

Small Molecules

For Stem Cell Research

Small Molecules, Big Impact

Small molecules are increasingly being used as tools to understand and regulate stem cell biology. Whether to affect reprogramming, self-renewal or differentiation, the right small molecule can transform a research project. Target key pathways in stem cell biology with small molecules from STEMCELL Technologies for high-impact research.

For a complete listing of available small molecules and to see how they are being used in high-impact studies, please visit www.stemcell.com/smallmolecules.

Why Use Small Molecules?

- Can be cell permeable and affect signaling pathways within the cell
- More stable and cost effective than growth factors
- Chemically defined: High purity and low lot-to-lot variability in activity
- Finely tune effects by varying concentration

Product Listing:

PRODUCT NAME	PATHWAY / TARGET	APPLICATIONS	CATALOG #
AICAR	AMPK pathway activator; Activates AMPK	Maintenance, Differentiation	72702
Anacardic Acid	Epigenetic modifier; Inhibits HAT	Differentiation, Activation, Antibiotic	73192
L-Ascorbic Acid	Antioxidant, reducing agent	Reprogramming, Maintenance, Differentiation	72132
5-Azacytidine	Epigenetic modifier; Inhibits DNA methyltransferase	Reprogramming, Differentiation	72012
(+)-BAY K8644	L-type calcium channel inhibitor	Reprogramming, Differentiation	72362
BI-D1870	RSK pathway inhibitor; Inhibits RSK	Maintenance	72712
BIO	WNT pathway activator; Inhibits GSK3	Reprogramming, Maintenance, Differentiation	72032
BIO-Acetoxime	WNT pathway activator; Inhibits GSK3	Differentiation	73322
BIRB-796	Inhibits p38 MAPK	Maintenance	72682
BIX01294	Epigenetic modifier; Inhibits G9a histone methyltransferase	Reprogramming	72042
(-)-Blebbistatin	Inhibits non-muscle myosin II ATPase	Maintenance	72402
Brefeldin A	Protein trafficking inhibitor; Inhibits Sec7-containing GEF	Antibiotic, Cell Line Development	73012
8-Bromo-cAMP	cAMP pathway activator; Activates cAMP-dependent kinase	Reprogramming	73602
Calcitriol	Activates calcitriol receptor/vitamin D receptor	Differentiation	72412
Cardiogenol C	Induces cardiomyocyte differentiation	Differentiation	72422
CAY10585	Hypoxia Inducible Factor-1 α inhibitor	Differentiation	72432
CD437	Retinoid pathway activator; Activates RAR	Reprogramming	72722
CH223191	Aryl hydrocarbon receptor (AhR) antagonist	Maintenance	72732
CHIR99021	WNT pathway activator; Inhibits GSK3	Reprogramming, Maintenance, Differentiation	72052
Cyclic Pifithrin- α	p53 inhibitor	Reprogramming, Maintenance	72062
Cyclopamine	Hedgehog pathway inhibitor; Inhibits Smoothed	Differentiation	72072

Product Listing (continued):

