

2nd genetic code could provide clues to schizophrenia, bipolar disorder

Last Updated: Wednesday, March 12, 2008 | 3:07 PM ET

CBC News

New Canadian research suggests chemical changes to genes may trigger the altered brain functions resulting in schizophrenia and bipolar disorder, a finding that may lead to better understanding and treatment of the conditions.

"The DNA sequence of genes for someone with an illness like schizophrenia and for someone without a mental illness often look the same; there are no visible changes that explain the cause of a disease," Dr. Arturas Petronis, a senior scientist at Krembil Family Epigenetics Laboratory at the Centre for Addiction and Mental Health, said in a release.

"But we now have tools that show us changes in the second code, the epigenetic code."

The Toronto-based study, published in the March 3 edition of the American Journal of Human Genetics, identified a second genetic code of epigenetic changes — chemical changes to a gene that do not alter the DNA sequence — in individuals with the psychoses. These changes can trigger under-production or overproduction of the body's proteins, changing its functions.

The researchers found evidence of total or partial silencing of genes responsible for communication with the brain, brain development and other processes linked to schizophrenia and bipolar disorder.

The Schizophrenia Society of Canada estimates 300,000 people in the country are affected by the

disorder, which is characterized by delusions, hallucinations and drastic changes in mood.

Bipolar disorder causes severe changes in mood and energy. The Canadian Psychiatric Association estimates that 500,000 Canadians suffer from the condition.

Petronis and his team studied 105 samples of brain tissues from a bank in the United States. The scientists looked at an equal number of schizophrenic, bipolar and healthy brains.

Analyzing 12,000 genes, the researchers identified 40 genes that showed marked differences between patients suffering from psychosis and the average samples.

Some of the differences in the genes were shared in both disorders, while others expressed themselves in only one.

"Once we understand the primary molecular causes of an illness, we can advance diagnosis and treatment approaches, and possibly even prevent illness," Petronis said.

He said the researchers plan to conduct larger studies "which will hopefully give us an even better understanding of psychiatric illnesses."