

USE OF NOVEL PYLRS—TRNA(PYL) PAIRS FOR GENETIC CODE EXPANSION

Tech ID: 33689 / UC Case 2025-016-0

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2026/072574	04/02/2026	2025-016

BRIEF DESCRIPTION

This innovation addresses the limitations of producing proteins with non-natural monomers (NNMs), which have valuable applications in drug discovery and materials science. Researchers at UC Berkeley have developed novel PylRS-tRNAPyl pairs that enable the efficient incorporation of NNMs into proteins. This technology provides a significant advantage over existing methods by offering a broader range of NNM incorporation with high specificity and efficiency.

Provided are compositions and methods for creating proteins that contain non-natural monomers (NNMs) using new PylRS-tRNAPyl pairs. This technology works by introducing a subject PylRS, a tRNA, and an NNM into a host system, such as a bacterial cell, eukaryotic cell, or an in vitro translation system, allowing the tRNA to be acylated with the NNM by the PylRS.

SUGGESTED USES

- » Drug discovery and development by creating novel protein-based therapeutics with enhanced properties.
- » Materials science for the creation of new polymers and biomaterials with tailored functions.
- » Basic research to study protein structure and function by incorporating specific chemical probes.

ADVANTAGES

- » Enables the efficient and site-specific incorporation of a variety of non-natural monomers into proteins.
- » Offers greater flexibility and expanded genetic code options compared to traditional methods.
- » The system is compatible with various hosts, including bacterial and eukaryotic cells, and in vitro translation systems.

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Novel Phage CRISPR-Cas Effectors and Uses Thereof](#)

CONTACT

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



INVENTORS

- » Banfield, Jillian F.

OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
- » Genomics
- » Health
- » **Medical**
- » New Chemical Entities, Drug Leads
- » Research Tools
- » **Research Tools**
- » Nucleic Acids/DNA/RNA
- » Protein Synthesis

RELATED CASES

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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

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