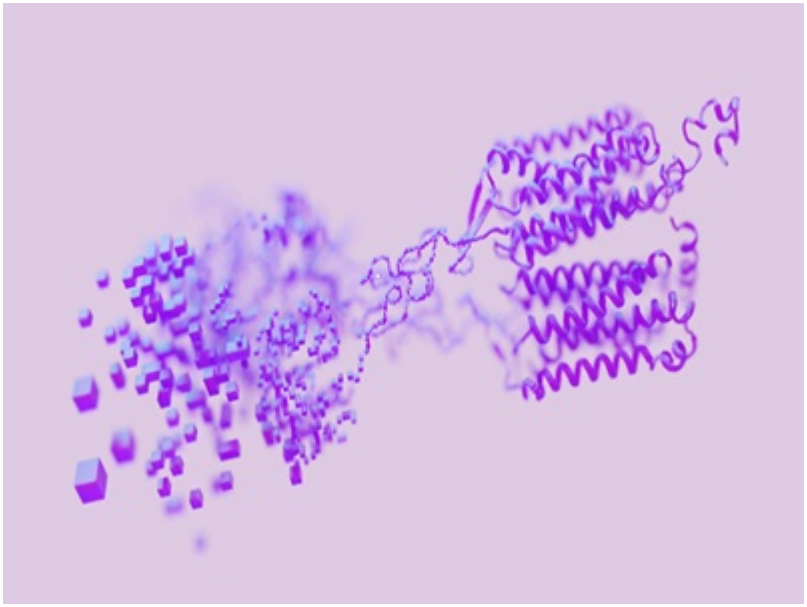
Amyloidogenic Peptide Traps: A Novel Approach to Amyloid-Related Diseases

This technology is a novel method to design protein scaffolds to bind and neutralize amyloid-forming proteins, offering a potential therapeutic intervention for diseases associated with amyloid fibrils.



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Category

Selection of Available Technologies

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What is the Problem?

Amyloid fibrils, self-associated segments of proteins, are implicated in many diseases, including Alzheimer's, Parkinson's, and type 2 diabetes. These proteins contain segments that are intrinsically disordered, making it difficult to generate binders or inhibitors targeting these regions due to its conformational flexibility. Current therapeutic strategies often fail to effectively target these amyloid-forming proteins, leaving a significant unmet need in the treatment of these conditions.

What is the Solution?

The technology involves the use of de novo designed protein scaffolds that contain deep peptide binding clefts. These clefts bind to segments of amyloid-forming proteins, effectively neutralizing them. The technology has been successfully applied to segments of several amyloid-forming proteins, including Transthyretin, Tau, Serum amyloid A1, and Aβ42. The Aβ binders, in particular, have been shown to block the assembly of Aβ fibrils as effectively as the

most potent clinically tested antibodies to date.

What is the Competitive Advantage?

This approach enables the design of protein binders to target segments of proteins that have a propensity to form β-strand-rich amyloid fibrils, a common feature of many disease-associated proteins. The Aβ binders have demonstrated high efficacy in blocking the assembly of Aβ fibrils, a key factor in Alzheimer's disease. The technology has potential applications in a range of diseases associated with amyloid fibrils, offering broad market potential. This innovative approach represents a significant advancement in the field, offering a potential strategy to target intrinsically disordered regions of proteins, which have traditionally been considered 'undruggable'.

References

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