

# 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](http://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-1a 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- $\alpha$	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 g-secretase	Differentiation	72082
3-Deazaneplanocin A	Epigenetic modifier; Inhibits EZH2 lysine methyltransferase	Reprogramming	72322
Dexamethasone	Glucocorticoid signaling pathway; Activates glucocorticoid receptor	Reprogramming, Differentiation	72092
Dihydropyridone	Antioxidant, reducing agent	Maintenance	73622
16,16-Dimethyl Prostaglandin E2	Prostaglandin pathway activator; Inhibits 15-hydroxy PGDH	Maintenance	72372
DMH1	Activin/Nodal/TGF $\beta$ 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 F $2\alpha$ 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 Smoothed	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- $\beta$ pathway activator	Differentiation	72512
IDE2	Activin/NODAL/TGF- $\beta$ 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/b-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

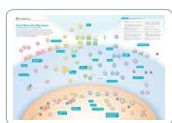
# Small Molecules for Stem Cell Research

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	CBFb-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- $\beta$ pathway inhibitor; Inhibits ALK5	Reprogramming, Differentiation	72592
LY411575	Notch pathway inhibitor; Inhibits $\gamma$ -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-m	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	Maintenance, Differentiation	72632
EP1, EP2, EP3, EP4	Maintenance, Differentiation	72192	72222
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- $\beta$ pathway inhibitor; Inhibits ALK5	Reprogramming, Differentiation	73792
RepSox (Hydrochloride)	Activin/NODAL/TGF- $\beta$ 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 $\gamma$	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/b-catenin pathway	Maintenance, Differentiation	72872
SB431542	TGF- $\beta$ 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 CaMKs	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
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](http://www.stemcell.com/smallmoleculeswallchart)

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