

## **Studies elucidate genetic links between cancer and schizophrenia**

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A series of studies presented today at the American College of Neuropsychopharmacology (ACNP) annual meeting elucidates evidence that there is a genetic link between schizophrenia and cancer, providing a surprising possible scientific explanation for lower rates of cancer among patients with schizophrenia – despite having poor diets and high rates of smoking – and their parents.

Researchers at the National Institute for Mental Health (NIMH) emphasize that many of the genes associated with schizophrenia are the same as the genes associated with cancer, but that the cells that have these genes use them in opposite ways in the two disorders. While cancer results from changes in the genes that cause cells to go into metabolic overdrive and multiply rapidly, those same genes cause cells in schizophrenia to slow to a crawl.

"We found that many of the same genes are involved in schizophrenia as in cancer, but in a yin and yang way. This will provide critical insight into the molecular structure of schizophrenia," said lead researcher and ACNP member Dr. Daniel Weinberger of NIMH. Some of the genes showing this yin-yang effect include NRG1, AKT1, PIK3, COMT, PRODH and ErbB4. While these genes can't be used to predict exactly who will develop these diseases, Dr. Weinberger says they can be used to help determine risk.

Dr. Amanda Law of the University of Oxford, who heads one of the teams working at the NIMH, explored specific genetic pathways that



cells use to make basic decisions about their development and their fate.

"This is about basic decision making by cells—whether to multiply, move or change their basic architecture," says Dr. Law. "Cancer and schizophrenia may be strange bedfellows that have similarities at the molecular level. The differences lie in how cells respond to external stimuli: in cancer the molecular system functions to speed up the cell and in schizophrenia the system is altered in such a way that causes the cell to slow down." Law adds that selective targeting of these pathways may be a potential target in developing treatments for schizophrenia.

"It's very curious that a brain disorder associated with very complicated human behavior has at a genetic and cellular level a striking overlap with cancer, a very non-behavior related disorder. Understanding these pathways might provide us with some new strategies for thinking about cancer," said Dr. Weinberger.

Dr. Weinberger added that future research involves using this information to search for therapeutic insights that can reverse these processes, with implications not only for treatment of schizophrenia, but also maybe for cancer as well.

An estimated two million Americans have schizophrenia, a biological condition that affects a person's ability to think clearly, distinguish reality from fantasy, to manage emotions, make decisions and relate to others. The World Health Organization has identified schizophrenia as one of the ten most debilitating diseases affecting humans.

Source: American College of Neuropsychopharmacology

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