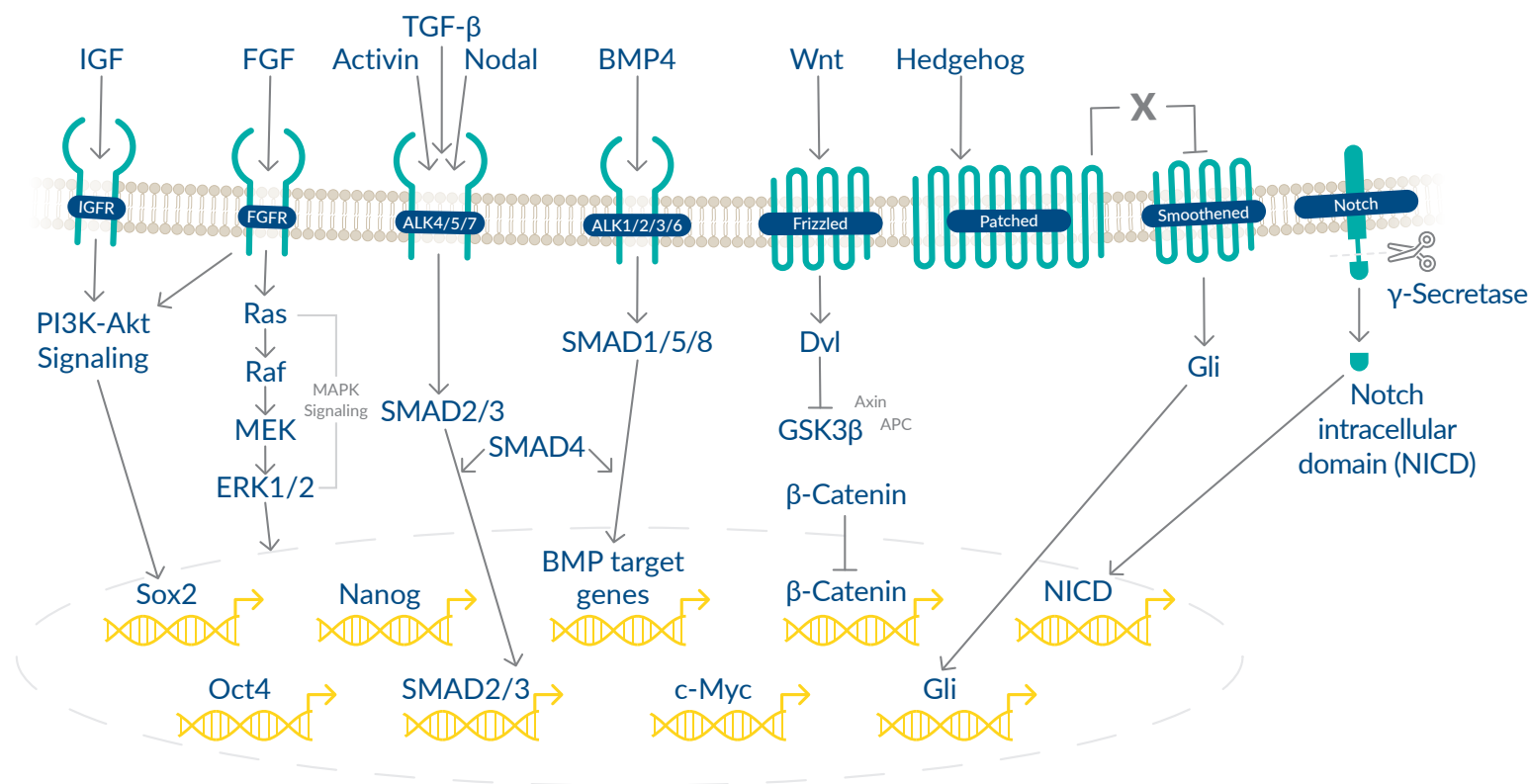


Stem Cell Research

Cayman offers small molecule modulators of stem cell differentiation, renewal, and proliferation, as well as reprogrammers of differentiated cells back to pluripotent cells. This product line includes activators and inhibitors of the Wnt, TGF- β , BMP4, hedgehog, Notch, and growth factor signaling pathways, as well as compounds to control apoptosis occurring during stem cell self-renewal and proliferation. Tools to study transcription factor activation and antibodies against various stem cell markers and intracellular signaling components are also available.



