SP600125 is an inhibitor of c-Jun N-terminal kinase (JNK). The three isoforms of JNK are members of the MAP kinase superfamily that induce the expression of immediate-early genes in response to specific stress and inflammatory signals. Through these actions, the JNK enzymes modulate cell proliferation, apoptosis, differentiation, and autophagy. SP600125 is a potent and reversible inhibitor of JNK1-3 (IC₅₀ = 0.11 µM; Bennett et al.). It is cell permeable and dose-dependently inhibits c-Jun phosphorylation in cells, blocking the expression of COX-2 and TNF-α in monocytes and IL-10, TNF-α, and IFN-γ in T cells (Bennett et al.).

### Properties

**Physical Appearance:** A crystalline solid

**Storage:** Product stable at -20°C as supplied. Protect from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.

**Solubility:**
- DMSO ≤ 90 mM
- Absolute ethanol ≤ 2.2 mM

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.

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

REPROGRAMMING
- Direct lineage reprogramming of fibroblasts to mature neurons, in combination with CHIR99021 (Catalog #72052), RepSox (Catalog #73792), Forskolin (Catalog #72112), G06983 (Catalog #72462), Valproic Acid (Catalog #72292) and Y-27632 (Catalog #72302) (Hu et al.).

DIFFERENTIATION
- Inhibits BMP9-induced osteogenic differentiation in cultured mouse mesenchymal stem cells (MSCs) and in primary bone marrow stromal cells (Zhao et al.).
- Promotes adipogenic, but represses osteogenic differentiation of human MSCs (Bilkovski et al.; Liu et al.; Qiu et al.; Tominaga et al.).
- Causes cell death and inhibits neurogenesis when added during early stages of neuronal culture (Tiwari et al.).

References
Qiu W et al. (2011) Activation of non-canonical Wnt/JNK pathway by Wnt3a is associated with differentiation fate determination of human bone marrow stromal (mesenchymal) stem cells. Biochem Biophys Res Commun 413(1): 98–104.
Zhao Y et al. (2013) Activation of JNKs is essential for BMP9-induced osteogenic differentiation of mesenchymal stem cells. BMB Rep 46(8): 422–7.

Related Small Molecules
For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules or contact us at techsupport@stemcell.com.

This product is hazardous. Please refer to the Safety Data Sheet (SDS).