Neurotech.com is the world’s premier source of NeuroTech Industry Analytics, Forecasting and Benchmarking. It is the creation of Alon Braun from Riverbanks Solutions and Dmitry Kaminskiy from Deep Knowledge Group.

Neurotech.com is the central repository of market insights and analytics, and news for the NeuroTech space, including sectors, influencers, investors, technologies, R&D centers, Hubs, companies, and trends.

Alon Braun is a business architect who guides companies to achieve their goals more quickly and increase their profitability.

Alon has worked with dozens of entrepreneurs and companies in the private and public sectors, helping them grow from an idea to profitability.

He has created a model called The Entrepreneur’s Journey (TM) that integrates the process of building a profitable business, including creating the ideas, leading the team, building the technical systems and software, going to market, and operating the business.

Alon specializes in applying his model to companies in industries including NeuroTech, AgeTech, AI, Genetic Engineering, and BioTech. His extensive experience in marketing, research & development, and managing teams allows him to solve problems and exploit opportunities in fast-paced industries.

Alon has been featured in outlets like Forbes, inc, and Entrepreneur magazine as an author, an expert in marketing and decision making, and one of the top 30 international entrepreneurs.

Dmitry Kaminskiy is an innovative entrepreneur and investor active in the fields of Longevity, Precision Medicine, and Artificial Intelligence. He is a co-founder and managing partner at Deep Knowledge Ventures, a leading investment fund focused on DeepTech, renowned for its use of sophisticated analytical systems for investment target identification and due diligence.

He is a frequent speaker on AI and Longevity, including events organized in London by The Economist “Aging Societies and The Business of Longevity”, Financial Times “Smart Machines vs Smart People”, Financial Times “Global Pharmaceutical and Biotechnology Conference”, the “Precision Medicine World Conference” in Silicon Valley as well as others at Oxford and Cambridge Universities.

He is actively involved in the work of the initiative group and was instrumental at the initial stage of the launch of the All-Party Parliamentary Group for Longevity in the UK Parliament. He now serves as co-director of the secretariat, overseeing the APPG’s international Longevity cooperation development division. He is also supervising all of the APPG’s activities related to the development of Centres of Artificial intelligence for Preventive Medicine in the UK.
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NeuroTech is a set of technologies created on the basic principles of the human nervous system functioning and directly or indirectly related to the brain and various aspects of consciousness, thought, and higher-order activities in the brain. The structure and functioning of the brain are used as the main model for the development of NeuroTech applications that covered a wide range of capabilities. NeuroTech is changing markets, by giving rise to new products and services, including aimed at quality of life improvement and longevity.

**Report goal:** identifying the key stakeholders in the NeuroTech field, and classifying them by relevant characteristics.

**Value proposition of the report:** market mapping and landscape analysis leverage to identify the key players in NeuroTech and understand the broad context in which they are operating for designing the strategy for investors and other interested parties, i.e. selecting the directions for resource allocation in order to balance the unmet market needs and maximize the returns. We propose to use this report to "get smart" on NeuroTech, discover important trends shaping a field, or identify peers and partners. The report allows make visible which tendencies, approaches or beneficiaries are well served by existing players, as well as any grey spaces where no enough companies are currently active.

**NeuroTech Landscape Overview** delivers a comprehensive in-depth analysis of leading NeuroTech companies, investors, governmental initiatives, hubs, research institutions, conferences, influencers, and journalists. Also, are enlightened:

- Market structure;
- Technologies usage and implementation;
- Aspects of global NeuroTech race;
- Current and future trends of the NeuroTech industry, as well as predictions;
- Social and ethical implications of NeuroTech;
- Profiles of TOP-200 impactful players of the market.

The report focuses predominantly on NeuroTech in medicine and wellness, since this sector is the most mature and well-development and can serve as an analytical framework for the study of every other NeuroTech sector in the future.
Report Methodology

I. **Defining of report goals.** Targeting the objectives of the analysis and identifying key questions the report will help answer.

II. **Scope definition.** Determining the types of organizations and participants should be included in the review. Key aspects to consider include:

- Subject - the neuroscience and neuro-related technologies;
- Function - product and/or service providing organizations;
- Approach - scientific research, knowledge dissemination, service provision, B2C or B2B goods manufacturing;
- Type of organization - for profit, governmental and institutional;
- Beneficiary - entrepreneurs/manufacturers, investors and founders, scientists & health care professionals;
- Geography - worldwide coverage.

III. **Deciding on the critical information to gather.** Identifying the main data parameters to collect about each review participant:

- Trading name and icon;
- Market;
- Technology type;
- Technology usage application;
- Geographic location;
- Year of foundation;
- Number of employees;
- Total funding amount.

IV. **Conducting targeted research.** Mapping the selected subject based on goals and scope set and by using research methods such as conducting surveys, reviewing online databases and problem-oriented media, organization websites and their pages on social platforms.

V. **Synthesizing and drawing out implications.** Analytical and statistical analysis of information obtained during data collection.
### NeuroTech Industry Framework

#### Stakeholder Groups
- Scientists & Health Care Professionals
- Investors and Founders
- Entrepreneurs / Manufacturers
- Patients / Consumers
- Civil Society and Army
- Regulators

#### Types of Use
- Diagnosis
- Rehabilitation
- Therapy
- Improvement
- Surgery
- Training & Learning

#### Markets
- Healthcare
- Education
- Wellness
- Lifestyle Computing
- Sport
- Military

#### Opportunities & Concerns
- Enhancement vs. therapy
- Safety
- Cognitive Liberty
- Hype & False Claims
- Human Identity
- Distributive Justice & Access
NeuroTech Landscape Overview 2020
Company Benchmarking

