BI-D1870 inhibits the 90 kDa ribosomal S6 kinases (RSKs), which are serine/threonine kinases involved in diverse cellular processes including growth, survival, and motility (Romeo et al.). BI-D1870 is a cell-permeable, ATP-competitive inhibitor of the four vertebrate isoforms of RSK (RSK1 - 4; IC₅₀ = 31, 24, 18, and 15 nM, respectively; Sapkota et al.). At 100 nM, it also significantly inhibits polo-like kinase 1, Aurora B, maternal embryonic leucine zipper kinase, and mammalian STE20-like kinase 2 (Bain et al.; Sapkota et al.).

**Molecular Name:** BI-D1870  
**Alternative Names:** Not applicable  
**CAS Number:** 501437-28-1  
**Chemical Formula:** C₁₉H₂₃F₂N₅O₂  
**Molecular Weight:** 391.4 g/mol  
**Purity:** ≥ 95%  
**Chemical Name:** 2-(3,5-difluoro-4-hydroxyanilino)-5,7-dimethyl-8-(3-methylbutyl)-7H-pteridin-6-one

**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 ≤ 38 mM  
For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 255 µL of fresh DMSO.

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

MAINTENANCE AND SELF-RENEWAL
- Reduces neural stem cell proliferation and self-renewal in vitro (Karelina et al.).

CANCER RESEARCH
- Inhibits growth of breast cancer cell lines (Stratford et al.; Dhillon et al.).

References

Karelina K et al. (2014) Ribosomal S6 kinase regulates ischemia-induced progenitor cell proliferation in the adult mouse hippocampus. Exp Neurol 253: 72–81.

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.