Accelerated protein engineering using Vibrio natriegens genetic code expansion

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Abstract

Escherichia coli has been considered as the most used model bacteria in the majority of studies for several decades. However, a new faster chassis is emerging in the form of the fast-growing gram-negative bacterium Vibrio natriegens. Different methodologies, well established in E. coli, are currently being adapted for the Vibrio natriegens in the hope of enabling a much faster platform for general lab-work. Amongst the vast technologies available for E. coli, genetic code expansion, the incorporation of unnatural amino acids into proteins, serves as a robust tool for protein engineering and biorthogonal modifications. Here we designed and adapted the genetic code expansion methodology for Vibrio natriegens and demonstrate an unnatural amino acid incorporation into a protein for the first time in this organism.

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