

A Method for Increasing Synaptic Growth or Plasticity

Background

Studies have shown that neurotrophins such as Brain Derived Neurotrophin (BDNF) modulate synaptic strength and thereby affect learning and memory. Transcription and translation of certain genes induced by endogenous BDNF have been shown to be necessary for learning. For example, BDNF and trkB may be required for the acquisition, consolidation and recall of certain types of information. Previous studies have utilized transcriptional profiling to identify genes associated with learning. However, genes associated with BDNF-induced plasticity and the correlation of their expression with learning has not been studied. The present invention relates to the identification of differentially expressed genes involved in BDNF-induced synaptic activity and plasticity.

Description of the Technology

UMDNJ researchers have utilized whole-cell patch-clamp recordings in conjunction with differential display and single-cell transcriptional analysis to identify genes whose expression is altered during BDNF-induced plasticity. A panel of genes induced by BDNF was identified. Some example of the genes induced by BDNF include c-fos proto-oncogene, early growth response protein 1, activity-regulated cytoskeletal associated, fos-related antigen 2, G1/S-specific cyclin D1, voltage-gated potassium channel protein, and sodium channel beta 1 subunit. The present invention also provides a method for increasing synaptic growth or plasticity by increasing the expression of genes inducible by BDNF. Agents that modify the expression of BDNF induced genes can be used in the treatment of diseases associated with damaged or diseased synapses.

Applications

To increase the synaptic growth or plasticity by modulating the expression of BDNF induced genes.
To treat diseases associated with damaged or diseased synapses

Patent Status

PCT application filed
Application was published on May 21, 2004 (publication number: WO 2004/041778 A2)

Licensing Opportunity

This technology is available for licensing exclusively.

Contact

Peter Golikov, MS, MBA
Director, Ventures and Licensing
University of Medicine and Dentistry of New Jersey
335 George Street
New Brunswick, NJ 08901
Direct Phone: (732)-235-9355
Main Office Phone: (732)-235-9350
Facsimile: (732)-235-9358

Email: golikope@umdnj.edu
Web: <http://www.umdnj.edu/resrhweb/patents>

File 02-79/Black