



SCIENCE FOR THE BENEFIT OF HUMANITY

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Generation of Semi-Synthetic Polypeptides

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Technology Summary

The ability to chemically synthesize proteins (protein engineering) has the potential to generate unique research tools and novel therapeutic agents. A key limitation in current protein engineering methods is that they are only effective for synthesizing small proteins or individual domains and are often technically demanding.

Our researchers have developed a protein engineering method that involves a single chemical step to selectively add a peptide to a recombinant protein termed “expressed protein ligation”. They have successfully synthesized functional many classes of protein with this method, including, kinases, ion channels, polymerases, transcription factors, cytokines etc. The method can also be expanded to incorporate unnatural amino acids, biosensors, biophysical probes, and post-translational modifications into the protein for a wide variety of applications. For example, our scientists have the ability to specifically label the recombinant proteins with sensor peptides to monitor the protein’s function and structure by fluorescence spectroscopy.

Advantage

- This method is practical and convenient for generating proteins that are large and complex with various modifications for different applications. The method can also be used for large-scale production of such proteins.

Area of Application

- Production of proteins with native structure and function.
- Production of unique tools for biomedical research, such as novel molecular probes/beacons for detecting conformational changes in proteins during complex biological processes, e.g. transcription.

Stage of Development

- Discovery

Lead Inventor

- Dr. Tom Muir

Patent Information

- U.S. Patent 6,875,594 (issued April 5, 2005)

References

- Muir, et al. 1998. PNAS, 95:6705-6710.
- Severinov & Muir. 1998. J. Biol. Chem., 273:16205-16209.
- Cotton & Muir. 2000. Chem. Biol., 7:253-261.
- Muir, T.W. 2003, Annu. Rev. Biochem. 72:249-289

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