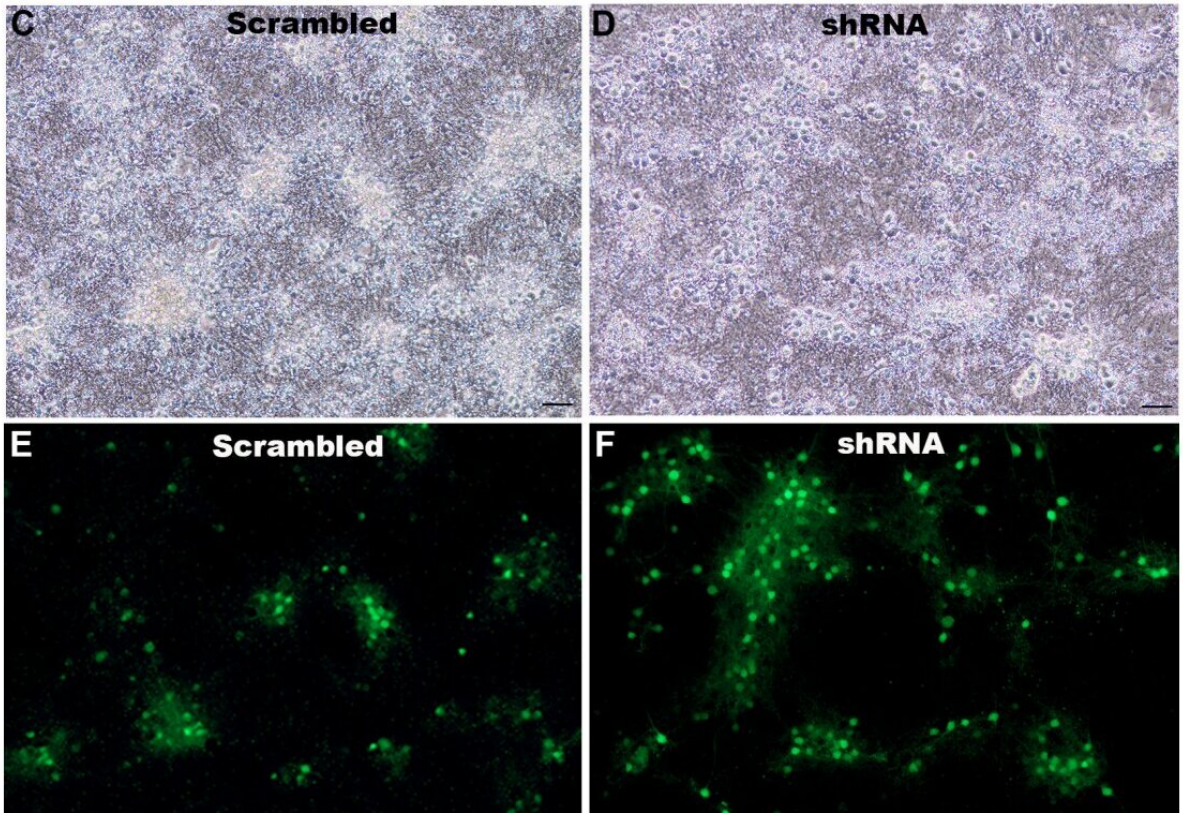
Medical Xpress

RNA treatment shows promise for enhancing memory and reducing anxiety

September 5 2024



Targeting strategy to knock down the mouse HTR2A gene using shRNA and transduction efficiency in primary mouse cortical neurons. Credit: *Genomic Psychiatry* (2024). DOI: 10.61373/gp024r.0043

Scientists at Cognigenics have made a significant advance in the field of neuroscience and mental health treatment. Their research, published in

Genomic Psychiatry, demonstrates that a new RNA-based therapy called COG-201 can enhance memory and reduce anxiety in animal models.

COG-201 uses short hairpin RNA (shRNA) to target and reduce the expression of the serotonin 5-HT2A receptor in the brain. This receptor plays a crucial role in regulating mood, anxiety, and cognitive functions. By decreasing its expression, the researchers observed notable improvements in memory and reductions in anxiety-like behaviors in both mice and rats.

"Our findings suggest that COG-201 could offer a new approach to treating conditions like mild cognitive impairment and anxiety disorders ," said Dr. Troy T. Rohn, lead author of the study. "What's particularly exciting is that we're seeing these effects through a non-invasive, intranasal delivery method."

The study provides both behavioral and neurophysiological evidence for the efficacy of COG-201. In addition to improved performance on memory tests, treated animals showed changes in neuronal activity that aligned with enhanced cognitive function. Specifically, the researchers observed decreased spontaneous electrical activity in cortical neurons, suggesting a reduction in overall neural excitability.

This research represents a significant step forward in the development of precision-based therapeutics for neurological and psychiatric disorders. By targeting a specific receptor with RNA interference, COG-201 offers a more precise approach compared to traditional pharmacological treatments.

"We're particularly encouraged by the potential applications for patients with mild cognitive impairment who also experience anxiety," noted Dr. Fabio Macciardi, a co-author of the study. "Currently, there's no single medication that effectively addresses both of these symptoms."

While the results are promising, the researchers caution that further studies, including trials in larger animals and eventually humans, will be necessary to fully understand the therapy's potential and safety profile.

This innovative approach to treating cognitive and mood disorders could open new avenues for therapeutic interventions. As the global population ages and the prevalence of cognitive impairments increases, therapies like COG-201 may offer hope for millions of people worldwide.

More information: Troy T. Rohn et al, Treatment with shRNA to knockdown the 5-HT2A receptor improves memory in vivo and decreases excitability in primary cortical neurons, *Genomic Psychiatry* (2024). DOI: 10.61373/gp024r.0043. gp.genomicpress.com/wp-content … GP0043-Rohn-2024.pdf

Provided by Genomic Press