

# Researchers reveal possible molecular blood signature for suicide in major depression

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A University of California, Irvine-led team of researchers, along with members of the Pritzker Research Consortium, has developed an approach to identify blood biomarkers that could predict the suicide risk of major depressive disorder (MDD) patients.

The study, titled "Identification of potential blood biomarkers associated

with [suicide](#) in major depressive disorder," was published in *Translational Psychiatry*.

Results from the study demonstrate that non-preserved blood can be used to discover suicide specific biomarkers using a novel gene expression approach and a gene expression quantification approach less sensitive to the effects of RNA degradation (NanoString). In addition to identifying individuals at highest risk for suicide, the results can help researchers understand molecular changes in suicide victims.

"These blood [biomarkers](#) are an important step toward developing blood tests to identify patients with imminent risk of ending their lives," said corresponding author Adolfo Sequeira, Ph.D., associate researcher in the Department of Psychiatry & Human Behavior at the UCI School of Medicine. "To our knowledge, this is the first study to analyze blood and brain samples in a well-defined population of MDDs demonstrating significant differences in gene expression associated with completed suicide."

After analyzing data from blood and brain samples from suicide victims, researchers found gene expression changes in [stress response](#), including polyamine metabolism, circadian rhythm, immune dysregulation and telomere maintenance.

Researchers used data obtained in collaboration with the Pritzker Neuropsychiatric Disorders Research Consortium from non- (RNA) preserved blood samples in combination with gene expression data from blood and brain samples from the same subjects. Subjects with no psychiatric diagnosis (all non-suicides) and [major depression](#) subjects who died of suicide or from natural causes were included in the study.

Suicide is a serious global public health problem that accounts for close to 800,000 deaths per year. In the United States alone, suicide rates

increased by more than 35 percent over the past 20 years, with over 48,000 just last year. Suicide prevention strategies and current medications, although helpful, have not stemmed the increase in self-inflicted deaths. Many individuals do not disclose suicidal intentions despite frequent contact with healthcare professionals. An estimated 30 percent of those who die by suicide visit a healthcare provider within a month of the suicide event. A dramatic rise in suicide also occurs in the days to weeks following discharge from psychiatric hospitals. Thus, there is a critical opportunity for healthcare providers to evaluate at-risk individuals with a blood biomarker test to assess serious suicide intent.

**More information:** Firoza Mamdani et al, Identification of potential blood biomarkers associated with suicide in major depressive disorder, *Translational Psychiatry* (2022). [DOI: 10.1038/s41398-022-01918-w](https://doi.org/10.1038/s41398-022-01918-w)

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