

ADVERTISEMENT

Schizophrenia: A byproduct of the brain's complex evolution?

New genetic evidence, published in the journal *Schizophrenia*, suggests that the condition is an "unwanted side effect" of the evolution of the complex human brain.



The human brain is complex, and in its equally complex evolution, schizophrenia may have come up as 'an unwanted side effect.'

More and more studies have been illuminating the genetic components of **schizophrenia**, a condition that affects about 1 percent of the world's population.

The largest twin study of schizophrenia put **79 percent** of the risk of the condition down to genes, while another believed that genetic mutations in the brain's **glial cells** may be responsible for the disorder.

Now, a **new study** conducted by three researchers from the Florey Institute for Neuroscience and Mental Health in Parkville, Australia, finds genetic changes in a frontal brain area commonly linked with schizophrenia traits, supporting the theory that the condition may be an undesired side effect of the human brain's evolution.

Prof. Brian Dean, of Swinburne University's Centre for Mental Health in Hawthorne, Australia, as well as the Florey Institute, is the new study's corresponding author.

Altered gene expression found in frontal pole

Prof. Dean and colleagues conducted a postmortem examination of the brains of 15 people who had schizophrenia and 15 who did not.

ADVERTISEMENT

The scientists measured the levels of **messenger RNA** (mRNA) in the frontal pole of the brain, the dorsolateral prefrontal cortex, and the cingulate cortex. Using mRNA levels, the researchers predicted genetic pathways "that would be affected by the changes in gene expression."

MEDICAL NEWS TODAY NEWSLETTER

Stay in the know. Get our free daily newsletter

Expect in-depth, science-backed topline of our best stories every day. Tap in and keep your curiosity satisfied.

SIGN UP NOW

Your [privacy](#) is important to us

In the brains of people who had been diagnosed with schizophrenia, the researchers found 566 instances of changes in genetic expression in the frontal pole of the brain and surrounding areas, which are regions known to be involved in schizophrenia-related traits.

As the study authors explain, "The frontal pole is critical in maintaining the cognitive flexibility that underpins human reasoning and planning abilities," which are two functions "that are impaired in individuals with [schizophrenia]."

New genetic pathway uncovered

The study also uncovered a genetic pathway in the brain's so-called **Brodmann area** that comprised interactions between 97 genes.

"A better understanding of changes in this pathway could suggest new drugs to treat the disorder," says Prof. Dean. He goes on to explain the findings, saying, "It's thought that schizophrenia occurs when environmental factors trigger changes in gene expression in the human brain."

Such potential environmental triggers for epigenetic changes include pregnancy and delivery complications, as well as psychosocial stressors such as growing up in a dysfunctional family.

"Though this is not fully understood," adds Prof. Dean, "our data suggest the frontal area of the brain is severely affected by such changes."

"There is the argument that schizophrenia is an unwanted side effect of developing a complex human brain and our findings seem to support that argument."

– Prof. Brian Dean

"A major finding of this study," the authors continue, "is that [...] no gene had altered levels of expression in all three regions of the cortex from subjects with [schizophrenia]."

According to them, this means that in terms of gene expression, schizophrenia-related molecular changes are not uniform across the cortex.

"These data also raise the possibility that the symptoms of [schizophrenia] that are thought to result from the dysfunction of different cortical regions could be due to changes in gene expression specific to the cortical region thought to be central to the genesis of a symptom," they say.

Schizophrenia Genetics Neurology / Neuroscience Psychology / Psychiatry



RELATED COVERAGE

Marijuana: Effects of teenage use may be reversible

New study identifies a brain mechanism altered by adolescent marijuana use and shows how to target it to eliminate schizophrenia-like symptoms in rats.

[READ MORE →](#)

First analysis of 'Sustainable Development Goals' published

The Sustainable Development Goals provide solid targets by which to measure global improvement. The first analysis of the data yields surprising...

[READ MORE →](#)

Schizophrenia risk gene plays key role in early brain development

New research shows that the schizophrenia risk gene ZNF804A influences brain structure and function during the early development of the fetus' brain.

[READ MORE →](#)

Schizophrenia: Nearly 80 percent of risk down to genes

The largest study of its kind to date suggests that almost 80 percent of the risk of developing schizophrenia is purely down to genetic factors.

[READ MORE →](#)

Breakthrough: Scientists create mouse embryo

Researchers from Cambridge University in the United Kingdom have managed to create a self-organizing structure that looks and behaves like a mouse...

[READ MORE →](#)

Schizophrenia 'voices' quietened by magnetic stimulation

Schizophrenia is notoriously difficult to treat, but a recent study shows that stimulating the brain with magnetic pulses reduces auditory...

[READ MORE →](#)

Written by [Ana Sandolu](#) on February 24, 2018 - [Fact checked](#) by Jasmin Collier

ADVERTISEMENT


Police Say To Carry This


Police say everyone should carry this new safety device that protects against attackers.


➔


TrySafePersonalAlarm.com


Latest news

 **Catnip:** What do we know about the feline drug?

 **Giving TB vaccine** intravenously boosts efficacy

 **Heart health:** Are women getting incorrect treatment?

 **Online information** about probiotics often misleading

 **Older adults** who drink tea are less likely to be depressed

ADVERTISEMENT

Police Say To Carry This

Police say everyone should carry this new safety device that protects against attackers.

➔

TrySafePersonalAlarm.com

Popular in: Schizophrenia

Schizophrenia: Largest genetic study offers new insights

Does the air we breathe influence our schizophrenia risk?

'New lead' in hunt for better schizophrenia drugs

Could hair analysis diagnose schizophrenia?

ADVERTISEMENT

Here to help go right.

ADVERTISEMENT

Here to help go right.

ADVERTISEMENT

Here to help go right.

ADVERTISEMENT

Here to help go right.



- Popular News

Knowledge Center

Share Our Content

Careers

Privacy
- Editorial Articles

Ad Policy

About Us

Contact Us

Do Not Sell My Info
- All News Topics

Newsletters

Our Editorial Team

Advertise With MNT

Terms

Get our newsletter

Health tips, wellness advice and more.

Enter your email

SUBSCRIBE

Your [privacy](#) is important to us

© 2004-2020 Healthline Media UK Ltd, Brighton, UK, a Red Ventures Company. All rights reserved. MNT is the registered trade mark of Healthline Media. Any medical information published on this website is not intended as a substitute for informed medical advice and you should not take any action before consulting with a healthcare professional.