

MRK-990: A chemical probe for PRMT9/5

Version 2.0 (19th December 2024)



Web link for more details: <https://www.thesgc.org/chemical-probes/MRK-990>

Overview

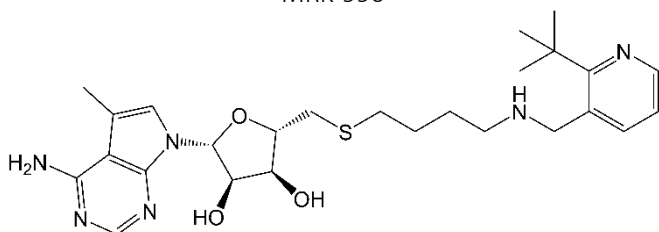
MSD in collaboration with the SGC has developed a dual activity chemical probe MRK-990 for PRMT9 and PRMT5. When used in parallel with selective chemical probes for PRMT5 (e.g., GSK591 and LLY-283), MRK-990 can be used to study the biological role of PRMT9.

Summary

Chemical Probe Name	MRK-990
Negative control compound	MRK-990-NC
Target(s) (synonyms)	PRMT9/PRMT5
Recommended <i>in vitro</i> assay concentration	< 0.1 μ M; use with negative control, and orthogonal controls for PRMT5 for best interpretation of data
Suitability for <i>in vivo</i> use and recommended dose	This chemical probe was not tested for <i>in vivo</i> use.
Publications	
Orthogonal chemical probes	GSK591, LLY-283
<i>In vitro</i> assay(s) used to characterise	Radioactivity (methyltransferase), SPR
Cellular assay(s) for target-engagement	NanoBRET, in cell western
ChemicalProbes.org	

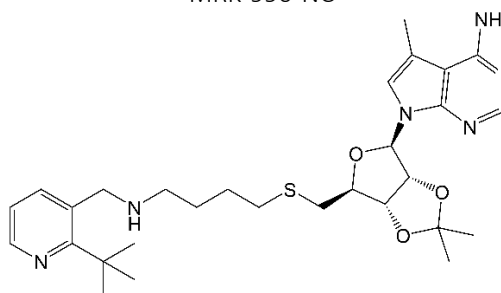
Chemical Probe & Negative Control Structures and Use

MRK-990



SMILES:
NC1=NC=NC2=C1C(C)=CN2[C@@H]3O[C@@H]([C@H]([C@H]3O)O)CSCCCC
NCC4=CC=CN=C4C(C)(C)C
InChIKey: PLCITURFVJNAFH-GUQHISFFSA-N
Molecular weight: 514.3
Storage: As a dry powder or as DMSO stock solutions (10 mM) at -20 °C.
DMSO stocks beyond 3-6 months or 2 freeze/thaw cycles should be tested for activity before use
Dissolution: Soluble in DMSO up to 50 mM; use only 1 freeze/thaw cycle per aliquot

MRK-990-NC



SMILES:
NC1=NC=NC2=C1C(C)=CN2[C@@H]3O[C@@H]([C@H]([C@H]3O)O)CSCCCC
NCC4=CC=CN=C4C(C)(C)C
InChIKey: VXZSITJOQSAYQT-TXJANDSUSA-N
Molecular weight: 555.3
Storage: As a dry powder or as DMSO stock solutions (10 mM) at -20 °C.
DMSO stocks beyond 3-6 months or 2 freeze/thaw cycles should be tested for activity before use
Dissolution: Soluble in DMSO up to 50 mM; use only 1 freeze/thaw cycle per aliquot

Chemical Probe Profile

***In vitro* Potency & Selectivity:** In a radioactivity-based methyltransferase assay, MRK-990 inhibits PRMT9 with IC₅₀ = 10 nM and PRMT5 with IC₅₀ = 30 nM.

Potency in Cells and Cellular Target Engagement: In an in-cell western, MRK-990 inhibits the symmetric dimethylation of SAP145 (PRMT9) with IC₅₀ = 145 nM, and dimethylarginine (PRMT5) with IC₅₀ = 519 nM.