New Treatment of mood disorders and stress related disorders (Yissum)

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Raz Yirmiya , HUJI, Faculty of Humanities, Psycology

Categories	Depression, Stress-related disorders, Inflammation
Development Stage	Proof of concept in experimental animal models of depression; ongoing research
Patent Status	Provisional patent application filed
Market	The market for antidepressants was valued at $11.9 billion in 2011, and it is expected to continue growing up to $13.4 billion by 2018.

Highlights

- Despite the impressive progress in understanding the molecular, cellular and circuit-level correlates of depression, the biological mechanisms that causally underlie this disease are still unclear, hindering the development of effective preventive and therapeutic procedures.
- Selective Serotonin Re-uptake Inhibitors (SSRIs) and related drugs, which were discovered more than 40 years ago, continue to dominate the antidepressant market in the absence of novel effective therapeutic alternatives, despite growing concerns over their safety and efficacy.
- One possible reason for the slow progress in developing effective anti-depressive treatments is that most research in this area focuses on the involvement of neuronal functioning, whereas the possible critical involvement of glia cells in this disease was not thoroughly examined.
- The present invention introduces a completely novel target - microglia cells, for development of anti-depressive treatment. Furthermore, we discovered novel pharmacological approaches for reversing depressive symptoms that are induced by microglial alterations in specific depressive and stress-related conditions.

Our Innovation

- We recently discovered that some forms of chronic stress-induced depression result from dynamic alterations in the number, morphology and activation status of microglia cells in specific areas of the brain.
- This original and novel discovery allowed us to invent a conceptually novel approach for depression treatment, based on drugs that alter microglia morphology and functioning.
- Our invention further shows that specific microglia-modulating anti-depressive drugs should be effective in specific patient sub-populations, based on their peripheral immune status before treatment.

Key Features

- Our invention provides a new class of compounds, which could serve as potent and effective anti-depressive drugs (in contrast with the relative inefficacy of current anti-depressants, as mentioned above).
- Our invention shows that these compounds provide almost immediate relief from the symptoms of depression as was tested in animal models (i.e., within a few days). These fast actions constitute a major advantage, given that current anti-depressants take weeks to be become effective (usually 3-6 weeks).
- Our novel pharmacological approach to anti-depressant treatment should be applicable to many types of depressive syndromes, including chronic stress-associated depression, treatment-resistant depression, depression associated with PTSD and other traumatic

conditions, chronic fatigue syndrome and post-viral fatigue syndromes.

Development Milestones

Seeking funding for ongoing research and industrial collaboration.

The Opportunity

- In any given year 5-7% of the world population experiences a major depressive episode (including 10 to 14 million people in the U.S. and 30 million people in Europe) and one in six people will suffer from this disease at some time during their life.
- Accordingly, antidepressant drugs represent the second largest class of prescription drugs, with more than 253.6 million prescriptions filled for these drugs in the USA in 2010.
- Due to the relative inefficacy of existing antidepressant drugs, as well as the many expiries of patents for blockbuster antidepressants and high generic entry, there is an urgent need to identify new target mechanisms.
- Our invention identified brain microglia as such a target and introduces first-in-class molecules that are more efficacious and fast acting than existing antidepressants.

Contact for more information:

Shoshana Keynan ✉, VP, Head of Business Development, Healthcare, +972-2-6586683

Yissum Research Development Company of the Hebrew University of Jerusalem
Hi-Tech Park, Edmond J. Safra Campus, Givat-Ram, Jerusalem P.O. Box 39135, Jerusalem 91390
Israel Telephone: 972-2-658-6688, Fax: 972-2-658-6689