

BD PureCoat™ Cultureware
Where life thrives on the surface



Helping all people
live healthy lives

Meet the next generation of advanced cell culture surfaces – **BD PureCoat** surfaces.

The first generation of BD cell culture surfaces, **BD Falcon™**, brought untreated and tissue culture-treated surfaces.

Next, **BD BioCoat™** brought a surface coating technology using **BD™** extracellular matrices and attachment factors.

BD Biosciences proudly introduces the next generation of advanced cell culture surfaces — **BD PureCoat™** surfaces.

BD PureCoat surfaces are a novel family of chemically-defined, animal-free cell culture surfaces designed to enhance cell performance. A proprietary thin-film coating technology produces a uniform, functionalized surface that provides a highly controlled environment for cell culture applications.

Both BD PureCoat amine, a positively charged surface, and BD PureCoat carboxyl, a negatively charged surface, are proven to provide improved cell attachment and cell proliferation over standard tissue culture (TC)-treated surfaces. These defined surfaces function with a broad range of primary and transfected cells in standard, serum-free, or serum-reduced culture conditions. BD PureCoat surfaces support standard cell dissociation techniques, do not interfere with microscopy or imaging analysis, and do not require special steps for cell adaptation.

Defined Animal-Free Cell Culture Surfaces

BD PureCoat amine and carboxyl surfaces are chemically-defined, animal-free enhanced cell culture surfaces. Both surfaces reduce variability, giving you more control over your cell culture environment and resulting in a more predictable biological outcome.

Improved Attachment and Increased Proliferation

BD PureCoat surfaces provide improved attachment, increased proliferation, enhanced recovery from freeze-thaw, and improved differentiation for a broad range of cells that exhibit poor attachment properties. These features save you time while increasing productivity in the lab.

BD PureCoat Surfaces

Optimized for Basic Research and Drug Discovery Applications

Advantages of BD PureCoat Amine and Carboxyl Surfaces

- **Improves Performance**

Surface technology enhances attachment, proliferation, and recovery post-thaw for a variety of cells with poor attachment properties – mainly primary cells, transfected cells, and fastidious cell lines in standard, serum-free or serum-reduced conditions.

- **Increases Confidence**

Both surfaces are highly consistent from lot-to-lot. They are quality control tested using an appropriate cell line.

- **Delivers Versatility**

Surface chemistries are available on a variety of cultureware formats for preparative cell culture and drug discovery assays.

- **Saves Time**

An alternative to variable and time-consuming self-coating procedures.

In preparative cell culture and applied research assays, BD PureCoat™ amine and carboxyl surfaces are proven to provide improved attachment, increased proliferation, enhanced recovery from freeze-thaw, and improved differentiation for a broad range of cells that exhibit poor attachment properties in standard, serum-free or serum-reduced conditions (e.g., primary cells, transfected cells, and fastidious cell lines). In drug discovery assays, when using transfected cells and commercially prepared division arrested cell lines, both surfaces maintain cell monolayers during vigorous liquid handling manipulation.

Cells cultured successfully on BD PureCoat surfaces:

		AMINE (+)	CARBOXYL (-)
Primary Neuronal Cells	Rat Brain Cortex	■	
	Rat Cerebellar Granule (RCG)	■	
Primary Cells	Human Epidermal Keratinocytes (Neonatal)*		■
	Human Placental Epithelial*	■	
	Primary Cervical Epithelial*	■	
	Rat Astrocytes	■	
	Rat and Mouse* Cardiomyocytes		■
	Rat Epidermal Keratinocytes		■
	Rat Primary Pancreatic Islet*	■	
Stem Cells	Embryonic Mouse Brain Stem Cell*	■	
	Human Adipose-Derived Stem Cells	■ [†]	■ ^{††}
	Human Bone Marrow-Derived Mesenchymal Stem Cells	■ [†]	■ ^{††}
	Rat Bone Marrow-Derived Mesenchymal Stem Cells*	■ ^{††}	■
	Rat E14d Cortex Derived Neural Stem Cells*	■	
Transfected Cells	293T*	■	
	EcoPack™2-293	■	■
	Flp-In™ T-REx™ 293*	■	
	hERG-T-REx™ 293 Division Arrested	■	
	Living Colors™ HEK-ZsGreen Proteasome Sensor	■	■
Cell Lines	Baby Hamster Kidney (BHK-21)	■	
	CHO	■	
	HEK-293	■	■
	HeLa*		■
	HepG2	■	■
	HT-1080		■
	LnCAP		■
	MRC-5		■
	N2A*	■	
	PC12	■	■