- Intermediate: 125 companies
- Advanced: 25 companies
- Strong: 50 companies
| 1. | Acorda Therapeutics          | 34. | BIOS           |
| 2. | Actipulse Neuroscience       | 35. | Biowave Corporation |
| 3. | AcuraStem                    | 36. | Bitbrain       |
| 4. | Advanced Brain Monitoring    | 37. | Blackfynn      |
| 5. | Aerial BioPharma             | 38. | BlackThorn Therapeutics |
| 7. | Alcyone Lifesciences         | 40. | Brain Power    |
| 8. | Alector                      | 41. | Brain Stimulation |
| 9. | Aleva Neurotherapeutics      | 42. | BrainCheck     |
| 10. | Alpha Omega                  | 43. | BrainCo        |
| 11. | AlterG                       | 44. | BrainFx        |
| 12. | Altoida                      | 45. | BrainKey       |
| 13. | Alzeca Biosciences           | 46. | Brainomix      |
| 14. | Amydis                       | 47. | BrainScope Company |
| 17. | Atentiv                      | 50. | Brainsway      |
| 18. | Autifony Therapeutics        | 51. | BrainWaveBank  |
| 19. | Avalon AI                    | 52. | C8 Sciences    |
| 20. | Avaz                         | 53. | Cala Health    |
| 22. | Axial Biotherapeutics        | 55. | Cell Cure Neurosciences |
| 23. | Axonics Modulation Technologies | 56. | Cerecor        |
| 24. | AxoSim                       | 57. | Cerego         |
| 25. | Axovant                      | 58. | Ceribell       |
| 26. | 3Brain                       | 59. | Cerora         |
| 27. | Backyard Brains              | 60. | CerSci Therapeutics |
| 28. | BalanSeat                    | 61. | Cognixon       |
| 30. | Biodirection                 | 63. | Cortexyme      |
| 31. | Biohaven Pharmaceutical      | 64. | CTRL-labs      |
| 32. | Bionik Laboratories          | 65. | Demiurge Technologies |
| 33. | Bionure                      | 66. | Dreem          |
| 67. | EBS Technologies             | 68. | Electrical Geodesics |
| 69. | ElectroCore                  | 70. | EIMindA        |
| 71. | Emotiv                       | 72. | eNeura Therapeutics |
| 73. | Eodyne Systems               | 74. | Fisher Wallace Laboratories |
| 75. | Flow Neuroscience            | 76. | FORMULA        |
| 77. | FreeOx Biotech               | 78. | G.Tec Medical Engineering |
| 79. | Generable                    | 80. | GliaCure       |
| 81. | Global Kinetics Corporation  | 82. | Great Lakes NeuroTechnologies |
| 83. | GTX medical                  | 84. | Halo Neuroscience |
| 85. | headversity                  | 86. | Healium        |
| 87. | Hocoma                       | 88. | Horama         |
| 89. | humm                         | 90. | ImStar Therapeutics |
| 91. | InSightec                    | 92. | Inspire Medical Systems |
| 93. | Intendu                      | 94. | Inttheon       |
| 95. | KalGene Pharmaceuticals       | 96. | Karuna Labs    |
| 97. | Keepstone Therapeutics       | 98. | Kernel         |
| 99. | Kineta                       | 100. | Koniku         |
| 101. | Limbic |
| 102. | Lumos Labs |
| 103. | Magnolia NeuroSciences |
| 104. | Magstim |
| 105. | Mainstay Medical |
| 106. | MaxWell Biosystems AG |
| 107. | mBrainTrain |
| 108. | Meltin MMI |
| 109. | meEquilibrium |
| 110. | MicroTransponder |
| 111. | MindImmune Therapeutics |
| 112. | MindMaze |
| 113. | Mindstrong |
| 114. | Minerva Neuroscience |
| 115. | Monteris Medical |
| 116. | Muse |
| 117. | Myndlift |
| 118. | MyndYou |
| 119. | Myomo |
| 120. | Navega Therapeutics |
| 121. | Neofect |
| 122. | neotiv |
| 123. | NeuCyte |
| 124. | Neurable |
| 125. | Neuralink |
| 126. | Neuro Device Group |
| 127. | Neuro-Bio |
| 128. | Neurogene |
| 129. | NeurogesX |
| 130. | Neurological Initiative |
| 131. | NeuroLens |
| 132. | NeuroLutions |
| 133. | Neurorome |

| 134. | Neuronetics |
| 135. | NeuroPace |
| 136. | NEUROPHET |
| 137. | NeuropsyAI |
| 138. | Neuros Medical |
| 139. | NeuroScouting |
| 140. | NeuroSky |
| 141. | NeuroTech International |
| 142. | NeuroTechnia |
| 143. | Neurotrack |
| 144. | NeuroVigil |
| 145. | NeuroVigil Imaging |
| 146. | Nevro |
| 147. | Nexstim |
| 148. | NEXT Integrative Minds Life Sciences |
| 149. | NextMind |
| 150. | NICO |
| 151. | Novoron Bioscience |
| 152. | Nuralogix |
| 153. | NURO CORP. |
| 154. | Nuvestra |
| 155. | Nyxoh |
| 156. | OccamRazor |
| 157. | Oculogica |
| 158. | OpenBCI |
| 159. | P1vital |
| 160. | Paradromics |
| 161. | Phannex |
| 162. | Pixium Vision |
| 163. | ProMIS Neurosciences |
| 164. | Psylaris |
| 165. | Q30 Innovations |
| 166. | Qmenta |

| 167. | Reha Technology |
| 168. | Relevant MedSystems |
| 169. | Respica |
| 170. | ReWalk Robotics |
| 171. | REX Bionics |
| 172. | SAGE Therapeutics |
| 173. | Saluda Medical |
| 174. | Sana Health |
| 175. | Second Sight |
| 176. | SensArs |
| 177. | Sense Neuro Diagnostics |
| 178. | SenseNeuro |
| 179. | Sleep Shepherd, LLC |
| 180. | Solace Lifesciences |
| 181. | Somnox |
| 182. | Soterix Medical |
| 183. | SPR Therapeutics |
| 184. | Starlab |
| 185. | Stimwave Technologies |
| 186. | Synaptic Medical |
| 187. | SynchroNex |
| 188. | SyncThink |
| 189. | Syntermed |
| 190. | Thync |
| 191. | Tivic Health |
| 192. | Truust Neuroimaging |
| 193. | United Neuroscience |
| 194. | Verge Genomics |
| 195. | Virtuelep |
| 196. | Voyager Therapeutics |
| 197. | WeSee |
| 198. | WinterLight Labs |
| 199. | Ybrain |
| 200. | Zynex |
# TOP-200 NeuroTech Investors

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## TOP-200 NeuroTech Investors

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TOP-30 NeuroTech Hubs and Conferences

**Hubs**

1. Allen Institute
2. Amsterdam Neuroscience, Industry Alliance Office
3. Brain Center UMC Utrecht
4. Brain Imaging Center (BIC)
5. Cleveland FES Center
6. Clinatec
7. DZNE
8. IEEE Brain
9. Institute of Neural Engineering
10. Istituto di Neuroscienze
11. Max Planck Florida Institute for Neuroscience (MPFI)
12. Moss Rehabilitation Research Institute
13. Neurex
14. Neuro-Electronics Research Flanders (NERF)
15. Neuroengineering Initiative at Rice
16. Neuroscience center at UCSF
17. NeuroTech Alliance
18. NeuroTech Foundation
19. NeuroTech Network
20. NeuroTechX
21. New Zealand Brain Research Institute
22. Queensland Brain Institute
23. Texas Biomedical Device Center
24. The Bertarelli Program in Translational Neuroscience and Neuroengineering
25. The Florey Institute of Neuroscience and Mental Health
26. The Gonda Multidisciplinary Brain Research Center
27. The NeuroTech Institute
28. Weill Institute for Neurosciences
29. World Federation of Neurology
30. Wyss Center

