Research reveals new therapeutic target for Huntington's disease

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Research from Western University (London, Canada) has revealed a possible new target for treating movement disorders such as Huntington's disease (HD) and Parkinson's disease. Stephen Ferguson, PhD, a scientist at Western's Robarts Research Institute, and Fabiola Ribeiro, PhD, of the Universidade Federal de Minas Gerais in Brazil found a definite improvement in motor behaviors in a HD mouse model when one of the major neurotransmitters in the brain, called Metabotropic Glutamate Receptor 5 (mGluR5) was deleted. The research is published online in *Human Molecular Genetics*.

HD is an inherited neurodegenerative disorder which causes uncontrolled movement, and eventually cognitive decline and emotional disturbances.

Working in the Ferguson lab where Ribeiro was a postdoctoral trainee, the scientists crossed two mouse models. One was a mouse which doesn't have glutamate receptors –they've been knocked out genetically, and the other is a HD mouse model which over-expresses mutant human Huntington protein. They found if they deleted mGluR5, they lost the pathology of Huntington's in the neurons, and they saw improvements in motor behavior which normally would be impaired in these mice.

"What we found was, if we block mGluR5, which is the glutamate receptor we're interested in, the mice become hyper locomotive so they become able to move better than wild type mice suggesting glutamate receptors might be a good target for treating movement disorders such as Parkinson's disease. So that was a bit of a surprise that came out in the study, and we can show that genetically and pharmaceutically," says Ferguson who holds a Canada Research Chair in Molecular Neurobiology. "And the good thing is, there are mGluR5 antagonists now in stage three clinical trials for diseases such as Fragile X, so it is quite possible these drugs will be available for patients in the future."

Provided by University of Western Ontario