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In their study, Li, He, Li, and Guo [17] have identified a total of 18 diseases that have been documented in the Integrated Database of Neurodegenerative Diseases (IDND). The Integrated Database of Nucleotide Variants (IDND) was constructed by utilizing data obtained from reputable sources such as UniProt kB, which provides comprehensive protein data, KEGG, which offers pathway data, and PubMed, which contains articles related to diseases. PD Gene is a comprehensive online database that conducts meta-analyses on all published literature related to the disease. The acquisition of this knowledge has facilitated researchers in elucidating the genetic factors that contribute to the susceptibility of Parkinson's disease (PD). The identification of a novel locus for Parkinson's disease (PD) risk, ITGA8, was achieved through the utilization of the provided data set. Alz Data prioritizes the study of Alzheimer's disease due to its high prevalence and significant rate of growth as a neurological disorder.

The database encompasses a inclusive collection of reliable functional data derived from different sources, including neuroimaging screening, population-based longitudinal investigations, and transgenic mice phenotyping. Additionally, it incorporates genomic information from genome-wide association studies (GWAS) and whole exome sequencing, as well as transcriptomic, proteomic, and functional genomic data. Schizophrenia, a prevalent mental disorder, is believed to have a heritability rate of approximately 80%. The SZDB database encompasses the findings derived from genetic and molecular investigations pertaining to schizophrenia. SZDB 2.0, accessible at [18], represents the most recent version of an extensive database designed for the purpose of investigating schizophrenia. Young and Scott [19] incorporate novel additions such as data derived from genome-wide association studies (GWAS), genetic and gene expression investigations, polygenic risk score calculators, copy number variants, transcript quantitative trait loci (QTL), gene eQTL (expression quantitative trait loci), protein-protein communication researches, and methylation quantitative trait loci (MQTL).

Utilizing this resource as an initial reference for further exploration of schizophrenia is an obvious choice. The BD gene database is a supplementary resource that seeks to elucidate the intricate genetic aspects of bipolar disorder (BD), including the association between BD, and major depressive disorder (MDD), including and schizophrenia. Lussier et al. [20] offer a comprehensive examination of existing literature, along with empirical evidence pertaining to potential genes and pathways that could potentially contribute to the pathophysiology of the disease.

## VII. MODELS TO RESEARCH BRAIN DISORDERS

*Caenorhabditis elegans*, Fruit fly (*Drosophila melanogaster*), *Musca domestica* (also known as the house fly), *Danio rerio* (commonly referred to as the zebra fish), pigs, and monkeys are among the animal models that have been employed in [21] to evaluate the molecular route implicated in various brain illnesses and disorders. Cell lines are utilized in the examination of prospective molecular route concerned in the development of neurological disorders and illnesses. Falcone, Brunamonti, Ferraina, and Genovesio [22] have discovered notable parallels in the structural and organizational characteristics of primate and human cerebral cortices. The utilization of this technology will significantly contribute to the advancement of research on human brain disorders and diseases. The selection of a suitable model should be guided by the specific biological questions being posed. Due to its conserved characteristics, *Caenorhabditis elegans* has been utilized as a perfect organism in the investigation of different neurodegenerative disorders, such as Alzheimer's disease (AD), Huntington's disease (HD), and Parkinson's disease (PD). The utilization of transgenic technology has facilitated the utilization of the fruit fly, *Drosophila*, as an effective model organism for researching different neurodegenerative illnesses. The aforementioned conditions encompass tauopathy, Alzheimer's disease, Parkinson's disease, hereditary spastic paraplegia, polyglutamine disorders, and amyotrophic lateral sclerosis.

The origins of neurodegenerative illnesses such as Huntington's disease (HD), Parkinson's disease (PD), and Alzheimer's disease (AD) can be attributed to genes that possess homologues in zebrafish. Zebrafish larvae demonstrate observable neuro-pathological and behavioral abnormalities that bear resemblance to those found in humans. Genetic modification techniques have been employed to generate transgenic mice and rats in order to gain further insights into the etiology of Fragile X syndrome (FXS), autism, as well as other neuropsychiatric illnesses. In contrast to the cerebral cortex of mice or rats, the pig's cerebral convolution (gyri and sulci) exhibits a greater resemblance to the human neo-cortex, implying a potentially significant translational relevance. The investigation of pigs as a viable model for studying human brain disorders has been extensively examined by Lind, Moustgaard, Jelsing, Vajta, Cumming, and Hansen [23] within the realm of neuroscience. Genetically engineered pigs are currently being employed in the investigation of various neurological disorders due to their heightened genetic, physiological, and anatomical resemblances to humans. Transgenic primates have also been employed as experimental models to explore neurological disorders. The investigation of the etiology of Alzheimer's disease, Parkinson's disease, sleep disturbances, and microcephaly is most effectively conducted in

primates, particularly monkeys, owing to their significant resemblance to humans. The inevitability of brain dysfunctions and other significant effects of aging can be attributed to the limited regenerative capacity of neurons in the brain.

