

## Candidate genes of OCD interacts with human retrovirus to form new link in inflammatory hypothesis

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### Abstract

The undermentioned research gives a strong connection between genes related to HERV and genes candidate for OCD with biological pathways accentuated as immune system.

Lastly, the HERV may be a connection between the inflammatory system, knowing how the virus can affect, and neuropsychiatry disorders.

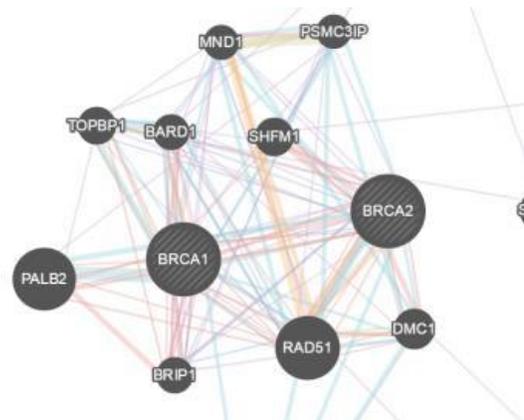
**Keywords:** Candidate genes, inflammatory, HERV, Retrovirus, Genome

### Introduction

In the current era of biomedical advancement, genetics is a new and upcoming topic, gradually every day scientists discover something new indicating that we still lack knowledge with our genome and how it can be connected to the brain. In a recent discovery the retrovirus HERV comprising 8% of our genome. Despite performing positive functions for the body, research shows us that it can lead to neuropsychiatric disorders. A possibility for a relation between the virus and OCD (Obsessive-compulsive disorder)

### Methods

The HERV is related to genes to regulate the gene expression, so an analysis of interactions between genes associated with the virus and candidate genes for OCD using the GeneMania, a tool to make networks, like in Fig. 1.



*Fig. 1 Example of a network with interactions between genes by Genemania*

Then, by using the software Ingenuity, it's possible to check in which biological process the genes related to HERV are acting, like in the Fig. 2.

Network
Cell-To-Cell Signaling and Interaction, Tissue Development, Gene Expression
Neurological Disease, Behavior, Cardiovascular Disease
Cell Death, Cellular Compromise, Neurological Disease
Cellular Development, Cell Morphology, Nervous System Development and Function
Behavior, Cardiovascular Disease, Neurological Disease

Fig. 2 Example of biological process related to some genes by Ingenuity

**Results**

The network of genes related to HERV and candidate genes for OCD, shown in Fig. 3, present a genetic interaction, a strong connection. The shape allows us to see a system of natural selection of the HERV, immune system and inflammatory process because of HERV de novo. The biological process associated with the genes is basically immune system and recognition of virus that can be seen in Fig. 4.

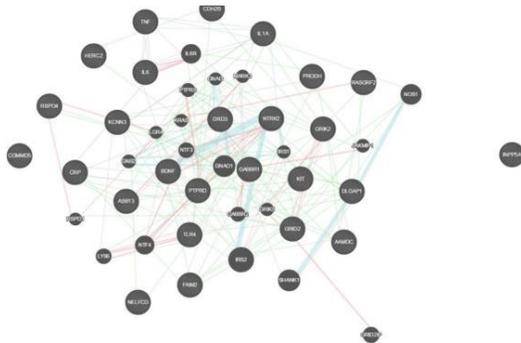


Fig. 3 Network of genes related to HERV and candidate genes for OCD.

Ingenuity Canonical Pathways
Communication between Innate and Adaptive Immune Cells
Altered T Cell and B Cell Signaling in Rheumatoid Arthritis
LXR/RXR Activation
Role of Hypercytokinemia/hyperchemokineemia in the Pathogenesis of Influenza

Fig. 4 Biological processes of the genes.

**Conclusion**

We can see a strong connection between genes related to HERV and genes candidate for OCD with biological pathways accentuated as immune system.

Lastly, the HERV may be a connection between the inflammatory system, knowing how the virus can affect, and neuropsychiatry disorders.

**References**

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