**Conferences**

1. NeuroTech Investing & Partnering Conference
2. NeuroTech Leaders Forum
3. 4th Meeting of The Swiss Federation Of Clinical Neuro-Societies 2019
4. Academy of Aphasia 57th Annual Meeting 2019
5. 24th World Congress of Neurology 2019 (WCN 2019)
6. 2020 Traumatic Brain Injury Conference
7. DARPA/BTO 2019 NEUROTECHNOLOGY Program Review & Transition Meeting
8. 28th International Conference on Neuroscience and Neurochemistry
9. Transformative Technology Conference 2019
10. NIPS 2019 (Thirty-third Conference on Neural Information Processing Systems)
11. Global Summit on Alzheimer’s Disease & Dementia
12. AI in Healthcare, AI World Conference and Expo
13. Neurology Symposium 2019
14. Neuromodulation and Neurostimulation Society of Australia and New Zealand 12th Annual Scientific Meeting
15. 34th European Neurology Congress
16. Toronto NeuroTechnology Congress
17. Global Summit on Neurology and Neurosurgery
18. 32nd World Congress on Neurology and Neuroscience
20. Scottsdale Headache Symposium 2019
21. 8th Annual Miami Neuro Symposium
22. German Sleep Society 2019 (DGSM 2019)
24. Pan-Asian Committee For Treatment And Research In Multiple Sclerosis 2019
25. Head and Neck Imaging Course 2019
28. Society of Vascular and Interventional Neurology 12th Annual Meeting 2019
29. 30th International Symposium on ALS/MND 2019
# TOP-30 NeuroTech Influencers and Journalists

<table>
<thead>
<tr>
<th>Influencers</th>
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<tbody>
<tr>
<td>1. Adrian Attard Trevisan</td>
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<td>2. Brett Giroir</td>
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<td>5. Christopher Lee Friesen</td>
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<td>11. Fabrice Grinda</td>
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<td>15. Brian Wang</td>
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<td>17. Jim Kwik</td>
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<td>20. Michael Dearing</td>
<td>20. Tom Avril</td>
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<td>22. Ramses Alcaide</td>
<td>22. Jonathan Lambert</td>
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<td>23. Robert Schmidt</td>
<td>23. Emily Singer</td>
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<td>27. Thomas Reardon</td>
<td>27. Lucy Ingham</td>
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<td>28. Tim Ferris</td>
<td>28. Matt O’Connor</td>
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<td>30. Yannick Roy</td>
<td>30. Andrea Park</td>
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Neuroscience and NeuroTech are important for our understanding of what it means to be human. The developing technologies prove the scientific fact that there is no biological limitation that cannot be overcome in principle. NeuroTech transforms and improves our inherited situation, alleviating suffering and reversing aging, as well as unlimitedly expanding our intellectual capabilities through chemical and technological interventions in the brain.

As an industry NeuroTech exists about 50 years. The foundations for the ever-closer integration of biological and technological have been laid by the cybernetics movement and brought to popular consciousness by contemporary science. The huge leaps in the scientific understanding of the brain and the human genome, as well as advances in computer technology, have led to the recent acceleration of this tendency and the establishment of a direct channel of communication between the brain and the machine.

In recent years, undeniable successes have been achieved in the study of the genetic, molecular and physiological mechanisms that contribute to the functioning of a brain. NeuroTech is one of the most promising and prospective sectors of modern biotechnology. Corporations, investors and other agents who will be able to utilize this growth and development will gain essential competitive advantages in their struggle for new markets, audiences, and funding. In this report, we make an overall NeuroTech landscape review and present the main stakeholders.
Until 4-3 centuries BC, the heart was considered the source of consciousness. Hippocrates and Plato proposed to consider the brain as a source of intelligence and sensations.

In the early 1800s, the French physiologist Jean-Pierre Florence, the founder of experimental brain science and a pioneer in anesthesia, was the first who began an experimental surgical brain lesioning and proved that the mind is in the brain, not in the heart.

In the late 1700s Luigi Galvani, an Italian physician recognized as the pioneer of bioelectromagnetics, discovered that the muscles of dead frogs' legs twitched when struck by an electrical spark. He became one of the first to study the electric signals from neurons and muscles.

Emil du Bois-Reymond demonstrated the electrical nature of the nerve signal, Hermann von Helmholtz measured the speed of the nerve signal and observed electrical activity in the cerebral hemispheres of rabbits, monkeys, and dogs.

In 1873 Camillo Golgi developed a staining method for visualizing nervous tissue under the light microscope (sometimes called Golgi's method). It was a major breakthrough in neuroscience. Golgi and Ramón y Cajal later won the Nobel Prize in Physiology or Medicine in 1906.

In late 1800s, Paul Broca, John Hughlings Jackson, and Carl Wernicke all helped contribute to the localization hypothesis: certain parts of the brain are responsible for certain functions.
Santiago Ramon y Cajal discovered the neuron, the elementary unit of processing in the brain. The investigations of the microscopic structure of the brain made him a neuroscience pioneer.

Edward Lee Thorndike work on comparative psychology led to the theory of connectionism: the mind is a network of connections and learning occurs when elements are connected.

Otto Loewi investigated how organs respond to chemical and electrical stimulation and how nerve impulses are transmitted. The 1st chemical neurotransmitter identified was acetylcholine.

William Van Wagenen performs “split-brain” surgery to control epileptic seizures. To this day, surgery is a palliative treatment method for many forms of epilepsy.

Donald Hebb's cell assemblies theory: the brain organizes itself into regions of self-reinforcing neurons - the strength of a connection depends on how often it is used. Donald Hebb recognized as the father of neuropsychology and neural networks.

Paul Maclean's evolutionary triune brain theory proposed that the human brain has, in reality, three brains in one: the reptilian complex, the limbic system, and the neocortex. Each brain corresponds to a different stage of evolution.
Roger W. Sperry discovered that the human brain is actually made up of two parts. He found out that both the left and right parts of the human brain have specialized functions and that the two sides can operate independently.

Vernon Mountcastle discovered and characterized the columnar organization of the cerebral cortex. This discovery was a turning point in investigations of the cerebral cortex.

David Kuhl conducted experiments with emission reconstruction tomography. His discoveries helped lead to the routine clinical use of PET in neurology, cardiology, and oncology worldwide.

Godfrey Hounsfield and Allan Cormack invented X-Ray Computed Tomography Scanning.

Raymond Damadian builds the world's first Magnetic Resonance Imaging (MRI) machine.

Gerald Edelman's theory: each brain is different because its ultimate configuration depends on the stimuli that it encounters during its development. The brain is not an "instructional" system but a "selectional" system.
NeuroTech allows us to scan, improve, change the brain and related neurological tissues and systems. Some of the technologies are recognized parts of modern medicine, such as magnetic resonance imaging (MRI) and pharmaceuticals, while others are still in their early theoretical stages.