During the initial phases, neurodegenerative diseases and disorders exhibit a comparatively gradual progression. In industrialized nations characterized by high life expectancy, the older demographic is notably susceptible to these illnesses. Several conditions that fall under the category of neurodegenerative illnesses include Progressive supranuclear palsy (PSP), Parkinson's disease (PD), multiple system atrophy (MSA), frontotemporal dementia (FTD), dementia with Lewy bodies (DLB), and Alzheimer's disease (AD). Symptoms of Parkinson's disease (PD), a deteriorating neurological illness, encompass movement impairment and muscular rigidity. The hallmark of this disorder is the deterioration of neurons within the substantia nigra and other brain regions. Lewy bodies (LBs) represent intracellular protein aggregates found within neurons that have been associated with the disease. Nanotechnology has enabled the potential permeation of medications through the blood-brain barrier (BBB). Greenwood, Wateridge, and Turowski [24] are currently engaged in the endeavor of developing liposomes that are loaded with nanoparticles with the aim of traversing the blood-brain barrier. Further research is warranted to ascertain efficacious approaches for assisting individuals afflicted with neurological disorders. In the field of clinical neuroscience, the application of nanotechnology in medication delivery across the blood-brain barrier (BBB) emerges as a highly promising avenue. The controlled sequential performance of multiple activities by nanoparticles is potentially critical for facilitating the transportation of medications across the blood-brain barrier (BBB).

### VIII. CONCLUSION

Various factors contribute to the development of diverse brain disorders, encompassing diseases, hereditary factors, and traumatic incidents. Each category possesses a distinct array of hazards, circumstances, and treatments. Brain damage frequently occurs as a consequence of blunt trauma. Trauma has the potential to cause damage to various components of the brain, including neurons, nerves, and tissue. This injury impedes the communications between the brain and the remainder of the body. The occurrence of brain tumors can occasionally arise, presenting a significant peril. Primary brain tumors are defined as tumors that originate in the brain, without spreading from other parts of the body. In specific circumstances, metastasis of cancer originating from a different anatomical site may occur, leading to the infiltration of malignant cells into the brain. These neoplasms are commonly known as metastatic or secondary brain tumors. Both malignant (cancerous) and benign (non-cancerous) brain tumors are potential occurrences. Medical professionals classify brain tumors into different grades, namely grades 1, 2, 3, or 4. Tumors with higher values are indicative of increased activity. Neurodegenerative diseases lead to the progressive degeneration of the brain and nerves over time. These individuals possess the ability to induce confusion and modify one's personality.

Additionally, there is potential for detrimental effects on the nerves and tissue within the brain. Certain neurological disorders, such as Alzheimer's disease, may exhibit a progressive deterioration in individuals as they advance in age. There is a potential for a gradual decline in memory and cognitive abilities. The terminology "mental health disorders" or "mental health conditions" encompasses a wide range of issues that exert influence on an individual's behavior. Non-genetic factors exert an influence on the progression of human brain disorders, thus prompting a surge of interest in the investigation of epigenetic factors within the realm of scientific research. The utilization of databases developed for neurodegenerative disorders and the availability of data facilitated by Genome-Wide Association Studies (GWAS) have demonstrated significant utility in this particular context. Despite the existence of multiple models for investigating neurodegenerative disorders, further specialized methodologies are necessary, particularly for neuropsychiatric states as a result of the presence of overlapping signs and symptoms. The BD genes have undertaken an endeavor to elucidate the intricate genetic condition of bipolar disorders, as well as the shared symptoms with Major Depressive Disorder (MDD) and schizophrenia.

#### **Data Availability**

No data was used to support this study.

#### **Conflicts of Interests**

The author(s) declare(s) that they have no conflicts of interest.

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#### **Ethics Approval and Consent to Participate**

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#### **Competing Interests**

There are no competing interests.

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