Signaling pathways regulating pluripotency and differentiation of stem cells

Small Molecule Inhibitors and Activators

Growth Factor Signaling/MAPK Pathway

| Item No. | Product Name | Summary |
|----------|--|--|
| 17254 | Compound 56 | EGFR inhibitor (IC_{50} = 6 pM); induces differentiation of rat mesenchymal stem cells |
| 31561 | Ganglioside G_{O1b} (bovine) (ammonium salt) | Promotes differentiation of murine embryonic stem cells (mESCs) to neuronal precursor and glial cells via activation of the ERK1/2 pathway |
| 10010268 | Lavendustin A | EGFR inhibitor (IC_{50} = 11 nM); induces differentiation of rat mesenchymal stem cells |
| 10006726 | PD 98059 | Prevents the activation of MEK by Raf or MEK kinase (IC_{50} = 2-7 μ M) |
| 13032 | PD 173074 | Selective inhibitor of FGFR tyrosine kinase activity, blocking autophosphorylation of FGFR1 (IC_{50} = 21.5 nM) |
| 13034 | PD 0325901 | Potent MEK inhibitor that suppresses phosphorylation of ERK |
| 10009557 | SC-1 | Inhibits RasGAP and ERK1 (K_d s = 98 and 212 nM, respectively), promoting self-renewal and blocking differentiation |
| 13182 | SU 5402 | An inhibitor of VEGFR2, FGFR1, and PDGFR β (IC_{50} s = 0.02, 0.03, and 0.51 μ M, respectively) |

Activin/Nodal/TGF- β Pathway

| Item No. | Product Name | Summary |
|----------|-----------------------|--|
| 9001799 | A 83-01 | Inhibits ALK4, ALK5, and ALK7 (IC_{50} s = 45, 12, and 7.5 nM, respectively) |
| 14794 | ALK5 Inhibitor II | Selectively inhibits ALK5; induces stem cell pluripotency by replacing the reprogramming transcription factor Sox2 <i>via</i> inhibition of the TGF- β signaling pathway and induction of Nanog transcription (also known as RepSox) |
| 13816 | IDE1 | Induces differentiation by activating the TGF- β signaling pathway (EC_{50} = 125.5 nM <i>in vitro</i>) |
| 13817 | IDE2 | Induces differentiation by activating the TGF- β signaling pathway (EC_{50} = 223 nM <i>in vitro</i>) |
| 13031 | SB-431542 (hydrate) | Selectively inhibits ALK5 (IC_{50} = 94 nM), suppressing stem cell renewal and promoting differentiation |
| 11793 | SB-505124 | Inhibits ALK4, ALK5, and ALK7, blocking activation of SMAD2/3 |
| 15945 | SMAD3 Inhibitor, SIS3 | Inhibits TGF- β /activin signaling by inhibiting SMAD3 phosphorylation (IC_{50} = 3 μ M) |

BMP4 Pathway

| Item No. | Product Name | Summary |
|----------|--------------|---|
| 16679 | DMH1 | Inhibits the kinase activity of ALK2 (IC_{50} = 13-108 nM) |
| 11967 | Dorsomorphin | Inhibits the BMP type I receptors ALK2, ALK3, and ALK6 |
| 16678 | K02288 | Inhibits ALK1 and ALK2 (IC_{50} s = 1.8 and 1.1 nM, respectively) and prevents BMP4-induced SMAD1/5/8 pathway activation |
| 11802 | LDN-193189 | Inhibits ALK1, ALK2, ALK3, and ALK6 (IC_{50} s = 0.8, 0.8, 5.3, and 16.7 nM, respectively) |
| 29904 | SJ000291942 | Activates BMP4 and increases expression of BMP target genes |