A good example of a high level of development is brain-imaging and neuromonitoring technology — machines for MRI and computed tomography (CT) were designed in the 1970s. These devices allow medical professionals and researchers to help diagnose and treat injuries and diseases, as well as a better understanding of how the brain works.

Another common and well-known example is pharmaceuticals that alter brain chemistry to change human behavior. Drugs such as selective serotonin reuptake inhibitors (SSRIs) and drugs used to treat attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD) are widely used, as they specifically change the way the brain functions.

Neuroprosthetics is mainly associated with the mixing of human nervous tissue with artificial implants, for example, through a brain-computer interface or other devices. Implants can be used to treat non-congenital blindness and case of hearing loss. Neural implants are a highly effective treatment for sleep apnea and assist the cardiovascular system after a stroke.

There are many technologies can potentially revolutionize neuroscience and health care over the next decade. They are providing doctors and patients with a new sense of optimism about the future diagnosis and treatment of neurological and psychiatric diseases, and will also contribute to future medical innovations.

In this report, we are exploring medical technologies that have already become widespread and primary applied to the whole nervous system. Based on the analysis of NeuroTech in healthcare, we will be able to define the general structure of the industry, its main risks, and opportunities, track the whole process of market development.
Addressing the widespread effects of aging populations, including the growth of mental illness and neurological disorders, remains a priority for many countries. Mental and neurological disorders are projected to increase dramatically in line with demographic aging and the globalization of unhealthy lifestyles. According to the World Health Organization, more than 25% of all years have been lived with disabilities.

The complexity of the human brain and resulting human behavior has been driving the desire for promoting open science and data sharing. International efforts at neurotechnology research, development, and regulation incorporate both principles of open innovation and a norm of meaningful public engagement in scientific decision making. The NeuroTech field often requires large public investments.

Governments, sponsors, and companies around the world are making unprecedented investments in brain research and the development of neurotechnology. Advanced science and new technologies developed as part of large-scale and interdisciplinary research initiatives are already creating new ways to understand and influence the fundamental functions of the brain. The translation of breakthrough research into tangible products with a positive impact on society remains a critical goal.

As product development and translation into markets are key moments in the gestation of technology, the private sector, and philanthropic investments are playing a main role in the development of NeuroTech that enable new understandings of the brain and provide innovative treatment approaches providing of business cases for translation of brain science into NeuroTech applications.
Molecular neuropharmacology is the study of how drugs affect cellular functions and neural mechanisms and aimed at developing drugs that have a beneficial neurological effect.

Behavioral neuropharmacology focuses on the study of how drugs affect human behavior, including the study of how drug dependence and addiction affect the human brain.

Gene therapy is carried out due to the special genetic state of the tumor cells and treats the disease by introducing the correct copy of the defective gene into the tissue instead of drugs.

Neuroinformatics is concerned about the organization and processing of the neuroscience data which allow to quantitatively confirm working theories by computational modeling.

Optogenetics is a method that uses a combination of techniques from optics and genetics to control nerve cells through the incorporation of light-active proteins into their membranes.

Reprogramming cells into neurons and their subsequent prosthetics is a way to restore the lost function of neurons by converting other cells of the body into new neurons.

Stem cells are implanted by injections into the brain to replace dead elements, induce the brain to produce new cells and create more connections between neurons.

Cyberkinetics uses engineering methods to repair, replace or improve neural systems and solve the problems at the junction of living neural tissues and non-living structures.
Neuromodulation is the alteration of nerve activity through targeted delivery of a stimulus, such as electrical stimulation or chemical agents, to specific neurological sites in the body.

Magnetic stimulation is a form of brain stimulation in which a changing magnetic field is used to cause electric current at a specific area of the brain.

Neural prostheses are a series of devices that can substitute a motor, sensory or cognitive modality that might have been damaged as a result of an injury or a disease.

Neurorecovery is a complex medical process that aims to aid recovery from a nervous system injury and to minimize or compensate for any functional alterations resulting from it.

Brain-computer interface is a direct communication pathway between an enhanced or wired brain and an external device with an allowance of bidirectional information flow.

Neuromonitoring/imaging are the methods for the scanning of the brain and spinal cord physiological functioning, including the assessment of its anatomical/physiological integrity.

Neurofeedback uses real-time displays that measure brain waves to produce a signal that can be used as feedback to teach the self-regulation of brain function.

Cognitive assessment & enhancing are a class of supplements and drugs that can actually increase the brain's performance on key intellectual measurements.
Neuropharmacology

Neuropharmacology is an area of great interest in both basic and clinical studies, and new data on topics such as neuropeptides, neurohormones and neuromodulators, and many others, are spreading at an ever-faster rate.

Neuropharmacology concerns both the treatment of those who are sick (therapy) and those who feel good (improvement). Thus, drug therapy and use can be considered across the entire spectrum: from drugs that can help a sick person to the latest "smart drugs". These "smart drugs" also known as nootropics, derived from the Greek words “noos” or “mind” and “tropein” meaning “bend/turn”, these “smart drugs” are designed to improve the functioning of a clinically normal person.

According to the World Health Organization, the burden of disorders of the brain and central nervous system (CNS) ranges from 35% to 38% of the total burden of all diseases, compared with 12.7% for cancer and 11.8% for cardiac vascular diseases.

Neuropsychiatric disorders are especially difficult to diagnose, especially in the early stages, as the symptoms are mild, nonspecific, and changes in the brain are still elusive. In fact, during the first visit, 30% of patients with Alzheimer's disease and about 10% of patients with Parkinson's disease were misdiagnosed.

There is currently no cure for progressive neurodegenerative diseases. Researchers at pharmaceutical companies, universities, and research hospitals spend more than $137B a year on new neurodrugs discovering. The pipeline is extremely inefficient, and it currently takes more than 12 years and $1.5B to bring the drug to the market. The initial phase of research and development, before starting any clinical trials, usually takes 3.5 years.
The short definition of neuromodulation is "changing in nervous activity through the delivery of stimulus." There are several types of neuromodulatory stimuli, each of which has different properties and uses. The stimulator is a type of implantable neuromodulation device that is used to send electrical signals to select areas.

Neuromodulation has been studied in various forms for decades, leading to a number of clinical treatments and new uses, including:

- Deep brain stimulation
- Sacral nerve stimulation
- Spinal cord stimulation
- Vagus nerve stimulation
- Transcranial magnetic stimulation
- Pharmacological stimulation using drugs.

Applications for neuromodulation include diagnosis, therapy of a wide range of disorders, as well as a tool for medical and neuroscience research. Since neuromodulation is a widely diverse field, applications are specific to the type of neurostimulation.

