NON-CONFIDENTIAL SUMMARY

INVENTOR(S): **JAMES KENNEDY, CLEMENT ZAI**

CAMH TECHNOLOGY ID: 008-2013

BUSINESS OPPORTUNITY

The Centre for Addiction and Mental Health is seeking partners to either license or co-develop this technology. CAMH is open to various forms of collaboration.

Genetic Test for Predicting Risk of Suicide

Market Need

Suicide claims over a million lives each year with 20 suicide attempts for each attributable death. It is a vital public health issue. Over 90% of suicide victims have at least one psychiatric diagnosis, including bipolar disorder, where in excess of 8% of BD patients die from suicide within 40 years of diagnosis. Suicide has a prominent genetic component, and attempts tend to occur more often within families with a higher concordance between monozygotic twins than between dizygotic twins. This is true for both completed and attempted suicides. The heritability of suicidal behavior reaches around 40%. A predictive metric and simple test to examine for a tendency to attempt and carry out suicide is of great importance to public health and safety authorities, and of great interest to healthcare providers and payers. As yet, no such meaningful genetic predictor has been made available clinically.

Technology Description

The test is based on obtaining a genetic sample from a subject and identifying whether they are at risk for suicide by identifying therein one or more genetic markers associated with suicide. Two complementary sets of genetic markers are included, which may be used separately, or combined in a broader panel. It consists of markers in the regions of the SDC3 (Syndecan 3), STOML3 (Stomatin Like 3), LINC00669 (long intergenic non-protein coding RNA 669), and APP (amyloid beta (A4) precursor protein) genes, as well as additional markers in a computer-implemented method of identifying a subject at risk of severe suicidal behavior and quantifying the risk as either low, intermediate or high based on the genetic risk score, or number of risk alleles, the subject possesses. Both methods encompass counselling, treatment and monitoring of the subject to prevent suicidal behaviors. In particular, the subjects are to be screened for psychiatric co-morbidities associated with suicide. The test may be made into a kit, and may also form the basis of, or an addition to multi-gene panels.

Stage of Development

- The test has been validated using 3 separate populations totaling 809 bipolar disorder subjects

Advantages

- A priori detection of the risk of suicidal tendencies
- Determination of increased suicide risk in otherwise healthy subjects or in conjunction with co-morbidities of suicide attempts
- Saves healthcare resources by preventing suicide attempts, and related healthcare outlay

Notable Publication(s)

Zai CC, Gonçalves VF, Tiwari AK, Gagliano SA, Hosang G, de Luca V, Shaikh SA, King N, Chen Q, Xu W, Strauss J, Breen G, Lewis CM, Farmer AE, McGuffin P, Knight J, Vincent JB, Kennedy JL. A genome-wide association study of suicide severity scores in bipolar disorder. J Psychiatr Res. 2015 Jun;65:23-9. doi: 10.1016/j.jpsychires.2014.11.002

Intellectual Property

The first test, set of markers, uses and variants are protected by a nationalized PCT (publication WO2015095967) with patents issued in the US (10,435,748), EU (3,087,203), CA (2,934,815), AU, JP and IL.

The second test, sets of markers, uses and variants are protected by a nationalized PCT (publication WO2016183659) with applications granted in US (11,104,952) and pending in CA.

FOR MORE INFORMATION CONTACT

Dr. Klara Vichnevetski
Director, Industry Partnerships & Technology Transfer
klara.vichnevetski@camh.ca
416 595-6056

Centre for Addiction and Mental Health
33 Ursula Franklin Street, Suite 4039
Toronto, Ontario, Canada M5A 2S1
www.camh.ca