Induced Modification And Degradation Of Intracellular Proteins In Lysosomes: Methylarginine Targeting Chimera (MrTAC)

Tech ID: 34129 / UC Case 2024-9AV-0

BRIEF DESCRIPTION

A revolutionary drug modality for the selective modification and degradation of intracellular proteins in lysosomes.

FULL DESCRIPTION

Methylarginine Targeting Chimera (MrTAC) is a heterobifunctional small molecule designed to selectively induce arginine methylation, facilitating the targeted degradation of intracellular proteins within lysosomes. This innovative approach leverages the enzyme protein arginine N-methyltransferase 1 (PRMT1) to chemically modify proteins, directing them towards lysosomal degradation, a pathway previously underutilized in targeted protein degradation therapies.

SUGGESTED USES

- Targeted cancer therapies by degrading disease-causing proteins overexpressed in cancer cells.
- Drug development for diseases associated with protein dysregulation and mutation.
- Research tools for studying protein function and methylation effects on cell biology

ADVANTAGES

- High selectivity in targeting specific proteins for degradation without affecting global methylation patterns.
- Utilizes the lysosomal degradation pathway, offering an alternative to proteasomal degradation.
- Capable of degrading proteins across various cell lines, timescales, and doses.
- Drives biological loss-of-function phenotypes affecting survival, transcription, and proliferation.
- Overcomes challenges associated with proteasomal targeting, such as ineffective ubiquitination and protein mutation.

RELATED MATERIALS

- Seabrook, L. J., et al. Albrecht, L. V. (2024). Methylarginine targeting chimeras for lysosomal degradation of intracellular proteins. Nat. Chem. Biol. 20.
- Seabrook, L. J., Albrecht, L. V. (2024). Targeting proteins to lysosomes with a chemical inducer of arginine methylation. Nat. Chem. Biol. 20.

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OTHER INFORMATION

CATEGORIZED AS

- **Biotechnology**
  - Proteomics
- **Materials & Chemicals**
  - Chemicals
- **Medical**
  - Disease: Cancer
  - New Chemical Entities, Drug Leads
  - Therapeutics
- **Research Tools**
  - Bioinformatics
  - Reagents

RELATED CASES

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