

Post-Traumatic Stress Disorder (PTSD) Diagnostics and Preventative Treatment

Market Need

US Department of Veterans' Affairs reports 7.8% of Americans will experience PTSD at some point in their lives, with women (10.4%) twice as likely as men (5%). At any given time in the course of a year, 3.6% of adult Americans (some 5.2 million people) have PTSD. The traumatic events most often associated with PTSD are rape, combat exposure, childhood neglect, childhood physical abuse, and being threatened with a weapon. Treatment costs of PTSD are estimated to be \$5,900 to \$10,300 for a two year mixed therapy course per victim. Little data is available for the PTSD market alone, and that available pertains mainly to military veterans of combat. However, Zion Market Research reports that the generalized anxiety disorder market to be \$3.25 billion US in 2014, and forecasted to grow to \$3.78 billion by 2020. Given that PTSD treatments to date have poor efficacy, and the increasing diagnosis of the syndrome, a successful pre-PTSD preventative therapy will have a strong chance of achieving market success.

Technology Description

A complex formed from two proteins (codes: CFL-1 and CFL-2) is elevated in peripheral blood from PTSD patients. The technology relates to a peptide that can disrupt the CFL-1::2 complex (an approach successfully demonstrated by this inventor, see Lee et al, 2016). The result is an a priori reduction in PTSD-like symptoms in a mouse model of PTSD. The technology is meant to be used as a treatment post-stress. Another aspect of this technology is its use as a true diagnostic marker. Specifically, a dramatic increase in CFL-1::2 protein complex was detected in peripheral blood of subjects exposed to a traumatic event that developed PTSD, but not in those that did not develop PTSD. Therefore, high levels of CFL-1::2 complex formation is strongly indicative of PTSD, particularly in its sub-clinical, incipient stage. This finding forms the basis of a powerful prophylactic tool capable of screening post-traumatic individuals for those who are likely to develop PTSD. This will greatly increase the efficacy of treatment, and prevent escalation while avoiding the trial-and-error use of a variety of therapeutics.

Stage of Development

- We created a peptide that disrupts the CFL-1::2 complex. The interfering peptide also significantly reduces freezing time in fear-conditioned mice, an animal model for PTSD, when administered both immediately after the fear-conditioning training and after the extinction session.
- The peptide is ready for development into a drug formulation, i.e. coupling with a delivery vehicle for cross-BBB administration, and testing on human subjects.

Advantages

- Unique preventative treatment of PTSD-like behaviour when administered immediately after trauma exposure. The interfering peptide can also be used in treatment of PTSD after clinical symptoms develop.
- Targets a PTSD causative mechanism, rather than being a generalized psychiatric treatment.
- Novelty: targeting of the CFL-1::2 complex, rather than a ligand targeted to CFL-1.
- Preventative diagnosis of non-symptomatic, post-traumatic individuals likely to develop PTSD.
- Prevention of PTSD escalation, increased productivity, decreased healthcare expenditures.

Notable Publication(s)

The present research is currently under review in a high-impact general science periodical.

Lee et al. "Disrupting GluA2-GAPDH Interaction Affects Axon and Dendrite Development" Sci Rep. 2016; V.6:30458

Intellectual Property

The peptide and its uses are the subject of a Canadian provisional patent application.

FOR MORE INFORMATION CONTACT

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