According to a market research study from NeuroTech Reports, the worldwide neuromodulation device industry is expected to grow from $8.4 billion in 2018 to $13.3 billion in 2022.
Main Types of Neuromodulation

**Deep brain stimulation** is the placement of a medical device called a neurostimulator, which sends electrical impulses, through implanted electrodes, to specific targets in the brain for the treatment of movement disorders, including Parkinson's disease, essential tremor, and dystonia. Also, deep brain stimulation has been studied in clinical trials as a potential treatment for chronic pain for various affective disorders.

**Sacred neuromodulation** is a procedure used to treat people with chronic urinary retention, as well as symptoms of an overactive bladder (frequent and urgent urination with associated urine leakage) that do not respond to medication or physiotherapy. Sacred neuromodulation changes the function of the sacral nerves located near the tailbone.

**Spinal cord stimulation** is a neuromodulation technique that is used to treat various types of chronic pain. Similar to the way a pacemaker corrects an abnormal heartbeat, a neuromodulation device can establish a neurological balance that may help reduce symptoms associated with pain. The treatment involves placing electrodes next to a specific spinal area presumed to be the source of pain.

**Vagus nerve stimulation** is a medical treatment that involves delivering electrical impulses to the vagus nerve. The relationship between depression, inflammation, metabolic syndrome, and heart disease might be mediated by the vagus nerve. Vagus nerve stimulation is used as an add-on treatment for certain types of intractable epilepsy and treatment-resistant depression.
Transcranial Magnetic Stimulation

Transcranial magnetic stimulation (TMS) is a non-invasive brain stimulation technique that uses magnetic induction forces that focus on a specific area of the brain. Electromagnetic induction is generated from the coil by electricity, and these impulses pass through the cranium to its specific area of the brain receptor.

Single or paired TMS pulses and repetitive TMS (rTMS) are two types of transcranial magnetic stimulation. Single or paired pulse TMS is currently the most common method. Nevertheless, it is expected that in the next few years in the segment of mTMS stimulants there will appear promising results of the use of mRMS technique for the treatment of various psychiatric disorders and growing clinical studies proving the effectiveness of this technique.

The use of transcranial magnetic stimulants includes research, diagnosis and therapy.

Diagnostic applications include evaluating the effects of diseases such as stroke, multiple sclerosis, and other neurological diseases on the brain. Therapeutic uses of transcranial magnetic stimulants include treatment of treatment-resistant major depression, migraine, obsessive-compulsive disorder (OCD), schizophrenia, and post-traumatic stress, among other psychiatric diseases.

According to Grand View Research data, the global transcranial magnetic stimulation market size was valued at $883.4 million in 2018 and is anticipated to grow preliminary by 9% per year.
Modern medicine has given us countless methods for understanding, measuring and managing our health indicators, such as temperature, weight, body fat percentage, cholesterol, PSA, etc. The patient's measured values are easily compared with established normal ranges.

The human brain is a very complex, multi-layered organ consisting of many billions of neurons organized into very complex interconnected neural networks. These networks carry electrical signals that are responsible for every function of a person, from memory to emotions and physical movement. When injuries or diseases of the brain occur, disruption of the brain's electrochemical networks leads to a dysfunction that is difficult to quantify.

Imaging modalities are providing us with information on brain anatomy, metabolism, and energy consumption:

**Magnetic resonance imaging (MRI)** of the brain is a safe test that uses a magnetic field and radio waves to produce detailed images of the brain and the brain stem.

**A brain positron emission tomography (PET)** scan is an imaging test of the brain. It uses a radioactive substance called a tracer to look for disease or injury in the brain.

**A cranial (CT)** scan stands for computed tomography is a type of X-ray procedure that produces three-dimensional pictures of the head, referred to as "slices."
Electroencephalography (EEG)

EEG allows for the measuring of the electrical activity generated by various cortical layers of the brain. In particular, electrical signals come from areas of gray matter that have a high density of pyramidal cells interacting with each other. Whenever large groups of these pyramidal cells are launched synchronously, the generated electricity is emitted to the surface of the scalp - this is what is recorded using EEG electrodes.

EEG leverage to register brain processes that occur shortly after the appearance of visual or sound stimuli, but we can also monitor brain conditions that reflect interaction and motivation for a longer time.

Magnetoencephalography (MEG)

Magnetoencephalography is a functional neuro technique for mapping brain activity by recording magnetic fields produced by electrical currents occurring naturally in the brain, using very sensitive magnetometers. While EEG detects electrical activity generated by neural excitation, MEG captures the magnetic fields generated by neural activity.

MEG measurements should usually be carried out in a shielded chamber so that external magnetic fields do not interfere with the data recording. The biggest advantage is that MEG combines a high temporal resolution similar to EEG, while it has a high spatial resolution.
Cognitive assessment & enhancing is a practice designed to help people improve their brain and cognitive development, social cognition, and increase vocational capabilities. It refers to the targeted improvement and expansion of cognitive and affective abilities based on an understanding of their basic neurobiology in healthy people who do not have mental illnesses.

For millennia we lived in the dark, knowing nothing of how our thoughts and our lives were determined by the incredible workings of the human brain. But times are changing. Over the last thirty years, the incredible discoveries of neuroscience have opened new horizons.

Our cognition functions naturally decline as we age, therefore new neuro technologies allow us to improve the health and performance of our brains, redefining what’s possible for how we experience and enjoy our lives.

A variety of studies have shown an increase in cognitive abilities after the intervention of cognitive training. The range of cognitive assessment and enhancing extends to meditation, video games, smart drugs, nutritional supplements, nutrition, brain stimulation, exercise, music, cognitive training, and more. Increasing the level of cognitive flexibility will increase the efficiency of the brain, help solve complex problems and understand new perspectives. People with cognitive flexibility are open to new ideas and can use more information about ways to overcome difficulties. If you increase your cognitive flexibility, chances are good that you will increase your IQ at the same time.
Brain-computer interfaces receive brain signals, analyze them, and translate them into commands that are sent to output devices that perform the required actions. BCIs do not use normal neuromuscular exit pathways. The main goal of BCI is to replace or restore beneficial function for people with neuromuscular disorders such as amyotrophic lateral sclerosis, cerebral palsy, stroke, or spinal cord injury.

From the very first days of punch cards, interaction with computers has always been a problem. Whether it's a keyboard and mouse, joystick, or controller, it takes a lot of unintuitive processes to get thoughts out of your head into a computer. But until we start implanting USB ports into our brain and directly load our thoughts, we will have to deal with neural signal detection devices.

Brain-computer interface technology is at the center of attention of a fast-growing research and development that attracts scientists, engineers, doctors and the public at large. Its future achievements will depend on achievements in three critical areas:

- Brain-computer interfaces require signal collection equipment that is convenient, portable, safe, and capable of functioning in all environments.
- Brain-computer interface systems should be tested through long-term studies of the actual use by people with severe disabilities, and effective and viable models must be implemented for their widespread dissemination.
- The daily and instant reliability of brain-computer interfaces needs to be improved so that it approaches the reliability of natural muscle functions.

