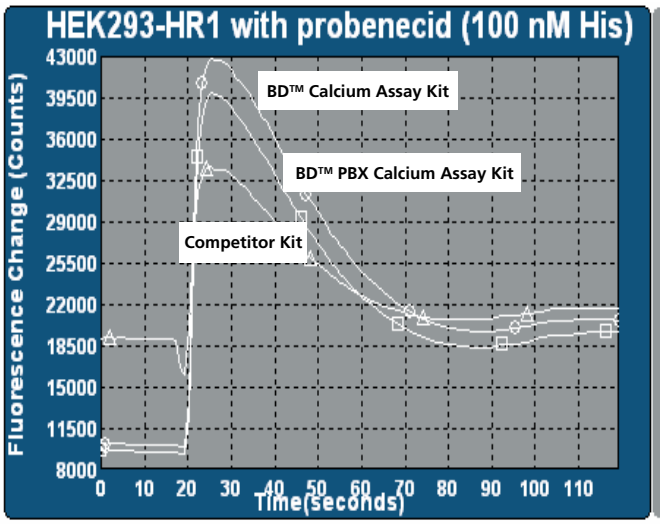
BD™ Calcium Assay Kits

- No-wash homogeneous assay format
- Higher signal over background compared to competitive kits
- PBX kit permits assays with reduced or no probenecid
- Ideal for all fluorescence-based calcium flux assays





Comparison of BD™ Calcium Assay kits with a competitive product used with CHO and HEK-293 cells in the presence of Probenecid. Both BD kits outperform a competitive product, providing significantly higher signal over background. The example on the right also shows the absence of an "addition artifact," a disadvantage seen using the competitive product.

BD Calcium Dye Kits have been optimized for detecting calcium flux in living cells. They provide increased signal-to-background in an easy-to-use no wash assay format. In most cases, the dye kits perform better than kits currently available on the market with no known interference to ligands (small molecules, peptide/proteins and lipids). Also, the "addition artifact" commonly seen in this application is significantly reduced with the new dye formulations. The BD kits can be used on different fluorescence-based readers for compound screening. In particular, the PBX-format is suitable for the BD ACT*One*™ GPCR screening technology.

Some of the cell lines successfully used with the BD™ Calcium Dye Kits include:

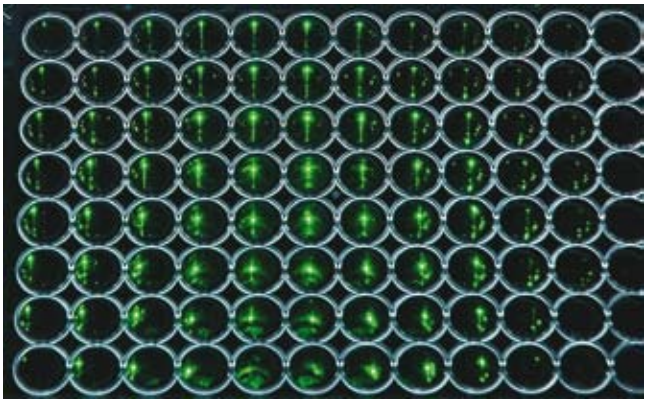
- CHO cells
- HEK-293 cells
- Jurkat cells
- HeLa cells
- U2OS cells

Description	Cat. No.
For Standard Applications	
BD™ Calcium Assay Kit, volumes sufficient for 10 plates	640176
BD™ Calcium Assay Kit, volumes sufficient for 100 plates	640178
For Probenicid Sensitive Applications	
BD™ PBX Calcium Assay Kit, volumes sufficient for 10 plates	640175
BD™ PBX Calcium Assay Kit, volumes sufficient for 100 plates	640177

Plate formats can either be 96-, 384-, or 1536-well.

NEW BD™ High Performance Calcium Assay Kits

- BD Calcium Assay Kits just got even better.



BD Biosciences' new BD™ High-Performance Calcium Assay Kit is a next generation kit that allows life science researchers to better analyze calcium signaling in live cells. Internal and customer data indicate that this new assay kit provides greater overall performance than other commercially available homogeneous calcium assay kits. The new kit builds upon the solid performance of BD Biosciences' existing calcium assay kits. It offers the same outstanding features, such as an easy-to-use, no-wash homogeneous format that saves time and money, two formulations (for use with probenecid and without probenecid, respectively) that help researchers optimize their assays to their particular needs, and high quality results. The calcium kits for standard and probenecid-free applications (PBX) are each available in either 10-plate or 100-plate formats. The kits allow for flexible use in either 96-, 384- or 1536-well assay plates. Additionally, custom packaged materials can be provided for higher volume users. The kits are ideal for more difficult cell lines and have been successfully used with a variety of cell lines including CHO, HEK293, Jurkat, Hela, and U2OS.

For customers who already started studies with the existing Calcium Dye Kits, we will continue to provide the old formulation. (see page 33 of this supplement)

Description	Cat. No.
For Standard Applications	
NEW BD™ High-Performance Calcium Assay Kit for 10 plates	644208
NEW BD™ High-Performance Calcium Assay Kit for 100 plates	644210
For Probenicid Sensitive Applications	
NEW BD™ High-Performance PBX Calcium Assay Kit for 10 plates	644207
NEW BD™ High-Performance PBX Calcium Assay Kit for 100 plates	644209

Plate formats can either be 96-, 384-, or 1536-well.

