GNE-PROBE-1977: A chemical probe for TREX1

Version 1.0 (24th Sept 2025)

Web link for more details: https://www.thesgc.org/chemical-probes/gne-probe-1977

Overview

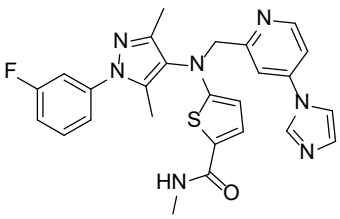
Genentech in collaboration with the SGC have discovered the first chemical probe, GNE-PROBE-1977, for human three-prime repair exonuclease 1 (TREX1).

Summary

Chemical Probe Name	GNE-PROBE-1977
Negative control compound	GNE-PROBE-3496
Target(s) (synonyms)	TREX1 (3'-5' exonuclease TREX1, deoxyribonuclease III)
Recommended *in vitro* assay concentration	500 nM but do not exceed 2 μM; use with negative control for best interpretation of data
Suitability for *in* vivo use and recommended dose	This chemical probe is not suitable for *in vivo* use.
Publications	
Orthogonal chemical probes	N/A
In vitro assay(s) used to characterise	Activity, DSF, SPR
Cellular assay(s) for target-engagement	NanoBRET, THP-1 IFN reporter assay
ChemicalProbes.org	

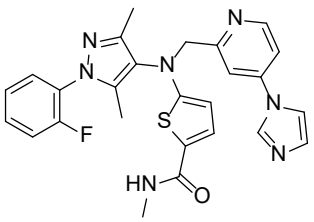
Chemical Probe & Negative Control Structures and Use

GNE-PROBE-1977



SMILES:
CC1=NN(C2=CC(F)=CC=C2)C(C)=C1N(C3=CC=C(S3)C(NC)=O)CC4=NC=CC(N5C=CN=C5)=C4
InChiKey: JSNOLYKRMWVFSV-UHFFFAOYSA-N
Molecular weight: 501.6
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

GNE-CONTROL-3496



SMILES:
CC1=NN(C2=C(F)C=CC=C2)C(C)=C1N(CC3=NC=CC(N4C=CN=C4)=C3)C5=CC=C(C(NC)=O)S5
InChiKey: YJGGKDSJYFUFFI-UHFFFAOYSA-N
Molecular weight: 501.6
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 an activity assay, GNE-PROBE-1977 inhibits TREX1 with an IC_{50} value of 500 pM.

Potency in Cells and Cellular Target Engagement: In an intact cell-based nanoBRET assay, GNE-PROBE-1977 inhibited the interaction between TREX1 and a nanoBRET tracer with an EC_{90} value of 2.1 μM.