Office of Technology Management

Peptides for Delivery of Therapeutic and Diagnostic Drugs Across the Blood-Brain Barrier

**Background:**
Alzheimer’s disease (AD) currently affects approximately 30 million people worldwide, however, there is currently no single test to indicate that a patient is suffering from AD. Instead, the diagnosis is made through a series of evaluations in an attempt to distinguish AD from dementia. Though there is not yet a cure for AD, early detection is beneficial to both patients and relatives as it allows for patient preparation and beginning treatment of symptoms and preventative exercises. Unfortunately, the development of detection agents, such as molecular imaging probes, and potential therapeutic treatments is challenged by the necessity for molecules that not only have but are also capable of crossing the blood-brain barrier (BBB).

**Technology Description:**
To allow for pre-mortem diagnosis of AD and assist with evaluating promising therapeutics for AD, WU investigators have discovered a novel BBB-permeant peptide for noninvasive AD diagnosis. When conjugated to a radioisotope (or alternate label), the peptide binds to amyloid plaques in a concentration-dependent manner to allow for detection via SPECT or PET. The peptide accommodates the widely used technetium-99m isotope for SPECT analysis, and also has a versatile scaffold for use with PET.

**Advantages:**
- Novel BBB-permeant peptide for noninvasive AD diagnosis
- Widely available technetium-based SPECT Aβ targeted imaging probe
- Versatile scaffold
- Avoids limitations of other known imaging agents
- Potential to aid in delivery of drug delivery across the BBB

**Patent:** Blood Brain Barrier Permeation Peptides, US7803351 B2

**Lead Inventor:**
Vijay Sharma, PhD – Professor, Radiology

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