

Montreal: A genetic explanation for Lithium response

At the age of 15, Vandana Rawal already knows where her career path is leading. “I am very interested in mental illness,” she says, “and I intend to pursue a career in neuropsychiatry – treating mental disorders caused by diseases of the nervous system.”

Last year, when she was in Grade 9 at Centennial Regional High School in Greenfield Park, Quebec, Vandana won the junior division of the Sanofi-Aventis Biotech Challenge Montreal regional competition with a study of the brain tissue of suicide victims.

This year she went one better, winning the open competition with ground-breaking work to unlock one of the mysteries surrounding bipolar disorder (BD). Also known as manic-depressive illness, BD affects around 12 in every 1,000 adult Canadians. Usually characterized by manic episodes followed by periods of depression, this major psychiatric disorder can be treated but not cured. Vandana became interested in studying BD when she learned that the mother of a friend suffered from the illness.

She learned that mood stabilizing medication is the mainstay for managing and treating BD and the first and still most commonly used mood stabilizing drug is lithium. “But only about 60 percent of patients respond to lithium,” she said, “and it was thought that there could be a genetic explanation for why lithium is effective on some people but not others.”

Working with her mentor, Dr. Gustavo Turecki, Director of the McGill University Group for Suicide Studies, Vandana set about looking for the genetic key to the lithium puzzle. Genotyping the DNA of 384 subjects, she located a sequence in the PRKCH gene that was significantly associated with favourable lithium response in BD.

“This could serve as a genetic marker for predicting which BD patients will respond to lithium and which ones should be prescribed alternative medication immediately after diagnosis,” said Vandana.