14-3-3 COVALENT MOLECULAR GLUE STABILIZERS

Tech ID: 32638 / UC Case 2022-070-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

This drug discovery platform focuses on identifying and developing covalent molecular glue stabilizers specifically designed to target 14-3-3 proteins. Researchers at UC Berkeley have engineered this system to discover small molecules that create a permanent, covalent bond between 14-3-3 adapter proteins and various disease-relevant targets. By stabilizing these protein-protein interactions (PPIs), the platform enables the sequestration and functional inhibition of proteins that are typically considered "undruggable" due to a lack of traditional binding pockets. This approach exploits the extensive regulatory network of 14-3-3 proteins, which interact with hundreds of signaling partners, to provide a modular strategy for therapeutic intervention across a wide range of human diseases.

SUGGESTED USES

- Oncology Therapeutics: Developing glues to sequester oncogenic signaling proteins that depend on 14-3-3 for stability or cellular localization.
- Neurodegenerative Disease Treatment: Targeting proteins involved in pathological signaling or misfolding pathways within the central nervous system.
- Modulation of Scaffolding Proteins: Providing a mechanism to inhibit the activity of adapter proteins that lack enzymatic domains and are therefore difficult to target with conventional inhibitors.
- High-Throughput Lead Discovery: Serving as a specialized screening system to rapidly identify novel covalent ligands for challenging protein-protein interfaces.
- Biological Research Tools: Utilizing specific molecular glues to acutely sequester proteins in cell models to validate their roles in complex biological pathways.

ADVANTAGES

- Irreversible Stabilization: The covalent nature of these molecular glues ensures long-lasting sequestration of the target protein, providing more robust inhibition than reversible binders.
- Targeting "Undruggable" Space: Effectively modulates protein-protein interfaces that are traditionally inaccessible to standard occupancy-based small molecules.
- Enhanced Selectivity: The mechanism requires the specific cooperative binding of 14-3-3 and the target protein, minimizing off-target interactions with other cellular proteins.
- Versatile Platform: Capable of being adapted to a wide variety of targets within the vast 14-3-3 interactome.
- Accelerated Development: The platform streamlines the transition from initial screening to the identification of therapeutic lead compounds.

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Covalent Degrader of the Oncogenic Transcription Factor CTNNB1
- Stereoselective Covalent Destabilizing Degradation of the Oncogenic Transcription Factor MYC
- Dcaf16-Based Covalent Handle For The Rational Design Of Monovalent Degraders

CONTACT

Laleh Shayesteh
lalehs@berkeley.edu
tel: 510-642-4537.

INVENTORS

- Nomura, Daniel K.

OTHER INFORMATION

CATEGORIZED AS

- Biotechnology
- Health
- Proteomics
- Medical
- Screening
- Therapeutics
- Research Tools
- Screening Assays

RELATED CASES

2022-070-0

University of California, Berkeley Office of Technology Licensing
2150 Shattuck Avenue, Suite 510, Berkeley,CA 94704
Tel: 510.643.7201 | Fax: 510.642.4566
https://ipira.berkeley.edu/ | otl-feedback@lists.berkeley.edu