

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

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

PATENT STATUS

Patent Pending

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

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Drug discovery and development by creating novel protein-based therapeutics with enhanced properties.

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Materials science for the creation of new polymers and biomaterials with tailored functions.

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Basic research to study protein structure and function by incorporating specific chemical probes.

ADVANTAGES

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Enables the efficient and site-specific incorporation of a variety of non-natural monomers into proteins.

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Offers greater flexibility and expanded genetic code options compared to traditional methods.

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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](#)

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