

## Psychiatric Genetics Role in Identification of Genes Associated with Mental Illness

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### DESCRIPTION

Mental illness is a complex and multifaceted phenomenon, with a wide range of symptoms and underlying causes. In recent years, there has been a growing interest in understanding the role of genetics in the development of psychiatric disorders. This field of research, known as psychiatric genetics, is focused on identifying the genetic factors that contribute to mental illness and using this information to develop new treatments and therapies. One of the primary goals of psychiatric genetics research is to identify specific genes that are associated with mental illness. This is done through a variety of methods, including Genome Wide Association Studies (GWAS), which examine the entire genome for variations that are linked to mental illness. These studies have identified a number of genes that are associated with conditions such as schizophrenia, bipolar disorder, and depression.

One of the well-studied genes in psychiatric genetics is the gene that codes for the dopamine D2 receptor (*DRD2*). Dopamine is a neurotransmitter that is involved in a wide range of functions, including reward processing and motivation. Variations in the *DRD2* gene have been associated with a variety of psychiatric disorders, including schizophrenia, bipolar disorder, and addiction. Other genes that have been linked to mental illness include those that code for the serotonin transporter, which is involved in the regulation of mood, and the neuregulin 1 gene, which is involved in the development of the nervous system.

While the identification of these genes is an important step in understanding the genetic basis of mental illness, it is important to note that these genes do not work in isolation. Rather, they interact with a wide range of environmental and lifestyle factors to contribute to the development of mental illness. For example, individuals with a genetic predisposition to depression may be more likely to experience depressive symptoms if they experience a stressful life event, such as the loss of a loved one or a job. Another important area of research in psychiatric genetics is the study of epigenetics, which refers to changes in gene expression that occur as a result of environmental factors. This can include

things like stress, diet, and exposure to toxins. Epigenetic changes can alter the function of genes, leading to an increased risk of mental illness. For example, studies have shown that individuals who experience childhood trauma are more likely to have epigenetic changes that increase their risk of developing depression or anxiety.

The identification of specific genes and epigenetic changes that contribute to mental illness has important implications for the development of new treatments and therapies. For example, drugs that target the dopamine system, such as antipsychotic medications, have been developed based on our understanding of the role of the *DRD2* gene in schizophrenia. Similarly, research into the epigenetic changes associated with mental illness may lead to the development of new treatments that target these changes, rather than the underlying genetic variations themselves.

However, there are also important ethical and social considerations that need to be taken into account when conducting research in psychiatric genetics. For example, the identification of specific genes that are associated with mental illness raises the possibility of genetic testing for these conditions. While genetic testing can be useful in certain situations, such as identifying individuals who may be at risk for a hereditary disease, it is important to consider the potential for stigmatization and discrimination that may result from genetic testing for mental illness.

### CONCLUSION

Psychiatric genetics is an important and rapidly evolving field of research that has the potential to significantly improve our understanding of mental illness. By identifying specific genes and epigenetic changes that contribute to these conditions, researchers are paving the way for the development of new treatments and therapies that may be more effective than current approaches. However, it is important to approach this research with caution and to consider the ethical and social factors.

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