PRODUCT NAME	PATHWAY / TARGET	APPLICATIONS	CATALOG #
DAPT	Notch pathway inhibitor; Inhibits γ -secretase	Differentiation	72082
3-Deazaneplanocin A	Epigenetic modifier; Inhibits EZH2 lysine methyltransferase	Reprogramming	72322
Dexamethasone	Glucocorticoid signaling pathway; Activates glucocorticoid receptor	Reprogramming, Differentiation	72092
Dihydrolipoic Acid	Antioxidant, reducing agent	Maintenance	73622
16,16-Dimethyl Prostaglandin E2	Prostaglandin pathway activator; Inhibits 15-hydroxy PGDH	Maintenance	72372
DMH1	Activin/Nodal/TGF β pathway inhibitor; Inhibits ALK2	Differentiation	73632
Dorsomorphin	BMP pathway inhibitor; Inhibits ALK2, ALK3, ALK6	Differentiation	72102
Doxycycline	Tetracycline-like antibiotic; Used in Tet-Inducible gene expression systems	Antibiotic, Cell Line Development	72742
EHNA	Inhibits adenosine deaminase and PDE2	Maintenance	72442
(-)-Epigallocatechin Gallate	Antioxidant and epigenetic modifier; Inhibits DNMTs	Differentiation	73642
EX527	Epigenetic modifier; Inhibits SIRT1	Differentiation	73652
Fasudil (Hydrochloride)	RHO/ROCK pathway inhibitor; Inhibits ROCK2	Differentiation	73662
Fluprostenol	Prostanoid pathway activator; Activates prostaglandin F2 α receptor	Differentiation	73672
Forskolin	cAMP pathway activator; Activates adenylyl cyclase	Reprogramming, Maintenance,	72112
Garcinol	Epigenetic modifier; Inhibits histone acetyltransferase	Maintenance, Differentiation	72452
Gatifloxacin	Bacterial DNA gyrase inhibitor	Maintenance, Antibiotic	72752
Gö6983	PKC pathway inhibitor; Inhibits PKC	Reprogramming, Maintenance	72462
GSA 10	Hedgehog Pathway activator; Activates Smoothened	Differentiation	73172
(Z)-Guggulsterone	Retinoid pathway activator; Inhibits FXR	Differentiation	73702
GW2580	CSF-1-cFMS pathway inhibitor; Inhibits cFMS kinase	Differentiation	72472
HA-100	PKC pathway inhibitor; Inhibits PKC	Reprogramming, Maintenance	72482
HPI-1	Hedgehog (Hh) pathway inhibitor	Maintenance	72492
I-BET151	Epigenetic modifier; Inhibits BET family proteins	Reprogramming	73712
IBMX	PKA pathway activator; Cyclic nucleotide phosphodiesterase inhibitor	Differentiation	72762
ID-8	DYRK pathway inhibitor; Inhibits DYRK	Maintenance	72502
IDE1	Activin/NODAL/TGF- β pathway activator	Differentiation	72512
IDE2	Activin/NODAL/TGF- β pathway activator	Differentiation	72522
Imatinib	c-ABL pathway inhibitor; Inhibits c-ABL, PDGFR, and KIT	Differentiation	72532
(-)-Indolactam V	Activates protein kinase C (PKC)	Differentiation	72312
Ionomycin	Calcium ionophore	Activation	73722
IQ-1	Wnt/ β -catenin pathway modulator; Inhibits PP2A	Maintenance	72772
ISX-9	Induces neural differentiation	Differentiation	73202
IWP-2	WNT pathway inhibitor; Inhibits Porcupine	Differentiation	72122
IWP-3	WNT pathway inhibitor; Inhibits Porcupine	Differentiation	72542

PRODUCT NAME	PATHWAY / TARGET	APPLICATIONS	CATALOG #
IWP-4	WNT pathway inhibitor; Inhibits Porcupine	Differentiation	72552
IWR-1-endo	WNT pathway inhibitor; Stabilizes AXIN2	Maintenance, Differentiation	72562
Kartogenin	CBF β -RUNX1 pathway activator; Binds filamin A	Differentiation	72572
Kenpaullone	WNT pathway activator; Inhibits GSK3	Reprogramming, Differentiation	72782
KY02111	WNT pathway inhibitor	Differentiation	72582
LDN193189	BMP pathway inhibitor; Inhibits ALK2, ALK3, ALK6	Differentiation	72142
LY294002	PI3K/AKT pathway inhibitor; Inhibits PI3K	Differentiation	72152
LY364947	Activin/NODAL/TGF- β pathway inhibitor; Inhibits ALK5	Reprogramming, Differentiation	72592
LY411575	Notch pathway inhibitor; Inhibits γ -secretase	Differentiation	72792
Neurodazine	Induces neural differentiation	Differentiation	73292
Nicotinamide	Induces pancreatic differentiation	Differentiation	07154
OAC1	Induces OCT4 expression	Reprogramming, Maintenance	72602
1-Oleoyl Lysophosphatidic Acid	Rho/ROCK and PI3K/Akt pathways activator ; Binds GPCRs	Differentiation	72692
PD0325901	MEK/ERK pathway inhibitor; Inhibits MEK	Reprogramming, Maintenance	72182
PD173074	FGF pathway inhibitor; Inhibits FGFR1	Reprogramming, Maintenance, Differentiation	72162
PD98059	MEK/ERK pathway inhibitor; Inhibits MEK	Maintenance, Differentiation	72172
Pifithrin- μ	p53-mediated apoptosis pathway inhibitor; Inhibits p53	Maintenance	72802
Pluripotin	MEK/ERK pathway inhibitor; Inhibits RasGAP and ERK1	Maintenance	72812
PluriSn-1	Oleic acid biosynthesis pathway inhibitor; Inhibits Stearoyl-CoA Desaturase (SCD1)	Differentiation	72822
Prostaglandin E2	Prostanoid pathway activator; Activates prostaglandin receptors EP1, EP2, EP3, EP4	Maintenance, Differentiation	72192
Purmorphamine	Hedgehog pathway activator; Activates Smoothened	Differentiation	72202
Pyrintegrin	Integrin pathway activator	Maintenance	72842
R848	Immune modulator; Inhibits TLR7 and TLR8	Differentiation, Activation	73782
Raloxifene	Estrogen receptor pathway modulator	Differentiation	72852
RepSox	Activin/NODAL/TGF- β pathway inhibitor; Inhibits ALK5	Reprogramming, Differentiation	73792
RepSox (Hydrochloride)	Activin/NODAL/TGF- β pathway inhibitor; Inhibits ALK5	Reprogramming, Differentiation	72392
Resveratrol	Inhibits COX-1	Maintenance, Differentiation	72862
All-Trans Retinoic Acid	Activates RAR	Differentiation	72262
9-cis Retinoic Acid	Retinoid pathway activator; Activates RAR and RXR	Differentiation	72382
Reversine	MEK/ERK pathway inhibitor; Inhibits MEK1	Reprogramming	72612
RG108	Epigenetic modifier; Inhibits DNA methyltransferase (DNMT1)	Reprogramming	72212
Rho Kinase Inhibitor IV (Hydrochloride)	RHO/ROCK pathway inhibitor; Inhibits ROCK2	Differentiation	73802
Rosiglitazone	Activates PPAR γ	Maintenance, Differentiation	72622

