Introduction on Autism Genetics

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Introduction

Autism spectrum disorder indicates range of conditions characterized by challenges with social skills, repetitive behaviors, discussion, expression, non-verbal communication. There is not one autism but many types that can be caused by mutant genes, environmental influences and other factors. The fact about autism as per Centers of Disease Control and Prevention estimates 1 in 59 children have autism and around 1 out of 3 people with autism remain nonverbal and around 1 out of 3 people approximately have an intellectual disability who have autism in United States [1].

Below are few reviews from bountiful of information about autism genetics that will help to investigate more about behavioral aspects of autism.

Autism Genetics Study in General Cognitive Impairment

Recent study of genetic factor involved in cause of Autism Spectrum Disorders. This new study draws attention that impact of these illnesses have on motor skills and more deep on cognitive function. It shows that diminished motor skills like low non-verbal IQ can correlate with the asperity of de novo mutation. These genetic factors are increasing to be known and are classified as two types; Researchers call de novo mutations. The next one changes to the DNA that do not appear in genetic makeup.

“Diminished motor skills present to be an almost universal property of children with autism” was confirmed by Prof. Michael Wigler, Ivan Iossifov from Cold Spring Harbor Laboratory (CSHL), the New York Genome Center and Andreas Buja from The University of Pennsylvania [2,3].

Figure 1 depicts Mutations that appears in a child which are not present in either parent can be important in autism that is called “de novo mutations”. Severe, gene-disrupting de novo mutations are understood to be capable of causing disorder in certain instances. It shows that diminished motor skills, like low non-verbal IQ, correlate with the severity of de novo mutations. Mostly the study calls attention to role played by genetics in diminished cognitive functions in children across the autism spectrum.

Rare Genetic Basis Found in Autism Genes That May Lead to Diagnosis

Scientist are a step closer in understanding genetic basis of autism which is the hope that can lead to diagnosis of what is very quickly becoming the most accepted disorder worldwide. In the investigation report, scientist examined the sequences of more than 650 genes associated with autism and found that characteristics that differentiate them from other brain specific genes and genes of other diseases. One specifically distinct characteristic of autism genes that scientist found that their exceptional genomic length, which is lengthier than other brain expressed genes that are closely related diseases like Alzheimer’s and schizophrenia.
“We are a step closer in understanding the genes correlated with autism and understanding the biological process involved in the diseases” was told by Dr. Idan Menashe, Erez Tsur and Prof. Michael Friger, member of Ben-Gurion University of the Negev (BGU) Department of Public Health in the Faculty of Health Sciences [4,5].

Genetics of Autism Spectrum Disorders Provides Insight by Mice

There is no specific known genetic cause for most of the cases in autism, but many divergent genes have been linked to the disorder. In exceptional, specific cases of Autism Spectrum Disorders, one copy of a gene called CHD8 is mutated and loses function. The CHD8 gene encodes a protein accountable for packing DNA in cells all over the body. Packing of Deoxyribonucleic Acid (DNA) controls how gene are turned on and off in cell throughout development process. Because mice and human have on an average of 85 percent of similarly coded genes, mice can used exemplary model to study and investigate how genetic mutations impact brain development. Changes in mouse DNA imitates changes in human DNA and vice versa.

In extension, mice exhibit behaviors that may be used as exemplary models to analyze human behavior. Scientist led by Alex Nord, professor of neurobiology, phys-
iology and behavior with the Center for Neuroscience at University of California, Davis are advancing to better understanding of role performed by a specific gene elaborated in autism [6,7].

Figure 2 depicts explains the study of mouse cortex; where definitive causes remain unclear, several genetic and environmental factors more likely to increase of autism spectrum disorder, a group of conditions covering spectrum of symptoms, skills and levels of disability.

Complete Genome Sequencing to Determine New Genetic Signature for Autism

With present tests for autism scan broad fraction of genome for DNA infusion and deletions that have previously been associated to autism. Other tests gives glimpse for changes in DNA building blocks of certain genes. However, these tests flag about 10% to 30% of cases. Based on family histories, genetics plays a vital role in 50% (approximately) of autism cases. Complete genome sequencing is a method that is very quickly becoming more affordable and available. This would provide a patient’s complete genetic information. This signature helps to describe cases that don’t have genetic markers of autism.

The results was reported by the study leader Evan Eichler, Howard Hughes Medical Institute (HHMI) investigator at the University of Washington [8,9].

New Research States that Autism Genes are in all of US

New research has shown on the genetic relationship between autistic spectrum disorders and its related traits in the broader population. Autism spectrum disorders are class of neurodevelopmental conditions. With recent advancement in genome sequencing and analysis, a picture of Autism spectrum disorders genetic landscape has begun to take shape. Research has shown that most of Autism spectrum disorders risk is polygenic (stemming from the linked small effects of thousands of genetic disparity, distributed across the genome). Some cases are also connected with rare genetic variants of large effect, usually de novo.

This research was led by a team of international researchers, academics from University of Bristol, Harvard, MIT and Massachusetts General Hospital (MGH) [10,11].

To consummate, SCIOL Genetic Science Journal will be committed to move forward with the international research community to attain sturdy possible scientific picture on coming up extent for unprecedented quality for human mankind.

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Conflicts of Interest

There are no conflict of interest as per Author’s point of view.

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