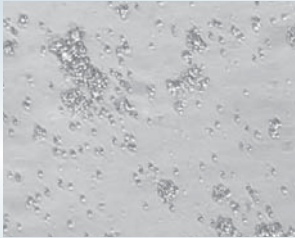
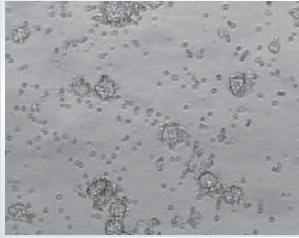
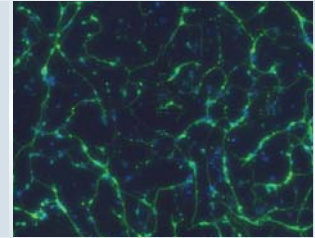
*Cells successfully cultured by customers on BD PureCoat surfaces

Both surfaces are recommended for growth and attachment for cells listed, unless specified.

†Recommended for growth, attachment, and differentiation.

††Recommended for differentiation only.

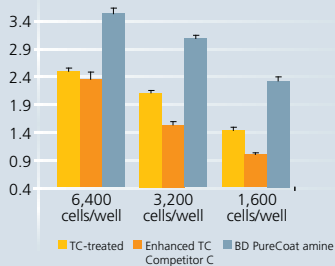
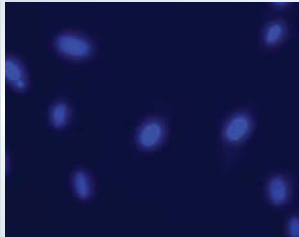
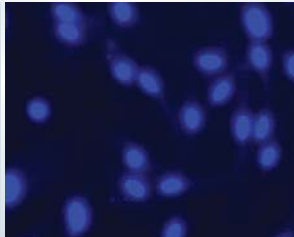


A. TC-treated**B. Enhanced TC Competitor C****C. BD PureCoat amine****D. BD PureCoat amine**

Increased cell attachment and differentiation of RCG cells on BD PureCoat amine

A-C. RCG cells were freshly isolated from rat brains and seeded onto 24-well TC-treated, Enhanced TC Competitor C, or BD PureCoat amine plates in medium containing 10% serum, glutamine, and potassium chloride. After 20-22 hours, cultures were observed under a microscope and images captured at 200X magnification. Results from a representative experiment show that RCG cells attach and differentiate on BD PureCoat amine, whereas those on TC and Enhanced TC Competitor C plates are poorly attached and formed clumps.

D. Neurite outgrowth was observed from RCG cells plated on BD PureCoat amine. In some instances, cultures were incubated for 48 hours, fixed, and immunostained with anti-tubulin IIIb. RCG cells grown on BD PureCoat amine exhibit dendritic processes and express tubulin IIIb, a neuronal marker. RCG cells cultured on TC-treated and Enhanced TC Competitor C plates remained unattached and were washed off the plates during the fixation protocol (data not shown).

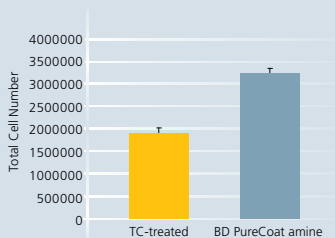
A. Relative Absorbance Units**B. TC-treated****BD PureCoat amine**

Up to 60% more BHK-21 cell growth on BD PureCoat amine as compared to TC-treated and Enhanced TC Competitor C.

A. BHK-21 cells were seeded onto 96-well black/clear TC-treated, Enhanced TC Competitor C, or BD PureCoat amine plates at densities between 1,600-6,400 cells/well and grown in culture medium containing 5% tryptose and 1% fetal bovine serum for 72 hours. MTS reagent (Promega) was added directly into culture wells (n=8 wells/condition) and incubated for 2 hours. Representative relative absorbance units (mean \pm SEM) from one of three experiments is shown.

