Popular Press Writing Assignment 11/03/2023
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Over the past hundred years, scientists have studied Autism. The neurological development disability affects everyone in fifty-nine births. () Although autism is one label, there are a range of developmental delays people have. The most common effects are social, emotional, and language delays. However, many areas of one's life can be affected by Autism. In recent years, scientists have studied different genes that may cause individuals to develop autism.

Scientists at the Massachusetts Institute of Technology in the Brain and Cognitive Sciences department looked at the effects of the mutated gene chromodomain helicase DNA-binding protein 8. The researchers want to see how parents carrying the affected gene play roles in developing autistic offspring. To study CHD8, the researchers created two isogenic human embryonic stem cell lines and genetically engineered the mutated CHD8 gene. They learned that the mutated CHD8 gene led to many alterations in other gene expressions in the newly formed stem cell lines. With these changes, they concluded that a developing embryo is more susceptible to developing autism. Furthermore, they discovered that there was an overlap between other intellectual disabilities and schizophrenia. Overall, scientific research can help other scientists study autism but can give an average of a day of people on the causes of Autism.

After the *Heterozygous deletion of the autism-associated gene, CHD8 impairs synaptic function through widespread changes in gene expression, and chromatin compaction* was published. NYU Press wrote a news release. They supported MIT researchers' work by sharing more information on how the mutation in the CHD8 gene can be achieved. This is by using CRISPR. Another group of researchers studied mice to show developmental differences when the CHD8 gene is altered. They found supporting evidence that there are many variations of delays that an individual has. With overwhelming evidence, one can conclude that CHD8 mutation is linked to individuals with Autism.

After reviewing the first article, the press release by NYU, I was able to understand why scientists suspected there was a relationship between the CHD8 gene and Autism. I could also apply my prior knowledge of CRISPR to know how the gene was artificially mutated. However, an average human would be able to follow along without the need to be widely versed in genetics lingo. The Primary article gave me a more in-depth understanding of how the experiment played out. To cement my support for the report, the final paper shows how other researchers studied similar effects of CHD8 mutation. Overall, the article Gene Editing in Human Stem Cells and Neurons reveals links between genome organization and Austim and presents accurate information.

Harrison, R. Gene Editing in Human Stem Cells and Neurons Reveal Links Between Genome Organization and Autism. *NYU New York Genome Center press,* https://www.nyu.edu/about/news-publications/news/2023/october/genome-organization-autism.html (October 2023)

Shi, X. Congyi, L. Corman, A. Nikish, A. Zhou, Y. et al. Heterozygous deletion of the autism-associated gene *CHD8* impairs synaptic function through widespread changes in gene expression and chromatin compaction. *Science Direct* v**olume 110, Issue 10**, https://www.sciencedirect.com/science/article/pii/S0002929723003178?dgcid=author#app2 (October 2023)

Tabbaa, M. Knoll, A. Levitt, P. Mouse population genetics phenocopies heterogeneity of human Chd8 haploinsufficiency. *Elsevier Inc*, https://www.cell.com/neuron/pdf/S0896-6273(23)00033-8.pdf (Febuary 2023)