

# SFK Covalent Protein Genetic Engineering Platform: Unlocking Potent Therapeutics for Undruggable Targets

Tech ID: 34576 / UC Case 2023-050-0

## TECHNOLOGY DESCRIPTION

UCSF inventors have developed a protein engineering platform that incorporates a novel latent bioreactive unnatural amino acid, sulfonylfluoro-L-lysine (SFK), into proteins. This technology addresses the challenge of targeting “undruggable” proteins by enabling covalent interactions with residues such as His, Tyr, and Lys, thereby enhancing therapeutic potency, reducing drug resistance, and allowing irreversible binding in vivo. The platform supports diverse applications, including drug development, imaging, diagnostics, and precision oncology. Currently in advanced experimental stages, it demonstrates key advantages such as stability, efficiency, and proximity-enabled reactivity, while offering unique insights into covalent protein interactions. This cutting-edge technology opens new avenues for advancing covalent protein therapeutics, transforming drug discovery, and enhancing precision medicine for diseases previously considered untreatable.

## RELATED MATERIALS

- ▶ [Genetically encoding latent bioreactive amino acids and the development of covalent protein drugs, PMID: 34968810, DOI: 10.1016/j.cbpa.2021.102106 - 12/27/2021](#)

## PATENT STATUS

Patent Pending

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## OTHER INFORMATION

### KEYWORDS

Covalent protein therapeutics, Protein engineering platform, Oncology drug development, Unnatural amino acids (SFK), Biologic and small molecule therapeutics, Targeting undruggable proteins, Sulfonylfluoro-L-lysine innovation

### CATEGORIZED AS

- ▶ **Medical**
  - ▶ Disease: Cancer
  - ▶ New Chemical Entities, Drug Leads
  - ▶ Therapeutics
- ▶ **Research Tools**
  - ▶ Antibodies

▶ [Other](#)

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