New Method May Predict Who Will Respond to Lithium Treatment

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For nearly 30 percent of people diagnosed with bipolar disorder (BPD) who take lithium, the medication is an effective treatment for both mania and depression. But for the remaining 70 percent, the drug doesn't work. Now, new research published in the journal Molecular Psychiatry may help explain why the vast majority of people living with this mental illness aren't responsive to the medicine, ScienceDaily reports.

For the study, researchers at Salk University reprogrammed immune cells called lymphocytes from six people with bipolar disorder and focused on the electrical firing patterns of each person's neurons in response to stimuli. Although the neurons of all people with bipolar disorder are more easily stimulated, or hyperexcitable, scientists found that the electrophysiological profiles of the neurons of individuals who responded to lithium were noticeably different from those who didn't.

Next, the team trained a computer program to recognize the variations between the profiles of lithium responders and nonresponders using the firing patterns of 450 neurons in order to test whether responsiveness to lithium could be predicted. Ultimately, the system identified—with 92 percent accuracy—which patients would respond to the drug.

"What's remarkable about this system is that you don't need to use 500 or 600 cells from multiple patients," said Fred "Rusty" Gage, PhD, a professor in Salk's Laboratory of Genetics and senior author of the study. "Five cells from one patient is enough to define whether someone is responsive or nonresponsive to lithium."

Researchers said that eventually this method could be applied to lymphocytes taken from blood samples of people with bipolar disorder, a technique that could make possible a quick, simple test to determine who might benefit from lithium therapy.

The study's authors also said these findings would help to spare millions of people living with BPD from undergoing ineffective treatment after their diagnosis.

Now, scientists want to see their findings replicated in a much larger sample of patients. In addition, researchers suggested that delving deeper into how the bipolar brain functions could drive the development of more effective drugs to treat the mental illness.

Click here to learn more about bipolar disorder, its symptoms and potential treatments for the

mental illness.

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