Wnt/ β -Catenin Pathway

| Item No. | Product Name | Summary |
|----------|------------------|---|
| 16733 | 1-Azakenpaullone | Inhibits GSK3 β (IC_{50} = 18 nM) |
| 13123 | BIO | Reversibly inhibits GSK3 α and GSK3 β (IC_{50} = 5 nM for both) |
| 13122 | CHIR99021 | Selectively inhibits GSK3 α and GSK3 β (IC_{50} s = 10 and 6.7 nM, respectively) |
| 20573 | CP21R7 | Selectively inhibits GSK3 β |
| 13951 | IWP-2 | Inactivates PORCN and inhibits Wnt production, impairing Wnt pathway activity <i>in vitro</i> (IC_{50} = 27 nM) |
| 13954 | IWP-4 | Inactivates PORCN and inhibits Wnt production, impairing Wnt pathway activity <i>in vitro</i> (IC_{50} = 25 nM) |
| 13659 | IWR-1-endo | Inhibits Wnt/ β -catenin pathway in cells (IC_{50} = 180 nM) by stabilizing the destruction complex |
| 14315 | KY 02111 | Promotes the differentiation of human pluripotent stem cells by inhibiting Wnt signaling |
| 10011251 | TWS119 | Inhibits GSK3 β (IC_{50} = 30 nM) |
| 19903 | Wnt Agonist I | Cell-permeable activator of Wnt signaling that does not inhibit GSK3 β |
| 16644 | Wnt-C59 | Inhibits PORCN, preventing Wnt activation |
| 13596 | XAV939 | Inhibits TNKS1 and TNKS2 (IC_{50} s = 11 and 4 nM, respectively), increasing protein levels of the axin-GSK3 β complex |

Stem Cell Small Molecule Screening Library (96-Well)

Item No. 9001827

- Contains >140 small molecules in two 96-well plates
- Includes compounds that induce differentiation, maintain self-renewal and proliferation, or improve the reprogramming efficiency of various stem cell populations



Hedgehog Pathway

| Item No. | Product Name | Summary |
|----------|---------------------------|---|
| 11321 | Cyclopamine | Inhibits signaling through the hedgehog pathway at the level of Smo |
| 13841 | GANT 61 | A Gli antagonist that inhibits Gli1 activation of gene expression ($IC_{50} = 5 \mu M$) |
| 14933 | SANT 1 | Inhibits hedgehog signaling by directly antagonizing Smo ($IC_{50} = 20 nM$) |
| 14193 | GANT 58 | A Gli antagonist that inhibits Gli1-mediated transcription ($EC_{50} = 5 \mu M$) |
| 20103 | 20(S)-hydroxy Cholesterol | An allosteric agonist of Smo that activates the hedgehog signaling pathway ($EC_{50} = \sim 3 \mu M$) |
| 10009634 | Purmorphamine | A Smo agonist that promotes differentiation |
| 11914 | SAG | A Smo agonist ($EC_{50} = 3 nM$) that inhibits hedgehog signaling at high concentrations ($>1 \mu M$) |

Notch Pathway

| Item No. | Product Name | Summary |
|----------|---------------|---|
| 27919 | Crenigacestat | An orally bioavailable Notch inhibitor |
| 15579 | Compound E | Inhibits γ -secretase, blocking the cleavage of the Notch carboxy-terminal fragment ($IC_{50} = \sim 0.3 nM$) |
| 13197 | DAPT | Inhibits γ -secretase, thereby indirectly inhibiting Notch |
| 14627 | DBZ | An inhibitor of γ -secretase that blocks cleavage of Notch into its active signaling effector |
| 21272 | FLI-06 | A first-of-its-kind Notch signaling inhibitor that disrupts the intracellular trafficking and processing of the Notch signaling pathway |

Controlling Stem Cell Apoptosis

| Item No. | Product Name | Summary |
|----------|--------------------------|--|
| 18168 | A-419259 (hydrochloride) | A Src family kinase inhibitor that prevents differentiation while maintaining pluripotency in embryonic stem cells |
| 16372 | Dihydrolipoic Acid | Triggers apoptosis of mouse embryonic stem cells and human cancer cells, suppressing proliferation |
| 16257 | ICG-001 | A disruptor of Wnt/ β -catenin signaling that selectively induces apoptosis in transformed cells and has been studied in the context of regulating cancer stem cells |
| 16161 | PluriSn 1 | Selectively induces ER stress and induces apoptosis in human pluripotent stem cells while sparing progenitor and differentiated cells |
| 15378 | Siomycin A | Inhibits FoxM1, preventing proliferation and inducing apoptosis in certain types of stem cells as well as cancer cells |
| 10005583 | Y-27632 (hydrochloride) | A ROCK inhibitor that blocks apoptosis of dissociated cultured human embryonic stem cells, increasing cloning efficiency by 25% and sustaining survival up to 30 passages |

