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**Self-Assembling Beta-Sheet Peptides for Targeting Amyloid Aggregates** BIPLAB SARKAR, SALAM HASHMI, GHIDAY LAMPTEY, HENRY CABRAL, PETER NGUYEN, VIVEK KUMAR, New Jersey Inst of Tech — Alzheimer's is the most common form of dementia that affects over 5 million people in the US. Current treatments offer a means to slow disease progression rather than reverse its effects. Two prime suspects linked with disease progression are neurofibrillary tangles and amyloid-beta plaques. Our research explores methods in which amyloid-beta plaques can be tagged in vivo for macrophage recruitment, phagocytosis, and consequent immune destruction. We propose the use of multi-domain peptides (MDP) due to their functional properties. By using an MDP with the base structure $K_2(SL)_6K_2$, modified with an amyloid-beta nucleation site can promote hybridization with amyloid-beta plaques in vivo. After our MDP has been developed and tested for macrophage recruitment, we can investigate hybridization potential with amyloid-beta in vitro and in vivo. With successful hybridization of our modified MDP fibers and amyloid-beta plaques, we can then test the immune destruction of these hybrid fibers by macrophage phagocytosis. Successful plaque reduction in vivo may enable reversal of symptoms and improvement in cognitive capabilities for patients.

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