

Bipolar Disorder

Making a Difference Today

Bipolar disorder, also known as manic depression, is a serious brain disease that causes extreme mood swings, from intense feelings of euphoria (mania) to deep depression. The National Institute of Mental Health estimates that about 2.3 million American adults—or 1.2 percent of those 18 and older—have the condition. Symptoms typically begin in adolescence or early adulthood and continue throughout life.

Left untreated, bipolar disorder can devastate lives. People with the disorder are at increased risk for alcohol and other substance abuse, and are 15 times more likely than the general population to commit suicide. They are also 15 times more likely to be in the lowest category of income earners. Bipolar disorder exacts a huge financial burden on the American economy. The lifetime cost for persons living with the disorder in the United States is estimated at \$24 billion to \$45 billion.

The causes of bipolar disorder are not well understood, and there is currently no cure. With medications and other treatments, however, many people with bipolar disorder can manage their symptoms and lead healthy and productive lives.

Research Breakthroughs

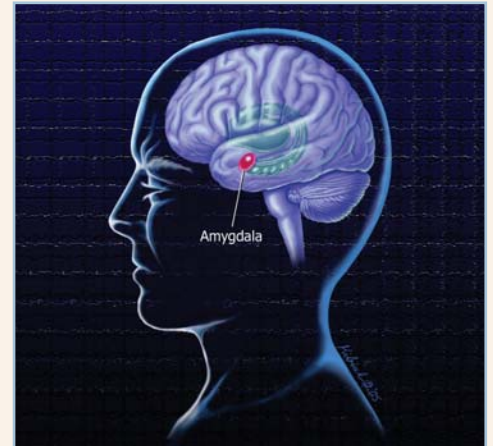
Past funding from the National Institutes of Health and the Department of Veterans Affairs has helped scientists make great progress in understanding bipolar disorder and, thus, in diagnosing and treating the illness.

Many studies, including some involving twins, have provided strong evidence that genes play a role in the transmission of bipolar disorder. People with a parent or sibling with bipolar disorder are 10 times more likely to develop the disease than the general population; identical twins have an 80-fold increased chance of developing the disorder. Scientists believe multiple genes are involved. One genetic link already identified is a mutation in G protein receptor kinase 3, a gene that regulates the brain's sensitivity to chemicals it produces (neurotransmitters), including dopamine, which produces feelings of pleasure.

Using the latest brain imaging technologies, scientists have also discovered that brain function and structure in people with bipolar disorder differs markedly from that in people without the illness. Researchers have found a significant decrease in the size of the amygdala, a part of the brain that governs emotions, in people with bipolar disorder. This brain change appears in adolescents as well as adults, which suggests that it is an early feature of the disease. Other studies have found a decrease in the density of gray matter in the brains of people with bipolar disorder. These and other exciting new findings are helping to pave the way for the design of new drugs that directly target specific genes or areas of the brain.

Understanding How Treatment Works

Since the 1970s, lithium, often in conjunction with an antidepressant, has been the “gold standard” treatment for bipolar disorder. Although not all people with bipolar disorder respond to lithium or can tolerate its side effects, studies have shown that the drug reduces suicide among people with bipolar disorder by 13-fold. Despite lithium's long use as a treatment, scientists are only beginning to understand how it works. In animal studies, both lithium and antidepressants have been found to result in increased gray matter in the brain. More recent human studies have found that the drug also significantly increases the amount of gray matter in the brains of people with bipolar disorder. By understanding how current treatments work, researchers hope to be able to develop new and better treatments.



Neuroimaging studies have revealed that people with bipolar disorder tend to have a significantly smaller amygdala, a brain structure that governs emotions, than people without the disorder. Some studies suggest treatment may reverse this characteristic.

Continued funding for research could lead to:

- The development of tests for early diagnosis and treatment.
- Greater understanding of the abnormalities in brain structure, chemistry, and function associated with bipolar and other mood disorders.
- Neuroprotective drug therapies to prevent or reverse the progressive loss of brain cells that occurs with bipolar disorder.

For more information please email brss@sfn.org.