Study Transcription Factor Activation in Cells

Sensitive, non-radioactive assays for detecting transcription factors

STAT3 Transcription Factor Assay Kit

Item No. 601950

- Detect specific STAT3 DNA binding activity in nuclear extracts
- DNA-coated 96-well plate with high binding capacity
- Highly specific monoclonal antibody provides excellent signal to background ratio

Oct4 Transcription Factor Assay Kit

Item No. 601080

- Detect Oct4 from whole cell lysates
- Capture the transcription factor using a specific dsDNA sequence bound to the 96-well plate
- Detect the dsDNA-bound transcription factor with specific antibodies

View additional STAT3 Assay Kits at www.caymanchem.com

Antibodies for Stem Cell Research

Cell Surface Markers

| Item No. | Product Name | Species Reactivity | Application(s) | Summary |
|----------|--|---------------------------|------------------|---|
| 32201 | CD31 Rabbit Monoclonal Antibody | (+) Human | IHC, WB | Surface marker of human and mouse embryonic stem cells |
| 38094 | CD31 Rabbit Monoclonal Antibody (Clone 007) | (+) Human | ICC, IF | |
| 10004835 | CD34 Monoclonal Antibody (Clone ICO-115) | (+) Human | FC, ICC | Surface marker of hematopoietic stem cells, satellite, and endothelial progenitor cells |
| 32245 | CD34 (C-Term) Rabbit Monoclonal Antibody | (+) Human, mouse, and rat | IHC, WB | |
| 10004597 | CD45 Monoclonal Antibody (Clone BRA-55) | (+) Human | FC, ICC, IHC, WB | Surface marker of white blood cell progenitors |
| 32236 | CD45 (C-Term) Rabbit Monoclonal Antibody (Clone RM291) | (+) Human | IHC, WB | |

Intermediate Filaments

| Item No. | Product Name | Species Reactivity | Application(s) | Summary |
|----------|---|---------------------------|----------------|--|
| 29286 | Nestin Monoclonal Antibody (Clone 4D11) | (+) Human, mouse, and rat | ICC, IHC, WB | Markers of ectoderm, neural, and pancreatic progenitor cells |
| 20197 | Vimentin Monoclonal Antibody (Clone 12E4) | (+) Human | ELISA, IP, WB | |
| 25341 | Vimentin Polyclonal Antibody | (+) Human | ELISA, WB | |

Intracellular Signaling

| Item No. | Product Name | Species Reactivity | Application(s) |
|----------|---|---|----------------|
| 32226 | β -Catenin Rabbit Monoclonal Antibody | (+) Human | IHC, WB |
| 100029 | β -Catenin Polyclonal Antibody | (+) Human, bovine, mouse, porcine, and rat | IHC, WB |
| 10822 | SMAD1/5/8/9 Polyclonal Antibody | (+) Human, mouse, and rat | WB |
| 10823 | SMAD2 Polyclonal Antibody | (+) Human, chicken, mouse, and rat | IHC, WB |
| 10832 | SMAD3 Polyclonal Antibody | (+) Human, bovine, canine, mouse, porcine, primate, and rat | IF, IHC, WB |
| 10838 | SMAD4 Polyclonal Antibody | (+) Human, new world monkey, mouse, and rat | WB |
| 32227 | SMAD4 (C-Term) Rabbit Monoclonal Antibody | (+) Human | IHC, WB |
| 35319 | Sox2 (C-Term) Rabbit Monoclonal Antibody | (+) Human | IHC, WB |
| 35812 | STAT3 α/β (N-Term) Rabbit Monoclonal Antibody | (+) Human | IHC, WB |
| 32212 | STAT3 α/β (Phospho-Tyr ⁷⁰⁵) Rabbit Monoclonal Antibody | (+) Human | IHC, WB |

To view a complete list of our Stem Cell Research products,
visit us online at www.caymanchem.com