# Small Molecules

**DAPT**

Notch pathway inhibitor; Inhibits γ-secretase

Catalog # 72082

5 mg

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## Product Description

DAPT is an inhibitor of the γ-secretase complex. Notch is a key target of γ-secretase, therefore DAPT indirectly inhibits the Notch pathway. Other targets of γ-secretase that would be influenced by DAPT include amyloid precursor protein, E-cadherin, and ErbB4 (Dovey et al.).

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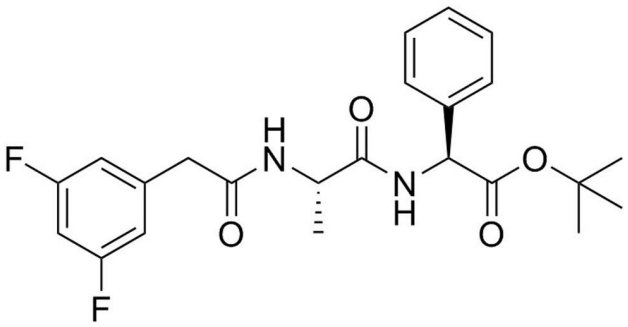
| Molecular Name: | DAPT |
| Alternative Names: | GSI-IX; LY-374973 |
| CAS Number: | 208255-80-5 |
| Chemical Formula: | $C_{23}H_{26}F_2N_2O_4$ |
| Molecular Weight: | 432.5 g/mol |
| Purity: | ≥ 95% |
| Chemical Name: | N-[2S-(3,5-difluorophenyl)acetyl]-L-alanyl-2-phenyl-1,1-dimethylethyl ester-glycine |
| Structure: |  |

## Properties

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| Physical Appearance: | A crystalline solid |
| Storage: | Product stable at -20°C as supplied. Protect from prolonged exposure to light. For product expiry date, please contact techsupport@stemcell.com. |
| Solubility: | · Absolute ethanol ≤ 2.3 mM<br>· DMSO ≤ 55 mM<br>For example, to prepare a 10 mM stock solution in DMSO, resuspend 5 mg in 1.16 mL of DMSO.<br><br>Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.<br><br>Compound has low solubility in aqueous media. For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity. |

## Published Applications

MAINTENANCE AND SELF-RENEWAL
· Reduces colony-forming efficiency of mouse neural stem cells (Androutsellis-Theotokis et al.).
· Enhances radiation-induced cell death of glioma stem cells (Wang et al.).
DIFFERENTIATION
· Promotes differentiation of nociceptors from human pluripotent stem cells, in combination with several other small molecules (Chambers et al.).
· Promotes differentiation of neurons from human and mouse embryonic stem (ES) cells (Crawford and Roelink; Elkabetz et al.).
· Promotes differentiation of retinal pigment epithelium from mouse ES cells (Osakada et al.).
· Promotes differentiation of pancreatic cells from human pluripotent stem cells (D'Amour et al.).
CANCER RESEARCH
· Reduces mammosphere-forming efficiency of breast cancer cell lines and ductal carcinoma in situ cells (Farnie et al.; Harrison et al.).

## References

Androutsellis-Theotokis A et al. (2006) Notch signalling regulates stem cell numbers in vitro and in vivo. Nature 442(7104): 823–6.
Chambers SM et al. (2012) Combined small-molecule inhibition accelerates developmental timing and converts human pluripotent stem cells into nociceptors. Nature Biotechnology 30(7): 715–20.
Crawford TQ & Roelink H. (2007) The notch response inhibitor DAPT enhances neuronal differentiation in embryonic stem cell-derived embryoid bodies independently of sonic hedgehog signaling. Developmental Dynamics: 236(3): 886–92.
D'Amour KA et al. (2006) Production of pancreatic hormone-expressing endocrine cells from human embryonic stem cells. Nature Biotechnology 24(11): 1392–401.
Dovey HF et al. (2001) Functional gamma-secretase inhibitors reduce beta-amyloid peptide levels in brain. Journal of Neurochemistry 76(1): 173–81.
Elkabetz Y et al. (2008) Human ES cell-derived neural rosettes reveal a functionally distinct early neural stem cell stage. Genes & Development 22(2): 152–65.
Farnie G et al. (2007) Novel cell culture technique for primary ductal carcinoma in situ: role of Notch and epidermal growth factor receptor signaling pathways. Journal of the National Cancer Institute 99(8): 616–27.
Harrison H et al. (2010) Regulation of breast cancer stem cell activity by signaling through the Notch4 receptor. Cancer Research 70(2): 709–18.
Osakada F et al. (2009) Stepwise differentiation of pluripotent stem cells into retinal cells. Nature Protocols 4(6): 811–24.
Wang J et al. (2010) Notch promotes radioresistance of glioma stem cells. Stem Cells 28(1): 17–28.

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