Product Listing (continued):

PRODUCT NAME	PATHWAY / TARGET	APPLICATIONS	CATALOG #
RSC-133	Epigenetic modifier; Inhibits DNMT	Reprogramming, Maintenance	73392
SAG	Hedgehog pathway activator; Activates Smoothed	Maintenance, Differentiation	73412
SB202190	Inhibits p38 MAPK	Maintenance, Differentiation	72632
SB203580	Inhibits p38 MAPK	Maintenance, Differentiation	72222
SB216763	Wnt/ β -catenin pathway	Maintenance, Differentiation	72872
SB431542	TGF- β pathway inhibitor; Inhibits ALK5, ALK4, ALK7	Reprogramming, Differentiation	72232
Shz-1	Induces cardiac differentiation	Differentiation	73422
Sinomenine	Anti-inflammatory analog	Maintenance	72882
Sodium Butyrate	Epigenetic modifier; Inhibits histone deacetylase	Reprogramming, Maintenance, Differentiation	72242
SP600125	JNK pathway inhibitor; Inhibits JNK1-3	Reprogramming, Differentiation	72642
Stauprimide	Inhibits nuclear localization of NME2	Differentiation	72652
StemRegenin 1	Inhibits aryl hydrocarbon receptor (AhR)	Maintenance, Differentiation	72342
StemRegenin 1 (Hydrochloride)	Inhibits aryl hydrocarbon receptor (AhR)	Maintenance, Differentiation	72352
STO-609 (Acetate)	Calcium signaling inhibitor; Inhibits CaMKKs	Differentiation	73862
Tamoxifen	Estrogen receptor modulator	Cell Line Development	72662
Thiazovivin	RHO/ROCK pathway inhibitor; Inhibits ROCK	Reprogramming, Maintenance	72252
Tranylcypromine	Epigenetic modifier; Inhibits lysine-specific demethylase 1 (LSD1)	Reprogramming, Maintenance	72272
Trichostatin A	Epigenetic modifier; Inhibits histone deacetylase (HDAC1)	Reprogramming, Maintenance, Differentiation	72282
TTNPB	Retinoid pathway activator; Activates RAR	Reprogramming, Differentiation	72892
UM171	Pyrimido-indole derivative that enhances HSC self-renewal in vitro	Maintenance	72912
UM729	Pyrimido-indole derivative that enhances HSC self-renewal in vitro	Maintenance	72332
Valproic Acid	Epigenetic modifier; Inhibits histone deacetylase (HDAC1)	Reprogramming, Maintenance, Differentiation	72292
XAV939	WNT pathway inhibitor; Inhibits TNKS1 and 2	Differentiation	72672
Y-27632	RHO/ROCK pathway inhibitor; Inhibits ROCK	Maintenance	72302
Zebularine	DNA methylation pathway inhibitor; Inhibits DNA methyltransferase	Reprogramming, Maintenance, Differentiation	72902

WALLCHART



Small Molecules, Big Impact in Pluripotent Stem Cell Research
www.stemcell.com/smallmoleculeswallchart

Copyright © 2016 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design and Scientists Helping Scientists are trademarks of STEMCELL Technologies Inc. All other trademarks are the property of their respective holders. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.

STEMCELL TECHNOLOGIES INC.'S QUALITY MANAGEMENT SYSTEM IS CERTIFIED TO ISO 13485. PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.