NEW BD™ RatioMax Calcium Assay Kits

The only excitement you need.

The BD™ RatioMax Calcium Assay Kit is the only commercially available homogeneous ratiometric calcium assay formulation that uses dual wavelength excitation. The unique formulation is excited only by UV light which results in significantly less interference by visible wavelength excitable fluorescent compounds. The new kit is a powerful counter screen tool for GPCR and calcium channels that use calcium indicators excited at 488nm in primary screens.

Description	Cat. No.
For Standard Applications	
NEW BD™ RatioMax Calcium Assay Kit for 10 plates	644243
NEW BD™ RatioMax Calcium Assay Kit for 100 plates	644244

Plate formats can either be 96-, 384-, or 1536-well.

Discontinued Products

Note for use of this index:
S denotes a supplement page number
D denotes a discontinued product

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BD Biosciences
Worldwide
Discovery Labware

Two Oak Park
Bedford, MA 01730
USA
Tel.: 877.232.8995
Fax: 800.325.9637
bdbiosciences.com

BD Biosciences
Europe
Discovery Labware

POB 13, Erembodegem-Dorp 86
B-9320 Erembodegem
Belgium
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Fax: (254) 20 2738342
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Fax: (358) 9 8870 7817
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norge@europe.bd.com

POLAND
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Fax: (48) 22 651.75.89
bdb.ema@europe.bd.com

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Diagnóstica e Farmacêutica, Lda
Tel.: (351) 21 421.93.30
Fax: (351) 21 421.93.39
enzifarma@enzifarma.pt

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Tel.: (966) 1 4727933
Fax: (966) 1 4723387
bdb.ema@europe.bd.com

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Fax: (27) 11 804.0544/804.0546
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Fax: (31) 20 582.94.21
info.benelux@europe.bd.com

TURKEY
Tel.: (90).212.328 2720
Fax: (90).212.328 2730
bdb.ema@europe.bd.com

UK & Ireland
Tel.: +44 (0) 1865 781 688
Fax: +44 (0) 1865 781 578
BDUK_CustomerService@europe.bd.com

UNITED ARAB EMIRATES
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Fax: (971) 4 337.9551
bdb.ema@europe.bd.com

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Fax: 33.4.76.68.55.96
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AUSTRIA
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Fax: (43) 1 928 04 66
help.biosciences@europe.bd.com

BELGIUM
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Fax: (32) 2 401 7094
help.biosciences@europe.bd.com

DENMARK
Tel.: (45) 80 882 193
Fax: (45) 80 882 198
help.biosciences@europe.bd.com

EMA
Tel.: (44) 207 075 3226
Fax: (44) 207 075 3227
help.biosciences@europe.bd.com

FINLAND
Tel.: (358) 800 11 63 17
Fax: (358) 800 11 63 16
help.biosciences@europe.bd.com

FRANCE
Tel.: (33) 1 707 081 93
Fax: (33) 1 707 081 94
help.biosciences@europe.bd.com

GERMANY
Tel.: (49) 69 222 22 560
Fax: (49) 69 222 22 561
help.biosciences@europe.bd.com

GREECE
Tel.: (30) 0 800 12 7506
Fax: (32) 2 401 7094
help.biosciences@europe.bd.com

HUNGARY
Tel.: (36) 6 800 16245
Fax: (32) 2 401 7094
help.biosciences@europe.bd.com

IRELAND
Tel.: (44) 207 075 3226
Fax: (44) 207 075 3227
help.biosciences@europe.bd.com

ISRAEL
Tel.: (972) 1 80 921 6283
Fax: (32) 2 401 7094
help.biosciences@europe.bd.com

ITALY
Tel.: (39) 02 360 036 85
Fax: (39) 02 360 036 86
help.biosciences@europe.bd.com

NORWAY
Tel.: (47) 800 18530
Fax: (47) 800 18532
help.biosciences@europe.bd.com

PORTUGAL
Tel.: (351) 8008 15176
Fax: (351) 8008 15183
help.biosciences@europe.bd.com

SOUTH AFRICA
Tel.: (27) 80 09 81008
Fax: (32) 2 401 7094
help.biosciences@europe.bd.com

SPAIN
Tel.: (34) 91 414 6250
Fax: (34) 91 414 6251
help.biosciences@europe.bd.com

SWEDEN
Tel.: (46) 8 5069 2154
Fax: (46) 8 5069 2155
help.biosciences@europe.bd.com

SWITZERLAND
Tel.: (41) 44 580 43 73
Fax: (41) 44 580 43 74
help.biosciences@europe.bd.com

THE NETHERLANDS
Tel.: (31) 10 711 4800
Fax: (31) 10 711 4801
help.biosciences@europe.bd.com

UK
Tel.: +44 (0) 207 075 3226
Fax: +44 (0) 207 075 3227
help.biosciences@europe.bd.com

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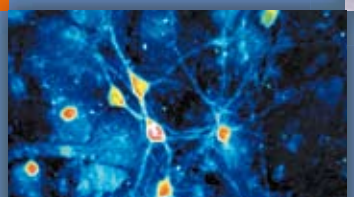

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