Heterogeneous Protein Foldamers Containing Alpha, Beta and Gamma Amino Acids

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing unnatural compounds containing rotationally constrained amino acid residues that are not amenable to enzymatic degradation, making them useful to probe protein-protein and other large molecule interactions.

OVERVIEW

Foldamers are synthetic protein oligomers with discrete and predictable folding properties akin to those of natural proteins. They provide molecular tools to investigate large-molecule interactions such as protein-protein or protein-RNA interactions. Current foldamers have homogeneous backbones containing either beta-amino acids or gamma-amino acids.

THE INVENTION

UW-Madison researchers have developed polypeptide foldamers containing alpha-amino acids along with cyclically constrained beta-amino acids and gamma-amino acids. These unnatural compounds contain rotationally constrained amino acid residues that are not amenable to enzymatic degradation, making them useful to probe protein-protein and other large molecule interactions. Because the backbone is heterogeneous, a portion of the residues, such as the alpha-amino acids, can provide functional diversity, while the cyclically constrained residues confer conformational specificity and stability.

APPLICATIONS

• Investigating large molecule interactions
• May be useful as non-enzymatically degradable probes to mimic protein behavior in solution

KEY BENEFITS

• Heterogeneous backbone greatly increases the number of specific molecular shapes
that can be achieved.
• Enhances likelihood of creating foldamers with desirable functions
• Allows modeling of peptide and protein conformations in aqueous solutions
• Compounds can be fabricated in many sizes.
• Libraries of compounds can be prepared by automated means.
• Compounds can be labeled and tracked throughout any given reaction.

ADDITIONAL INFORMATION

Tech Fields
Research Tools - Protein interactions & function
Research Tools - Synthesis & purification
Materials & Chemicals - Synthesis

CONTACT INFORMATION

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or (608) 265-9861.