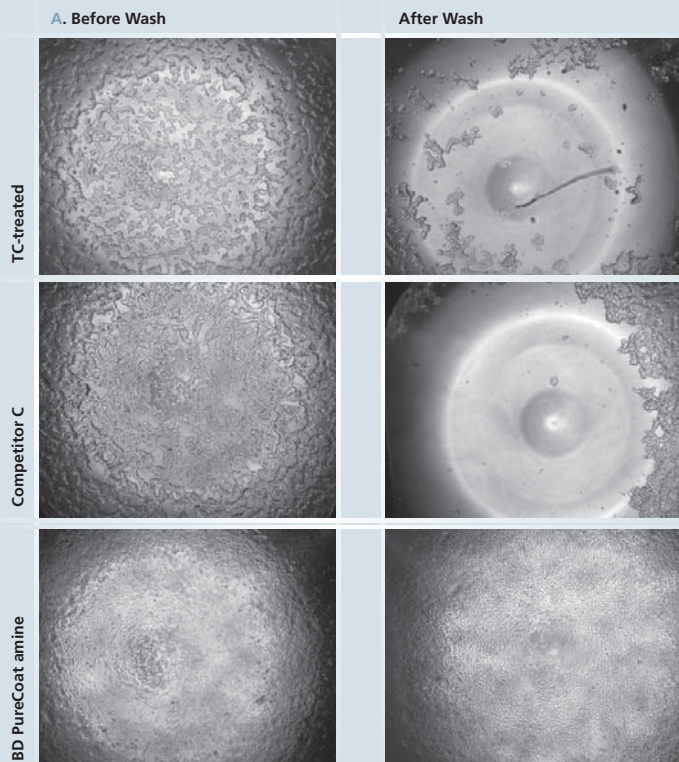
Increased cell proliferation was observed on BD PureCoat amine at all three seeding densities tested compared to TC-treated or Enhanced TC Competitor C plates.

B. Shown is a representative image of BHK-21 cells grown on 24-well TC-treated or BD PureCoat amine plates and fixed with 4% paraformaldehyde. A nuclear stain, DAPI, was added to cultures and fluorescence images were captured at 200X magnification. An increase in DAPI staining was observed on BD PureCoat amine indicating more cells attach and proliferate on the BD PureCoat amine surface versus TC-treated.

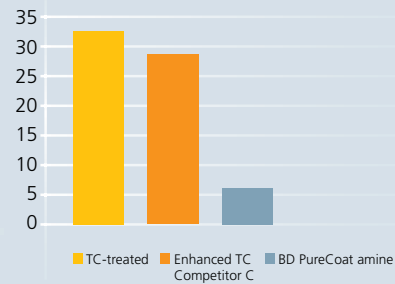


76% more BHK-21 cell growth in reduced serum on BD PureCoat amine.

BHK-21 cells were seeded onto 75 cm² area flasks of TC-treated and BD PureCoat amine surface at 1.125×10^6 cells/flask in 15 ml of GMEM culture medium containing 5% tryptose broth and 1% fetal bovine serum. After 72 hours, cells were trypsinized using 0.25% trypsin-EDTA for 3-5 minutes at 37°C (3 ml/flask) and the resulting suspension was centrifuged and enumerated. Results from a representative experiment show $\geq 76\%$ increase in BHK-21 growth on BD PureCoat amine vs. TC (n=3 flasks/surface).



B. Percent Coefficient of Variation (CV)

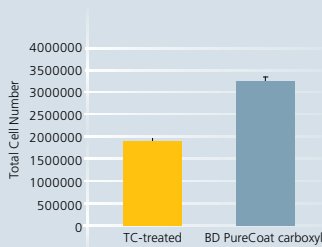


Improved post-wash adherence of EcoPack™2-293 cells (a permanent transfectant derived from HEK-293 cells) to BD PureCoat amine.