Bipolar Disorder

Making a Difference Tomorrow

Bipolar disorder is a chronic and disabling brain disease.

Did you know that:

- An estimated 2.3 million Americans are living with bipolar disorder.
- Men and women are equally likely to develop this disabling illness.
- Without effective treatment, bipolar disorder has a suicide rate of up to 19 percent—15 times higher than that of the general population.
- About 60 percent of people with bipolar disorder have drug and/or alcohol abuse problems—the highest rate among all people with major psychiatric illnesses.
- Bipolar disorder is one of the most commonly diagnosed chronic diseases at U.S. veterans hospitals and is associated with one of the highest uses of inpatient and outpatient resources at those hospitals.

Federally funded basic research has laid the groundwork for greater understanding of the neurobiology that underlies bipolar disorder. With continued funding, scientists will be able to translate this knowledge into better diagnostic procedures, treatments, and preventive interventions.

Research Brings Hope for the Future

Scientists are making exciting progress in discovering the complex genetic fingerprint of bipolar disorder. In 1989, the National Institute of Mental Health launched the Bipolar Disorder Genetics Initiative, which gathers genetic material and other data from families with two or more members affected by bipolar disorder. Ten major research groups are currently using the DNA and clinical data collected by this initiative to identify genes that leave people vulnerable to bipolar disorder. Genetic research in bipolar disorder has been greatly enhanced in recent years by the development of powerful new genetic technologies and animal models of the disease. Once scientists identify the genes that confer vulnerability to bipolar disorder—and the brain proteins expressed by those genes—they believe they will be able to develop more targeted and effective treatments for the illness.

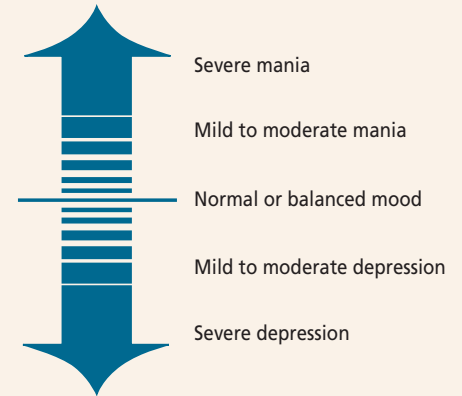
Scientists are also making great strides in identifying abnormalities in the structure or function of the brain circuits that are involved with bipolar disorder. In addition to changes in the amygdala, researchers have found lesions in the white matter of the brains of people with bipolar disorder, particularly in areas responsible for emotional processing. Also, changes in activity in certain areas of the brain have been observed in people with bipolar disorder. Studies suggest that some of these structural and functional changes may precede the onset of symptoms and that some medications may reverse these changes—findings that may lead to ways of diagnosing and treating the disease early, before symptoms occur. Already, scientists are exploring the possibility of low-dose lithium as a preventive measure against the atrophy and loss of brain cells.

Hope for Other Diseases

Research into bipolar disorder has advanced our knowledge about other degenerative diseases of the central nervous system. Findings about lithium's effects on the brain, for example, are leading scientists to explore the drug's usefulness in treating a wide range of other brain diseases, from Alzheimer's disease to schizophrenia. Only with continued funding will scientists be able to bring about the further medical breakthroughs needed to help the millions of Americans who have been disabled by these diseases.

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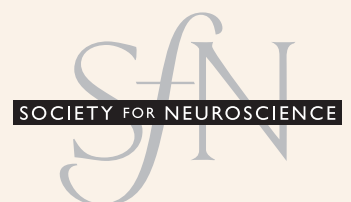
Spectrum of mood states in bipolar disorder



People with bipolar disorder experience mood states that can swing from severe depression to severe mania. Psychosis, a mental state characterized by hallucinations or delusions, may occur during severe episodes of mania or depression. Some people experience symptoms of mania and depression together in what is called a mixed bipolar state.

Already research has led to:

- The identification of part of the genetic fingerprint that underlies bipolar disorder.
- The discovery of how the structure and function of the brains of people with bipolar disorder differ from those of healthy individuals.
- The remarkable finding that the mood-stabilizing drug lithium can result in increased gray matter in the brain.



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