Systematic development of small molecules to inhibit amyloid beta aggregation in Alzheimer's disease

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Alzheimer's disease, which is the most common cause of dementia, affects over 50 million people worldwide. Among the top ten causes of death, this condition is currently the only one that we cannot prevent, cure or even slow down. In the last twenty years, great advances have been made in understanding the molecular origins of this disease, which, as we now know, is caused by the formation of abnormal protein aggregates in the brain of affected patients. Despite this knowledge, however, it has been extremely challenging to develop drugs capable of preventing the formation, or promoting the removal, of such protein aggregates. I will describe a novel drug discovery approach that has led to the discovery and systematic optimisation of compounds capable of blocking the key steps in the protein aggregation process.