Small molecule therapeutics for treatment of neuropsychiatric disorders

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Technology description

Summary

Glial cell line-derived neurotropic factor (GDNF) is an essential protein for the growth, development, and plasticity of dopaminergic and motor neurons. Elevated GDNF levels are associated with decreased risk for neuropsychiatric disorders, including addiction and depression. This technology describes a class of organic molecules designed to specifically elevate GDNF levels in the brain. By selectively inducing GDNF, the small molecules identified in this technology can be potentially used as a treatment for alcohol abuse, depression, Parkinson's disease, and other neuropsychiatric disorders.

Small molecules specifically induce GDNF production, reducing the risk of side effects

Unlike other small molecules that have been shown to increase GDNF expression, this technology does not also interfere with the signaling of dopamine and other neurotransmitters. The identified compounds specifically induce GDNF production in SHSY5Y cells and GDNF release in C6 cells, and show negligible activation of dopamine receptors, thereby reducing undesirable side effects for increased therapeutic efficacy.

This technology has been demonstrated to induce GDNF expression in vitro. The compounds were also screened against a panel of approximately 50 CNS receptors in order to confirm their specificity to GDNF expressions.

Lead Inventors:

Tech Ventures Reference: IR M11-026

Publications

Gassaway MM, Jacques TL, Kruegel AC, Karpowicz RJ Jr, Li X, Li S, Myer Y, Sames D1. "Deconstructing the Iboga Alkaloid Skeleton: Potentiation of FGF2-induced Glial Cell Line-Derived Neurotrophic Factor Release by a Novel Compound." ACS Chem Biol. 2016 Jan 15;11(1):77-87.

Advantages

These small molecules specifically induce GDNF production without interfering with other signaling pathways in the brain

Reduced risk of side effects

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