According to the global Brain-Computer Interface Market report published by Value Market Research, the market is expected to touch $1.8B by 2024, with a CAGR of 9.9% growing from $945M in 2017. Technological advances in BCI technologies are planned in the military, entertainment, gaming, and communications sectors.
Neurofeedback is a form of biofeedback that is based on the understanding that if you provide the patients with real-time feedback about their involuntary body functions, they can learn to control them. Neurofeedback works by showing patients information about their brain wave activity, they can learn to change their brain waves. Neurofeedback therapy is used to treat various neurological conditions.

To assess the needs of the patient and determine the optimal course of treatment, most therapists quantify the brain electroencephalograph (or qEEG) before starting neurobiological control.

QEEG is performed by placing electrodes in specific places on the scalp and recording brain activity. Then the results are compared with a large database of EEG measurements from the general population, which helps the doctor determine which specific brain wave frequencies need to be changed and how. It has been found that neurofeedback control is useful in the treatment of various brain diseases, including ADHD / ADH, epilepsy, depression, anxiety and PTSD, autism and rehabilitation of traumatic brain injuries. It has been proven that people with various brain disorders have different patterns of brain waves than the general population.

According to the Credence Research report data the Neurofeedback market is set to reach from $821M in 2017 to $1.57B by 2026, with a CAGR of 7.5% growing.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gamma (&gt;25 Hz)</td>
<td>Awareness</td>
</tr>
<tr>
<td>Beta (13-25Hz)</td>
<td>Alertness</td>
</tr>
<tr>
<td>Alpha (8-12 Hz)</td>
<td>Relaxed</td>
</tr>
<tr>
<td>Theta (4-7 Hz)</td>
<td>Tired</td>
</tr>
</tbody>
</table>
## Distribution of Technologies among TOP-200 Companies

<table>
<thead>
<tr>
<th>Technology</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuromonitoring / Imaging</td>
<td>32</td>
</tr>
<tr>
<td>Neuropharmacology</td>
<td>36</td>
</tr>
<tr>
<td>Cognitive assessment &amp; enhancing</td>
<td>24</td>
</tr>
<tr>
<td>Neuroinformatics</td>
<td>12</td>
</tr>
<tr>
<td>Neuromodulation</td>
<td>35</td>
</tr>
<tr>
<td>Cyberkinetics</td>
<td>2</td>
</tr>
<tr>
<td>Neurofeedback</td>
<td>21</td>
</tr>
<tr>
<td>Brain-computer interfaces</td>
<td>13</td>
</tr>
<tr>
<td>Neural prostheses &amp; simulators</td>
<td>14</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>3</td>
</tr>
<tr>
<td>Gene therapy</td>
<td>8</td>
</tr>
</tbody>
</table>
Cloud of NeuroTech Applications

- Therapy Devices
- Eye-Tracking
- Drugs
- Evaluating Platforms (Hard & Soft)
- Blood Tests
- Surgery Products
- Exoskeletons
- Retinal Devices
- Gait Trainers
- AI Engines
- Drugs
- Blood Tests
- Surgery Products
- Exoskeletons
- Retinal Devices
- Gait Trainers
- AI Engines
Distribution of Applications Among TOP-200 Companies

- AI engines: 8
- Blood tests: 2
- Drugs: 41
- Evaluating platforms (hard&soft): 44
- Exoskeletons: 7
- Eye-tracking: 3
- Gait trainers: 3
- Implantable stimulators: 18
- Neuroscience kit: 1
- Non-invasive wearables: 31
- Retinal devices: 3
- Sleep tracker: 5
- Software products: 14
- Surgery products: 6
- Therapy devices: 14
Introduction of TOP-200 Companies

by Technology Usage

- Surgery: 3.6%
- Training and learning: 7.0%
- Rehabilitation: 10.0%
- Improvement: 15.5%
- Diagnosis: 21.0%
- Therapy: 43.0%

by Business Direction

- B2B
- B2C

by Average Year of Foundation

2010

by Number of Employees
TOP-200 Companies Total Funding Amount Split

by Technology Usage

- Therapy: $4,522,165,000
- Surgery: $681,900,000
- Rehabilitation: $458,200,000
- Diagnosis: $375,943,000
- Training and learning: $218,865,000
- Improvement: $169,215,000

by Technology

- Neuroromodulation: $2,383,726,000
- Neuropharmacology: $1,237,965,000
- Neumonitoring / Imaging: $823,997,000
- Gene therapy: $619,340,000
- Brain-computer interfaces: $387,529,000
- Cognitive assessment & enhancing: $311,885,000
- Neural prostheses & simulators: $309,630,000
- Neurosurgery: $171,000,000
- Neuroinformatics: $125,456,000
- Neurofeedback: $106,910,000
- Cyberkinetics: $5,900,000

by Last Funding Date

- 2020-01-01
- 2015-01-01
- 2010-01-01
- 2005-01-01
TOP-200 Companies Benchmarking

- **Advanced** - 25
  - Average Total Funding Amount: $96M

- **Strong** - 50
  - Average Total Funding Amount: $58.5M

- **Intermediate** - 125
  - Average Total Funding Amount: $12M
Introduction of TOP-200 Investors

by Type

- Venture Capital: 53.7%
- Accelerator: 6.9%
- Angel Group: 2.9%
- Corporate Venture Capital: 3.4%
- Entrepreneurship Program: 2.9%
- Family Investment Office: 2.3%
- Government Office: 6.3%
- Hedge Fund: 1.7%
- Incubator: 1.1%
- Investment Bank: 1.7%
- Micro VC: 9.7%
- Private Equity Firm: 6.3%
- University Program: 1.1%

by Average Number of Investments

- 40

by Average Number of Founders

- 2

by Number of Employees

- [Bar chart showing distribution]
30 NeuroTech Hubs

Allen Institute  Amsterdam Neuroscience  Brain Center UMC Utrecht  Brain Imaging Center (BIC)  Cleveland FES Center  Clinatec  DZNE  IEEE Brain  Institute of Neural Engineering  Istituto di Neuroscienze

Max Planck Florida Institute for Neuroscience (MPFI)  Moss Rehabilitation Research Institute  Neurex  Neuro-Electronics Research Flanders (NERF)  Neuroengineering Initiative at Rice  Neuroscience Center at UCSF  NeuroTech Alliance  NeuroTech Foundation  NeuroTech Network  NeuroTechX

New Zealand Brain Research Institute  Queensland Brain Institute  Texas Biomedical Device Center  The Bertarelli Program in Translational Neuroscience and Neuroengineering  The Florey Institute of Neuroscience and Mental Health  The Gonda Multidisciplinary Brain Research Center  The NeuroTech Institute  Well Institute for Neurosciences  World Federation of Neurology  Wyss Center
30 NeuroTech Influencers

