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(54) Title: EXPANDING THE EUKARYOTIC GENETIC CODE

(57) Abstract: This invention provides compositions and methods for producing translational components that expand the number of genetically encoded amino acids in eukaryotic cells. The components include orthogonal tRNAs, orthogonal aminoacyl-tRNA synthetases, orthogonal pairs of tRNAs/synthetases and unnatural amino acids. Proteins and methods of producing proteins with unnatural amino acids in eukaryotic cells are also provided.

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