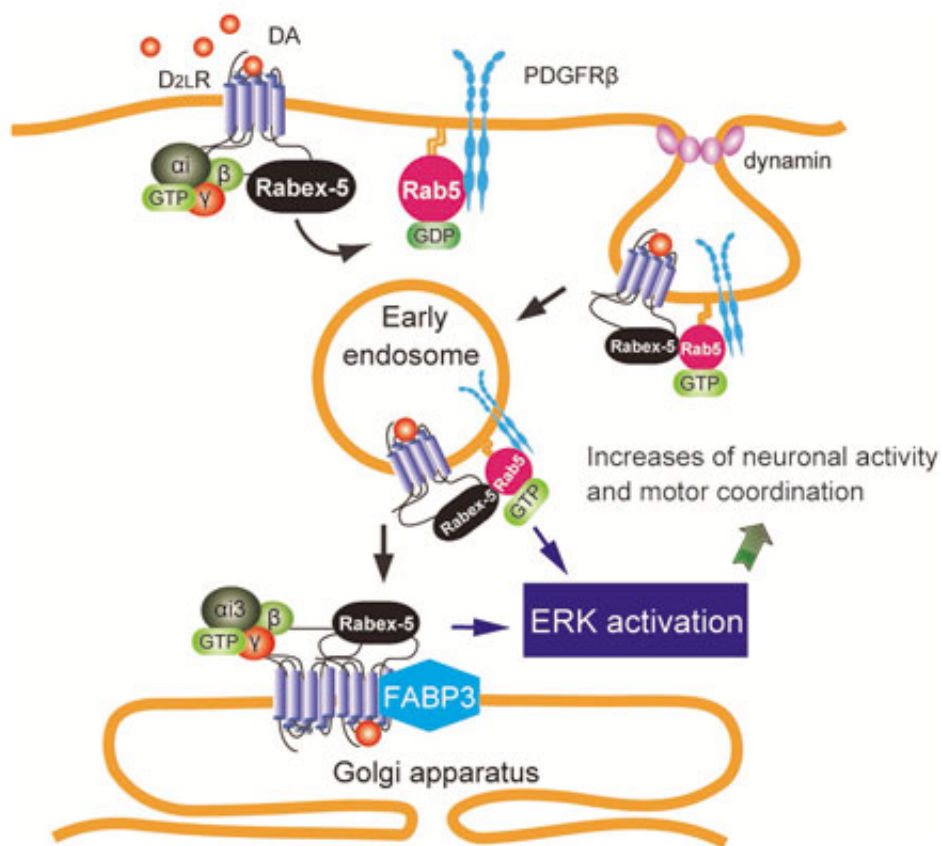


Intracellular dopamine receptor function may offer hope to schizophrenia patients

December 9 2016



Credit: Tohoku University

Dopamine is a chemical in the brain that plays an important role in controlling movement, emotion and cognition. Dopamine dysfunction is

believed to be one of the causes of disorders like Schizophrenia, Tourette's syndrome, Attention Deficit Hyperactivity Disorder and Parkinson's disease.

Now, a new function of intracellular dopamine receptor (D2LR) has been discovered by a Japanese research group led by Dr. Norifumi Shioda and Tohoku University Professor Kohji Fukunaga.

In the study, D2LR is localized to an intracellular compartment such as early endosome in neurons. The [growth hormone receptor](#) (PDGF β R) mediates the intracellular localization of the dopamine receptor. The intracellular dopamine receptor then elicits persistent activation of extracellular signal-regulated kinase (ERK).

D2LR-mediated ERK activation is associated with the neuronal excitability of [dopamine neurons](#) in the brain. And because the intracellular D2LR signaling through ERK activation improves motor coordination and body balance, the research team believes that drugs that target the intracellular D2LR could be used to help patients with Schizophrenia and Parkinson's disease.

More information: N Shioda et al. Endocytosis following dopamine D2 receptor activation is critical for neuronal activity and dendritic spine formation via Rabex-5/PDGFR β signaling in striatopallidal medium spiny neurons, *Molecular Psychiatry* (2016). [DOI: 10.1038/mp.2016.200](https://doi.org/10.1038/mp.2016.200)

Provided by Tohoku University

Citation: Intracellular dopamine receptor function may offer hope to schizophrenia patients (2016, December 9) retrieved 19 March 2023 from <https://medicalxpress.com/news/2016-12-intracellular-dopamine-receptor-function->

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