# TrkB Receptor PET Tracer Development

https://neurodegenerationresearch.eu/survey/trkb-receptor-pet-tracer-development/

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**Country**

USA

**Title of project or programme**

TrkB Receptor PET Tracer Development

**Source of funding information**

NIH (NIA)

**Total sum awarded (Euro)**

€ 644,036.70

**Start date of award**

15/09/2015

**Total duration of award in years**

2

**The project/programme is most relevant to:**

Alzheimer's disease & other dementias

**Keywords**

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Brain Disorders... Dementia... Depression... Diagnostic Radiology... Mental Health... Mental Illness... Neurodegenerative... Neurosciences

**Research Abstract**

? DESCRIPTION (provided by applicant): Neurodegenerative disorders such as Alzheimer’s disease (AD), Parkinson’s disease (PD), amyotrophic lateral sclerosis (ALS), and Huntington’s

disease (HD); and neuropsychiatric disorders such as depression, anxiety, bipolar disorder, schizophrenia, and addiction are devastating conditions that affect millions of people worldwide. These pathologies all share a common link which is brain-derived neurotrophic factor (BDNF) and its cognate transmembrane receptor, tropomyosin-receptor kinase B (TrkB). Small-molecule therapeutic agonism of TrkB in mice has been shown to protect neurons from neurotoxicity-induced apoptosis, to provide neuroprotection from hypoxia and ischemia, to stimulate neurogenesis, and to reduce memory deficits, reduce motor deficits, reduce brain atrophy, and extend survival in models of AD, PD, ALS, and HD. Small-molecule therapeutic antagonism of TrkB in mice has been shown to reduce anxiety and have antidepressant effects. Thus, modulation of BDNF-TrkB signaling with small-molecule drugs offers the possibility of treating numerous neurodegenerative and neuropsychiatric disorders by treating and reducing symptoms, stopping neurodegeneration, and inducing neurogenesis to replace damaged neurons. The goal of this proposal is to develop agonist and antagonist positron emission tomography (PET) tracers for TrkB that will aid and accelerate the understanding of the role of BDNF-TrkB signaling in neurodegenerative and neuropsychiatric disorders, and the development of TrkB therapeutics. Viable TrkB PET tracers will enable the measurement of the density of neuronal TrkB receptor expression in various neurodegenerative and neuropsychiatric states and under therapeutic treatment; and will enable target validation, occupancy, dose finding, and mechanism of action studies of potential TrkB therapeutics.

**Lay Summary**
PUBLIC HEALTH RELEVANCE: Dysregulation of BDNF-TrkB signaling has been implicated in numerous psychiatric and neurodegenerative disorders. The ability to non-invasively image TrkB with PET would provide insight into the levels of TrkB expression in these states, would allow for the monitoring of TrkB levels during neuroregeneration therapy, and would allow for target validation, occupancy, dose finding, and mechanism of action studies of potential therapeutic TrkB ligands.

**Further information available at:**

**Types:**
Investments > €500k

**Member States:**
United States of America

**Diseases:**
Alzheimer's disease & other dementias

**Years:**
2016

**Database Categories:**
N/A

**Database Tags:**
N/A