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Press Release
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Central Institute of Mental Health (CIMH):
Detection of genetic commonality between various psychiatric disorders

Do differing psychiatric disorders have genetic commonality? Researchers addressed this question in an international study. This investigated the degree of genetic commonality between five psychiatric illnesses that are particularly common in the general population: schizophrenia, bipolar disorder, major depression, autism, and attention deficit hyperactivity disorder (ADHD). The results demonstrate a strong genetic correlation between schizophrenia and bipolar disorder. A less pronounced but nonetheless clear overlap was also detected between major depression and the disorders bipolar disorder and schizophrenia, as well as between bipolar disorder and ADHD. The results of the study, which involved scientists from the CIMH, have now been published in the scientific journal *Nature Genetics*.

While environmental factors are implicated in the development of psychiatric disorders, the contribution of inherited factors is of particular importance in terms of disease-risk. Family studies have demonstrated an overlap in terms of genetic factors between individual, diagnostically defined clinical disorders. The recent advent of genome-wide research methods has allowed systematic investigation of this overlap at the molecular level. The study involved more than 300 international researchers, including a number of German scientists from the National Genome Research Network "MooDs", which aims to investigate the molecular causes of affective and schizophrenia disorders. During the course of the study, around 1 million variable positions in the genome, so-called "Single Nucleotide Polymorphisms" (SNPs), were compared between more than 75,000 individuals. This involved patients with schizophrenia, bipolar disorder, major depression, autism, and ADHD, as well as healthy control individuals.

„Once again, this study shows that our approach of systematically investigating the genome for the causes of psychiatric illness is successful," emphasized the coordinator of the Research Network Professor Markus Nöthen from the Institute of Human Genetics at the University of Bonn. "The limiting factor, however, is that the success of such investigations is dependent upon the number of participating patients, particularly since the symptoms of diseases and disease-progression vary so widely across the patients," pointed out Professor Marcella Rietschel, Scientific Director of the Department of Genetic Epidemiology in Psychiatry at the CIMH. Ultimately, the success of the study was enabled by the pooling of the efforts of a large number of researchers from across the world and the molecular-genetic data of tens of thousands of individuals.

The scientists found a particularly strong similarity in terms of the pattern of SNPs between schizophrenia and bipolar disorder. This indicates that these two illnesses share a large number of common genetic factors. Evidence for a significant overlap in terms of contributory genetic factors was also found between bipolar disorder and major depression, as well as between schizophrenia and

major depression. “In particular for schizophrenia and major depression, the study showed that the causes of these two psychiatric illnesses are more similar than previously thought, “explained Sven Cichon, Professor of Medical Genetics at the University of Basel. The results represent an important contribution to our understanding of these neuropsychiatric disorders, which occur frequently in the general population. They demonstrate biological similarities between disorders which have hitherto been defined diagnostically, and give impetus to the search for a system of causal disease classification.

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