Adrian Attard Trevisan, NeuroTech International, Founder & Non-Executive Director
Brett Giroir, Texas A&M Health Science Center, Professor
Bryan Johnson, Kernel, Founder & CEO
Charlie Songhurst, BIGS, Investor
Christopher Lee Friesen, Axem NeuroTechnology, Co-Founder & CTO
Daniel Chao, Halo Neuroscience, CEO
Dave Asprey, 40 Years of Zen, Founder
David Helgason, Nordic Makers, Co-founder
Elon Musk, Tesla, Product Architect & CEO
Eric Meier, Cervel NeuroTech, President & CEO

Fabrice Grinda, FJ Labs, Co-Founder
George Whitesides, MC10, Co-Founder
Howard Morgan, First Round Capital, Co-Founder & Partner
Hugo Mercier, DREAM, Co-Founder & CEO
Jeff Dean, Google, Googler Senior Fellow
Jeff Hammerbacher, Techhammer, Partner
Jim Kwik, Kwik Learning, Founder & CEO
Josh Hannah, Matrix Partners, Partner
Laura Yecies, Strategic Technology Leader
Michael Dearing, Harrison Metal, Founder

Michael S. McCorquodale, Cortera NeuroTechnologies, CEO
Ramses Alcaide, Neurable, Co-Founder, CEO & President
Robert Schmidt, Great Lakes NeuroTechnologies, CEO and Chairman
Sir Nigel Rudd, Juno Capital Partners, Partner
Sydney Swaine-Simon, NeuroTech, Project Lead
Tan Le, Emotiv, Co-Founder & CEO
Thomas Reardon, CTRL-labs, CEO & Co-Founder
Tim Ferris, science writer & best-selling author
Timothy J. Scannell, Stryker, Group President
Yannick Roy, NeuroTechX, Co-Founder & Executive Director

NeuroTech Analytics
The revolution caused by the development and massive deployment of neural technologies has already begun and we all are witnesses to the transformation of NeuroTech into a huge business. Based on an analysis of more than 10,000 IP filings made by the research team from SharpBrains, the overall financial impact of neurotechnologies looks impressive. In general, if we include the medical use of NeuroTech and other businesses that can benefit from brain-related technologies, this is a field that might generate more than $150B in revenue annually.

Neuroscience and NeuroTech extend far beyond their scientific and medical applications. People interact with the physical, digital and social worlds, which, in turn, from work in the workplace to personal relationships, are affected by how well our brain works.

Times commencing when it is not necessary to be a scientist in order to actively use the NeuroTech achievements in daily life. Connecting non-invasive wearables to the brain allow us to monitor brain waves in real-time and couple them with software that can determine patterns of brain activity and convert them into mental commands which are transmitted to the devices we want to control. Participants of this NeuroTech Landscape Review from around the world have developed systems that allow users to control the biological signals of their own bodies, operate virtual characters in video games, move robotic arms and legs, or print messages without moving their fingers. Any connected object can be controlled remotely, without physical attachment to a person.

Tens of thousands of people across the world owning devices, made by companies from our review, that are sharing the brain data with the algorithms, which are detecting mental commands by the support of the machine and deep learning. This is all the more important since the joint efforts of neuroscientists, engineers, healthcare professionals and government organizations, as well as companies in the private sector, are already making a difference in the lives of people with disabilities. Examples of medical devices connecting the brain and computer give blind people a sense of light and mimic the movement of limbs in paralyzed patients. Using affordable NeuroTech can change their lives.
In March 2019, the Food and Drug Administration took a key step towards the future of the NeuroTech by releasing FDA's Guide for the neurobiology industry to develop innovative brain-computer interface devices, the technology can stimulate a wave of investment in neurobiological startups. The manual focuses on industry recommendations on non-clinical testing procedures and clinical trial design for developing brain-computer interface devices. The aim is to ensure the safety and effectiveness of research results in this area.

FDA Commissioner Scott Gottlieb, M.D. said in the press release, "The idea that a prosthetic could interact with the brain has been the topic of much imagination, but now we're actually on the verge of realizing this opportunity. The FDA has an important role to play by laying out a path for developers on how to seize this prospect and advance the development of new devices."

The field of neurology, known as neuromodulation, has only recently come under the spotlight of the public market when companies like electroCore and Nuvecctra, have become famous for technologies that can relieve pain through electrical stimulation of the nervous system. By the way, humans have been measuring brain activity and modifying it with electrical stimulation to diagnose and treat neurological disorders, for decades. One of the applications of this technology is to treat insurmountable pain by stimulating the spinal and peripheral nervous system, and, in particular, directly in separate parts of the brain. Deep brain stimulants, meanwhile, are used to treat motor disorders such as dystonia and Parkinson's disease, and the destruction of small amounts of brain tissue can be used to treat epilepsy. In addition to technological progress, important advances in public recognition and adoption of neurotechnologies have also occurred in the last decade. In particular, doctors and patients are becoming more and more confident in the idea of surgical implantation of devices in the human brain. More than 150,000 people in the United States already have some form of a therapeutic brain implant, mainly for the treatment of Parkinson's disease.
Challenges for Further NeuroTech Development

According to the data of Kavli Foundation the cost of global neurological diseases, such as dementia and Alzheimer’s disease, that includes healthcare costs, loss of productivity in the workplace and impact on families reached $2.5 trillion in the 2010 year and can reach 6 trillion dollars by 2030. By then, the economic burden of brain health will be higher than the burden of cancer, diabetes, and respiratory illnesses combined.

Although there is a big social burden associated with disorders of the nervous system, the development of new therapeutic agents remains unchanged with relatively low FDA approval rates (8.4 percent) compared to other therapeutic areas. This is a fact, there are no yet effective ways to treat neurodegenerative diseases, and drug candidates have the highest failure rates in clinical trials. They have various underlying causes, and genetic causes of the disease have been identified in only less than 10 percent of diagnoses. This limits the ability of researchers to determine which therapeutic approaches will work for which patients and whether this approach will work in most cases for most patients.

Alzheimer’s disease drug development is by far one of the most challenging and serious failures, regardless of the strategy developed. Using advanced NeuroTech technologies, we can evaluate disease progression and test existing FDA-approved therapeutic agents or combinations of therapeutic approaches to find the most effective treatments that can slow disease progression.

For 30 years, medicine focused on the stage of the disease, which was too late to restore cognitive impairment. We need to identify patients 15–20 years before these irreversible symptoms appear in order to find an effective treatment. The latest scientific literature says that the future of neurological treatment will be a combination of pharmacological drugs aimed at certain mechanisms, such as deposition of peptides, excitotoxicity, and metabolic targets, and neuromodulation therapy to treat loss of plasticity, loss of neurogenesis and inflammation.
The traditional way to discover new drugs can take more than ten years and cost billions of dollars. If a promising drug works in laboratory animals, it must undergo rigorous clinical trials to test its safety and effectiveness in humans.

