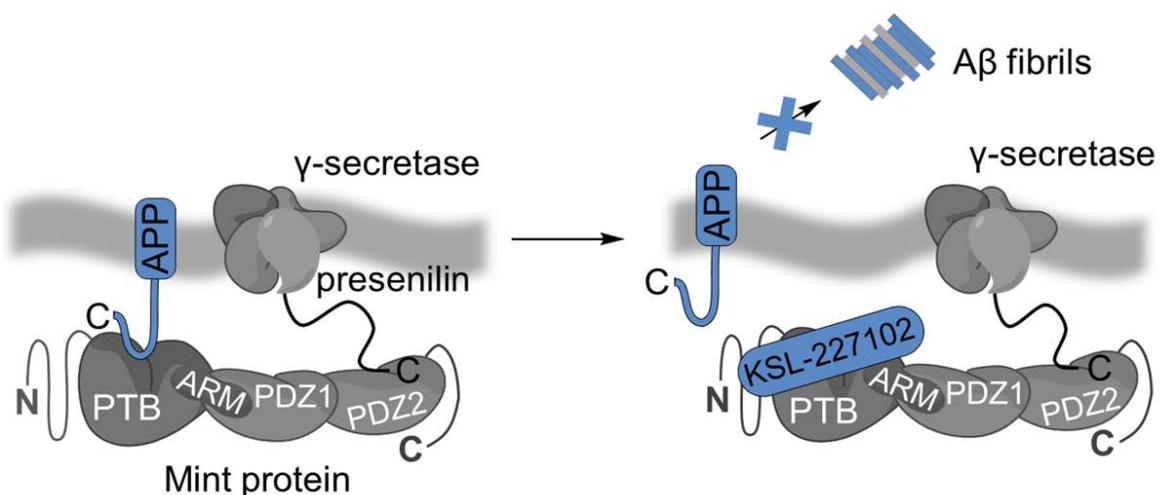


# A new approach to the treatment of Alzheimer's disease

Highly stable peptides with a novel mechanism of action



## Background

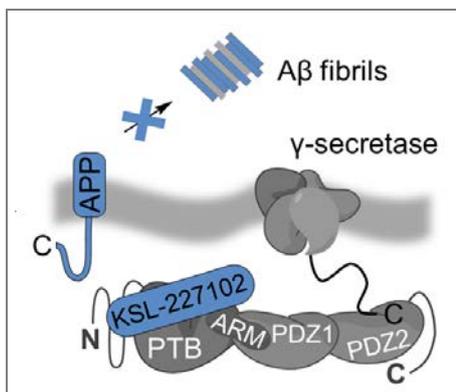
Worldwide, 47 million people are diagnosed with dementia with Alzheimer's disease (AD) accounting for 60–70% of those cases. AD mainly affects memory and cognitive function, but also mood and personality. Patients with advanced AD are often unable to hold conversations. In some cases, AD leads to other neurological symptoms, such as epilepsy. A patient's life expectancy typically ranges 8–10 years after diagnosis.

The formation of amyloid- $\beta$  peptides ( $A\beta$ ) through the proteolytic processing of the amyloid precursor protein (APP) is a key pathogenic event in Alzheimer's disease (AD). Accordingly, the search for a treatment has focused on 1) removing  $A\beta$  from the brain, or 2) blocking the enzymes ( $\beta$ - and  $\gamma$ -secretase) responsible for  $A\beta$  production. However, both approaches seem to be associated with poor risk-benefit ratios as there is still no treatment.

As a result, there is a big unmet need not just for the treatment of AD but also for novel approaches.

## The invention

**New approach:** Our peptides reduce the formation of  $A\beta$  by a novel mechanism of action: lowering  $A\beta$  levels without affecting the normal function of  $\beta$ - or  $\gamma$ -secretase.



**Benefit:** Both  $\beta$ - and  $\gamma$ -secretase are involved in numerous important processes; as such blocking either of these enzymes is likely to result in side-effects. Indeed,  $\gamma$ -secretase inhibitors – and lately  $\beta$ -secretase inhibitors – have failed in late stage phase III clinical development because of side-effects (e.g. liver toxicity). Our peptides are likely to show fewer side-effects.

**Mechanism of action:** The lead peptide works by binding a protein called Mint2, which would otherwise facilitate the production of  $A\beta$  by bringing together  $\gamma$ -secretase and APP. This approach is therefore specific to  $\gamma$ -secretase's role in AD, not any of its other functions.

**Potential new medicine:** The lead peptide has excellent physico-chemical and pharmacological properties, making it a promising drug-candidate or lead compound for further development.

## Key selling points

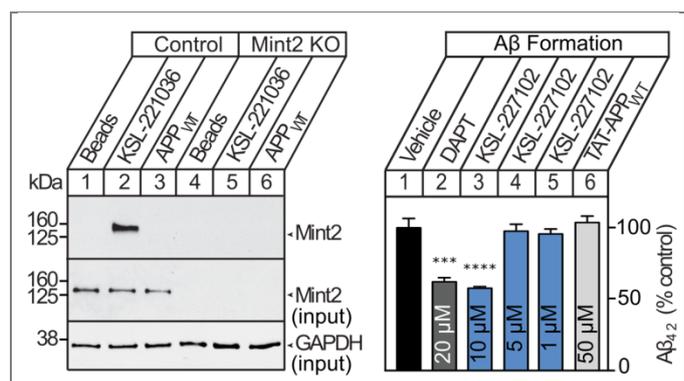
- New approach to the treatment of AD
- Small peptide with high target affinity
- Highly stable in biological media
- Robust and reliable manufacture

## Development status

The lead peptide has shown excellent results *in vitro*, and a study *in vivo* is underway as well as the development of a second generation of peptides.

## Intellectual property rights

University of Copenhagen owns all rights to the technology. A priority application was filed on 19 Mar 2018.



The peptide exhibits excellent target engagement and significantly lowers  $A\beta$  levels *in vitro* (Data relative to the vehicle control, DAPT is a commonly used  $\gamma$ -secretase inhibitor reference,  $n = 4$ ).