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Potential new autism therapy to help patients become self-sufficient

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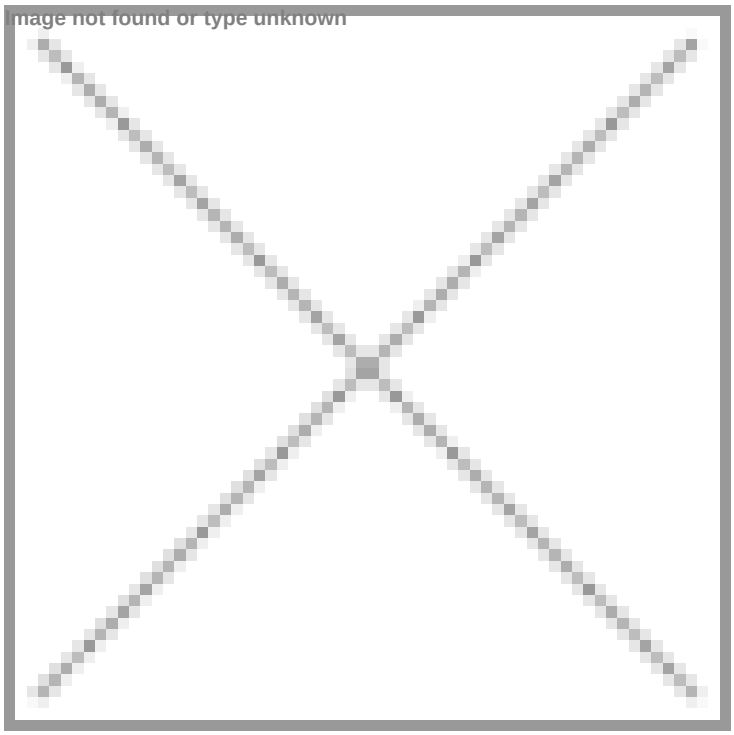
Therapeutic option by targeting epigenetic modifications in Syngap1-related ID/ASD



Researchers from Bengaluru-based Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), an autonomous institute of the Department of Science and Technology (DST), have found a potential therapy for patients suffering from Autism / Intellectual Disability (ID) that will enable the patient to lead a life less dependent on others.

Current therapeutics prescribed to treat Autism Spectrum Disorder (ASD) / ID are mostly related to alleviating the symptoms rather than correcting the phenotypes observed in neurodevelopmental disorders, especially after brain development.

JNCASR team has found that in mice with mutated *syngap gene* (*Syngap1*+/- mice) which resembles humans with mutated *syngap gene* (present in autistic patients) the acetylation of DNA-associated proteins, histones or proteins that provide structural support for chromosomes is repressed in the brain. The epigenetic enzyme behind this acetylation seems to be KAT3B or p300. Kundu`s group had previously discovered an activator of this enzyme, TTK21.

Upon conjugating this activator with glucose-derived nanosphere (CSP-TTK21) and feeding to the Syngap1 autistic mice, the researchers could induce acetylation in the brain. The team has shown in research published recently in the journal *Aging Cell* that the CSP-TTK21 restores neuronal function, learning, and memory, and induces neuronal rearrangements in Syngap1+/- mice, mainly when administered after the brain is considered to be developed (adolescents in human beings). This report not only directly connects histone acetylation with autism, for the first time, but also opens a very optimistic door for ASD therapy.

The study provides a new potential therapeutic option by targeting epigenetic modifications in Syngap1-related ID/ASD that can restore the deficits to an extent that will enable the patient to lead a life less dependent on others.