Cell Aging Measured by Telomere Length and Telomerase Activity as a Diagnostic and Prognostic Biomarker of Major Depressive Disorder

Published date: March 28, 2017

Technology description

This invention measures telomere length and telomerase activity via peripheral blood sampling as a diagnostic and prognostic biomarker of major depressive disorder (MDD). Telomere length is an indicator of "biological age" as it can reflect the number of cell divisions and exposure of the cell to various types of stress, such as oxidative stress. A team of UCSF researchers has shown that whole blood telomere length is significantly shorter in patients with MDD, as well as other chronically stressed individuals. Furthermore, low pre-antidepressant treatment telomerase activity predicted the best response to antidepressant therapy.

This invention describes a new way to predict response to antidepressants in patients with Major Depressive Disorder (MDD) and the likelihood of developing the disease by measuring telomere length and telomerase activity.

Innovative aspects of this invention include:

A diagnostic/prognostic test for estimating the likely benefit of antidepressant treatment

Allows for more individualized, personalized medicine

Helps biochemically track disease progression and treatment effectiveness

Potential for use during preclinical drug screening in animal models as a readout of drug effectiveness

Prognostic test for predicting the risk of developing MDD in individuals

Data Availability

Under CDA/NDA

Related Materials

1. Wolkowitz, O. M., Mellon, S. H., Epel, E. S., Lin, J., Reus, V. I., Rosser, R., ... & Blackburn, E. H. (2012). Resting leukocyte telomerase activity is elevated in major depression and predicts treatment response. Molecular psychiatry, 17(2), 164-172.

2. Wolkowitz, O. M., Mellon, S. H., Epel, E. S., Lin, J., Dhabhar, F. S., Su, Y., ... & Compagnone, M. (2011). Leukocyte telomere length in major depression: correlations with chronicity, inflammation and oxidative stress-preliminary findings. PloS one, 6(3), e17837.

Advantages

Currently, choosing an antidepressant drug is found by trial and error. This means that unfortunately only around one-third of patients fully respond to their first antidepressant trial and only around two-thirds of patients have found full improvement after as many as four consecutive trials. There are currently very few clinical tests that can predict who is likely to respond to antidepressants. A predictive test of antidepressant efficacy could save precious time, money, and suffering. This invention identifies cell aging, as measured by telomere length and telomerase activity, as a novel biomarker for depression that can be used to predict response to antidepressant treatment.

Institution

University of California, San Francisco

Inventors

Jue Lin
Owen Wolkowitz
Synthia Mellon
Elizabeth Blackburn
Elissa Epel

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com