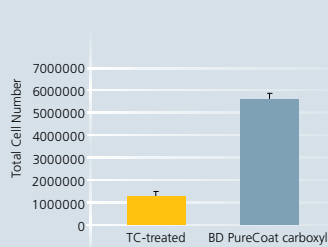
A. 10,000 cells were seeded onto TC-treated, Enhanced TC Competitor C, or 384-well black/clear BD PureCoat amine plates and grown under serum-free conditions for 20-24 hours. The cells were then washed (on an Embla cell washer) two times with Hank's buffered salt solution containing 10 mM Hepes, loaded with calcein AM for 1 hour and read on an EnVision™ (PerkinElmer) plate reader. Before and after wash images indicate that cells remain attached on BD PureCoat amine surface and are washed off the other surfaces that were tested.

B. Accordingly, relative fluorescent unit values are higher on BD PureCoat amine (data not shown). Intraplate CV values (n=240 wells) are below 10% on BD PureCoat amine offering superior consistency in cell-based assays, whereas CV values on TC-treated or Enhanced TC Competitor C plates are much greater.

A. 1st passage (P1), post-freeze thaw



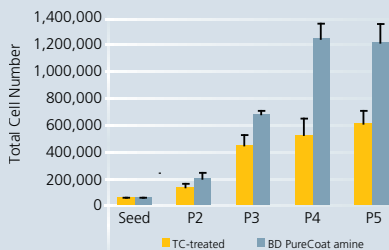
B. 2nd passage (P2)



increase in LnCAP cell growth post-thaw attached on BD PureCoat carboxyl vs. TC (n=3 flasks/surface). A 1:10 cell dilution of each flask type was passaged and allowed to grow for an additional 6 days in growth medium. Then, cells were trypsinized and quantified using a hemacytometer. This difference was further enhanced upon passaging (P2, panel B) resulting in 312% on BD PureCoat carboxyl flasks vs. TC.

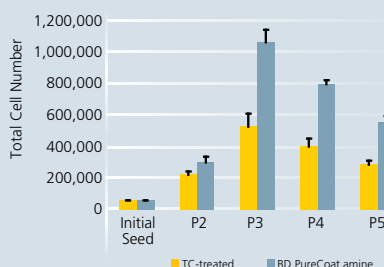
Better freeze-thaw recovery of LnCAP, a prostate cancer cell line, on BD PureCoat carboxyl.

A-B. Early passage LnCAP cells cryopreserved in growth medium (RPMI-1640, L-glutamine, 10% fetal bovine serum) and 10% DMSO were thawed in a 37°C water bath and immediately seeded onto 75 cm² area flasks of TC-treated and BD PureCoat carboxyl at 665,000 cells/flask. After an overnight incubation, growth medium was refreshed and cells allowed to grow. On the 4th day, exhausted medium was aspirated and replenished with 16 ml of fresh growth medium. Cells were allowed to grow for an additional 2-day period and later subjected to trypsinization (0.05% Trypsin-EDTA; 2 ml/flask) for 5 minutes at room temperature. An equal volume of growth media was added to each flask to neutralize trypsin and cells were centrifuged and subjected to cell counting (P1, panel A). Results from a representative experiment show 43%



Up to 140% more human bone-marrow derived mesenchymal stem cells (hMSCs) on 6-well BD PureCoat amine surface.

Cryopreserved hMSCs (P2) were thawed and immediately seeded onto 6-well TC-treated (TC) or BD PureCoat amine plates in serum-containing MSCGM™ media (Lonza) at ~6,000 cells/cm². After 4 days of growth, these cells were trypsinized, and split at a 1:2 ratio. Cells were grown for an additional 3 days, re-passaged (P3) and split in 1:5 ratio for two successive passages (P4 and P5) each grown for ~4 days. An increased number of cells are obtained more rapidly on BD PureCoat amine as compared to a TC-treated surface with increases ranging from 25-140% across several passages (P3-P5). This growth advantage starts slow but gains momentum by P3 and is continued through P5.



Up to 102% more human adipose-derived stem cells (hASCs) on BD PureCoat amine surface.

