



FACTS about MENTAL HEALTH

RESEARCH & CARE

California Biotechnology Companies Provide Hope to Patients Suffering from Brain Disorders

The human brain sets us apart from all other species. This single organ, which contains over 100 billion neurons, controls every physical and mental function in the body. The brain allows us to think, feel, move, smell, hear, see and speak. The brain also influences our mental capabilities, including emotions, behavior and memory.

Mental health is indispensable to our personal and physical well-being. A healthy brain is essential to our everyday lives and is the catalyst for learning, communicating, retrieving information, developing meaningful relationships, experiencing personal and emotional growth, and engaging in productive activities. There is no health without mental health.

The brain is so complex that if any one of its billions of neurons were out of sync, a serious brain disorder such as mental illness or dementia could occur as a result. Brain disorders do not discriminate. They affect people of all ages, ethnicities and socioeconomic levels. Though everyone is at risk, factors such as genetics, environment and social influences determine a person's propensity to develop a brain disorder. Left undiagnosed and untreated, many brain disorders are debilitating, robbing an individual of their identity and independence and, in many cases, even their life.

Brain Disorder Statistics



- **More than 1,000 disorders** of the brain and central nervous system have been identified and are prevalent in the United States and around the world. Tragic and devastating brain disorders such as schizophrenia, depression and bipolar disorder, autism, Alzheimer's disease and a range of other **mental disorders affect nearly one in five Americans in any year.**
- **According to** the National Institute on Mental Health, an estimated **21.6 percent of Americans ages 18 and older—about one in five adults—suffer from a diagnosable mental disorder** in a given year, which translates to about 8.5 million people in California.
- **Mental disorders are the leading cause of disability in the United States**, costing nearly \$205 billion a year in direct and indirect costs. Here in California, the economic loss exceeds \$10 billion each year. According to the National Alliance on Mental Illness, in California, people with mental disorders occupy more hospital beds than individuals with cancer, heart disease and lung disease combined.
- **Alzheimer's disease** is a progressive and fatal brain disease which destroys brain cells causing forgetfulness, disorientation, language and many other basic cognitive and motor skills. Alzheimer's is the most common form of dementia, **affecting more than 40% of individuals over 85**, and is the eighth leading cause of death in California.
- **More than five million Americans are living with Alzheimer's disease**, and here in California, more than 500,000 people are suffering from Alzheimer's. Even though the majority of Alzheimer's patients are age 65 and older, at least **500,000 people nationwide** younger than age 65 either have early-onset Alzheimer's or another dementia, according to the national Alzheimer's Association.
- **The total direct and indirect costs** to care for people with Alzheimer's disease each year **exceeds \$30 billion in California and more than \$100 billion in the United States**, according to the National Alzheimer's Association.
- **The yearly cost of caring for one Alzheimer's patient ranges from \$18,400 to \$36,100** depending on the stage of the disease. The average direct cost of caring for an Alzheimer's patient from diagnosis to death is \$174,000.



California's Life Science Industry is Making Remarkable Brain Disorder Discoveries

There is no cure for brain disorders like mental illness or Alzheimer's disease. Medical treatments for these diseases are currently limited to treating symptoms and managing adverse side effects. But significant progress has been made through biotechnology research, which is providing hope for individuals who suffer from serious brain disorders.



Biotechnology is providing insight into the pathology and genetics of many brain-related diseases.

Molecular and genetic tools are being used to identify genes and proteins that might be involved in the origins of mental illness and dementia. With the tools and knowledge that biotechnology provides, researchers are working to design gene-based treatments and therapies which target the fundamental causes of destructive brain diseases with minimal side effects.



DNA studies of the brain present some of the most exciting research opportunities in medical science, providing scientists with an arsenal of information and tools which will aid the development of brain disorder diagnostics, vaccines, medicines, treatments and, perhaps, a cure.