Lead Compounds for Diagnosis and Therapy of Alzheimer's Disease

Tech ID: 19515 / UC Case 2006-105-0

BACKGROUND

A number of neurologic diseases, including Alzheimer's (AD), Huntington's, and Parkinson, are characterized by deposition of beta-amyloid plaques. These beta sheet-rich structures are formed from misfolded peptides or proteins that non-covalently self-aggregate to form oligomers, fibrils, and larger structures. The aggregation of beta-amyloid and other cellular proteins has been associated with beta-amyloid induced neurotoxicity in the pathogenesis of AD. Current therapeutic strategies are focused mainly on:

- Slowing down the production of beta-amyloid peptide.
- Preventing the growth of beta-amyloid fibrils.
- Disrupting the fibrils so that they disassemble into their beta-amyloid peptide components.

An alternative strategy of coating the substrate fibrils with "neutralizing" small molecules may prevent or alleviate the symptoms of neuronal diseases associated with amyloid fibril or plaque formation.

TECHNOLOGY DESCRIPTION

UC San Diego researchers have identified several classes of molecules with excellent potential as lead compounds for therapeutic and imaging agents. Their proprietary approach has identified molecules that cannot be identified using historic methods. These compounds include non-dye classes of therapeutics and diagnostics for Alzheimer's disease and may provide alternatives to radiolabeled PET imaging agents and molecules under clinical development.

By obviating the need for specific fluorescent, spectroscopic, radioactive, and mechanistic properties, this approach is yielding classes of compounds more compatible with and readily translatable to clinical practice. Specifically, many of these proprietary compounds have:

- Low molecular weight.
- Known and favorable pharmacokinetic properties.
- Known permeability across the blood-brain barrier.
- Ready commercial availability.
- FDA approval as drugs.

Finally, while this approach has been developed using beta-amyloid fibrils found in Alzheimer's disease, the same high-throughput screen may be adapted to identify therapeutic/diagnostic agents for other neurologic diseases, including Parkinson's, Huntington, Down's Syndrome, bovine spongiform encephalopathy (mad cow disease), Kuru, Creutzfeldt-Jakob disease, and fatal familial insomnia.

RELATED MATERIALS

- See the following related technologies at SD2007-018.
- See the laboratory link for Jerry Yang.

INTELLECTUAL PROPERTY INFO

See issued patents

8,741,883

and 7,666,886.

PATENT STATUS

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OTHER INFORMATION

KEYWORDS

amyloid, fibril

CATEGORIZED AS

- **Medical**
  - Disease: Central Nervous System
  - New Chemical Entities, Drug Leads

RELATED CASES

2006-105-0, 2007-018-2, 2007-056-1

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,741,883	06/03/2014	2006-105
United States Of America	Issued Patent	7,666,886	02/23/2010	2006-105

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Fluorescent Amyloid Binding Agents for Diagnosis of Alzheimer's Disease
- pH-"Tunable" Nano-Particle Drug Delivery System
- Ultrasensitive, Ion Channel-Based Sensors

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