

Genetically Encoding Unnatural Amino Acids - New Opportunities for Protein-based Research and Engineering

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Abstract :

Proteins participate in virtually every biological process, and are becoming increasingly important for biological studies and engineering. Although proteins are naturally built with canonical amino acids containing limited functionalities, unnatural amino acids have been selectively incorporated into proteins in live cells through the expansion of the genetic code. Novel chemical, physical, and biological properties can be synthesized into the unnatural amino acid, and subsequently be introduced into proteins via genetic incorporation. In this talk, I will discuss our efforts to expand the unnatural amino acid technology in various cell types and organisms, and present how to harness various unnatural amino acids to enable new biological research in vivo and to engineer novel protein properties.