Cryopreserved hASCs (P2) were thawed and immediately seeded onto 6-well TC-treated or BD PureCoat amine plates in serum-containing MSCGM media (Lonza) at ~6,000 cells/cm². After 4 days of growth, P2 cells were trypsinized and split at a 1:5 ratio. Cells were grown for an additional 4 days (P3) and split at a 1:4 ratio for two successive passages (P4 and P5). Shown are calculated hASC cell yields from one donor. Cells were passaged between 70-80% growth confluency as measured by IncuCyte™ and the split ratio was kept constant across both TC-treated and BD PureCoat amine surface. A greater total cell yield of hASCs cultured on BD PureCoat amine was observed and increases in cell yield compounded with every passage.

BD PureCoat amine-expanded hMSCs and hASCs retained differentiation potential.

Ordering Information

BD PureCoat™ amine cultureware

Product Specifications

- Store at room temperature — no special storage or handling required
- Stable for at least 18 months from date of manufacture
- Quality control tested using an appropriate cell line
- Sterilized to SAL 10⁻⁶ by gamma irradiation
- Non-cytotoxic and non-pyrogenic
- Cultureware material is polystyrene suitable for cell culture
- 96- and 384-well microplates meet ANSI/SBS standards (1-2004, 2-2004, 3-2004, 4-2004)
- 1536-well microplates meet ANSI/SBS standards (1-2004, 3-2004, 4-2004)

DESCRIPTION	QTY./PACK	QTY./CASE	CAT. NO.
6-well plate	5	5	354721
	5	50	356721
24-well plate	5	5	354723
	5	50	356723
96-well plate, black/clear	5	5	354717
	5	50	356717
384-well plate, black/clear	5	5	354719
	5	50	356719
1536-well plate, black/clear	5	5	354771
	5	50	356771
100 mm dish	10	10	354732
	10	40	356732
75 cm ² flask, vented cap, canted neck	5	5	354726
	5	50	356726
175 cm ² flask, vented cap, straight neck	5	5	354728
	5	40	356728

BD PureCoat carboxyl cultureware

DESCRIPTION	QTY./PACK	QTY./CASE	CAT. NO.
6-well plate	5	5	354773
	5	50	356773
24-well plate	5	5	354775
	5	50	356775
100 mm dish	10	10	354784
	10	40	356784
75 cm ² flask, vented cap, canted neck	5	5	354778
	5	50	356778
175 cm ² flask, vented cap, straight neck	5	5	354780
	5	40	356780

For plate dimensions, automation compatibility guidance, working volumes, and application notes please visit bdbiosciences.com

✳ Custom Services

Barcoding, bulk packaging, and additional cultureware are available. Please contact your sales representative for more information.

To place an order in the U.S., contact Customer Service at:
tel: **877.232.8995**; fax: 800.325.9637 or 858.812.8889

For technical assistance, contact Technical Support at:
tel: **877.232.8995** or 978.901.7389; fax: 978.901.7491; e-mail: labware@bd.com

Outside the U.S., contact your local distributor or visit bdbiosciences.com/offices to locate your nearest BD Biosciences office.

BD Biosciences
Two Oak Park
Bedford, MA 01730 USA
tel: 877.232.8995
fax: 800.325.9637
Purchase Orders should be made out to:
2350 Qume Drive, San Jose, CA 95131

BD
Akasaka Garden City,
Akasaka 4-15-1, Minato-ku,
Tokyo, 107-0052 Japan
tel: (81) 24 593 5405
fax: (81) 24 593 5761

BD Biosciences
Erembodegem-Dorp 86
B-9320 Erembodegem, Belgium
tel: (32) 2 400 98 95
fax: (32) 2 401 70 94
e-mail: help.biosciences@europe.bd.com

BD
2100 Derry Road
Suite 100
Mississauga, Ontario
Canada L5N 0B3
tel: 888.259.0187
fax: 888.229.9918

BD Biosciences
Singapore Branch
30 Tuas Avenue 2
Singapore 639461
tel: (65) 6861 0633
fax: (65) 6860 1590

BD Biosciences
4 Research Park Drive
Macquarie University Research Park
North Ryde NSW 2113 Australia
tel: 1800 656 100
fax: 612 8875 7200
e-mail: aus_customerservice@bd.com

Class 1 medical device.