AI platforms use natural language processing while scanning research sources, patents, clinical trials, and patient histories. It forms a cloud-based view of billions of known and perceived connections between biological objects such as genes, symptoms, diseases, proteins, tissues, species, and potential drugs. This report presents unique interdisciplinary teams in science and data technology that bring together neuroscientists, machine learning experts, clinicians, software engineers, and cloud architects to combine academic-level scientific rigor with industry-level efficiency. **This unique combination of science and data puts NeuroTech at the forefront of precision medicine through AI.**

The 1950s AI pioneers discussed the creation of machines that could perceive, consider, and think like humans - a concept is known as ‘general AI’, which is likely to remain in the realm of science fiction. However, the continued rapid increase in computing power over the past two decades, the availability of large data sets, and the development of advanced algorithms have led to significant improvements in machine learning. This helped create a ‘narrow AI’ that focuses on specific tasks. These include improved abilities to analyze and understand the artificial neural networks designed to simulate our brain's perceptions of the world. This progress has triggered a wave of NeuroTech startups that use AI to detect drugs.

The idea is that machines that are skilled in pattern recognition can sift through a wealth of new and existing genetic, metabolic, and clinical information to unravel the complex biological networks that underlie disease. This, in turn, can help identify drugs that can work in specific groups of patients, while diverting companies from drugs that may fail.
The central role that the brain and nerve pathways play in controlling our major organ systems has become scientifically understood only over the past 20 years.

Neuroceuticals and neuromodulation therapies have emerged as a new way to treat chronic conditions, offering an alternative to pharmaceuticals. These treatments directly adapt nerve signals and enable you to create more targeted and more effective treatments than pharmaceuticals, with less cost and fewer side effects. The main bottleneck in the development of such treatment methods is the speed and accuracy with which scientists could detect and recreate accurate neural signals — biomarkers — that could affect our health. Neural data is incredibly complex, so huge volumes of neural data and more powerful interpretation methods are the key aspects of finding signal patterns that can be used as biomarkers.

The idea of using AI is to develop a platform for detecting biomarkers from neural data, combining long-life neural interfaces (connections that allow computers to read and write neural data directly to and from the body) with a deep intelligence system that trained to “learn” the biomarkers directly from neural data.

Being able to understand the "language" of the nervous system, the AI platform for detecting biomarkers allows by closed-loop experiments to easily test neuromodulation therapy on new targets, accelerates the development of treatment for a number of chronic conditions, and also is a huge step towards real-world clinical applications of AI within the body. This progress creates a new way to investigate the condition, accelerates the detection of neural biomarkers, and opens the door to a new generation of AI-based neural medical procedures.
A couple of decades ago, the aging field was considered a backwater by many neurobiologists, and medical students were not interested in or were even repelled by the idea. When scientists came to understand the activity of genes, it became clear that aging is not separated from the processes that control the development of the body before puberty, it uses the same biochemical mechanism. Genes are important in youth, and then help withstand stressful conditions in youth, and then affect health and longevity.

In addition to the obvious signs of aging, such as graying hair and memory problems, there are numerous shifts more significant: metabolic processes proceed less smoothly; neurons respond less quickly; DNA replication is growing faster. If scientists can accurately determine which of the changes in these processes cause aging but are not its result, it may be possible to intervene and extend the life of people.

About 15 years ago, in a paper published in Nature, Bruce Yankner, a professor of genetics and neurology at Harvard Medical School, observed the data on gene expression from the donor human brain to see how they change over life. A few years later, scientists realized that many of the changes they saw were caused by a protein called REST. In a 2019 publication in the Nature, Yankner reported on a previously unknown life expectancy controller: the level of neuron activity in the brain. In a series of experiments on roundworms, mice, and human brain tissue, they found that a protein called REST, which controls the expression of many genes associated with neural stimulation, also controls lifespan.

The data obtained are the first evidence that the activity of the nervous system affects the life expectancy of human organism.
According to estimates of the World Economic Forum, one in three people becomes disabled after the age of 80. Of all the diseases associated with old age, neurodegenerative diseases such as dementia and Alzheimer’s are the most terrifying, they gradually rob us of our identity and dignity. Since a third of us have a chance not so much to enjoy life extra years but to suffer the neurodegenerative symptoms, this indicates an urgent need for further research and development in the NeuroTech field.

This report proves that NeuroTech is ripe for growth and provides an opportunity to solve the most serious health problems our society is currently facing. It becomes apparent that the solutions lie in the area of the concrescence of the human brain and body with smart neural devices controlled by computers. What does this mean for the areas of aging and longevity? The basic idea is that the human brain merges with machines that can create solutions to aging problems. We can protect our bodies and minds from the effects of aging; for example, linking AI to the human neural system to help neurological sufferers.

Diseases and disorders related to the brain are one of the underserved medical markets in the world. NeuroTech creates radical possibilities to improve health and overcome biological limitations in ways that were previously unimaginable.

“It’s increasingly hard to tell where I end and where the computer begins.”

Yuval Harari
Acorda’s mission is to develop therapies that restore function and improve the lives of people with neurological disorders.

ARCUS® is an **innovative technology platform that transforms medicines into a light, dry powders**. These powders are designed to deliver high doses of medication through an inhalation device that is activated by a patient’s own breath.

ARCUS doesn’t change a medicine’s molecules, but rather the size and shape of the particles. ARCUS particles can be up to 10x larger than traditionally inhaled medicine particles but have a density that is up to 90% less, resulting in a powder that is more aerodynamically efficient than other dry powders. Results of an initial PK study of an inhaled zolmitriptan based on ARCUS showed that maximum plasma concentrations were obtained in an average of 11 minutes, a rate comparable to that of subcutaneous injection.
Actipulse Neuroscience is a neuro-tech company specialized in the research and engineering of Non-Invasive Brain Stimulation technologies for the treatment of Parkinson's Disease and dementia. We are pioneers in Non-Invasive Brain Stimulation technologies with a particular focus on transcranial neuromodulation devices using high-frequency magnetic pulses that target multiple well known, but neglected pathogenic mechanisms in neurodegenerative disorders.

The latest scientific literature and our current clinical results are showing that the future of neurological treatments will be a combination of pharmacological drugs targeting defined mechanisms such as Peptide deposition, excitotoxicity, and metabolic targets and neuromodulation therapy treating loss of plasticity, loss of neurogenesis and inflammation.

Actipulse Neuroscience has for goal to be the golden standard of neuromodulation technologies in the next five years and to become an integral part of the treatment of the millions of patients suffering from Parkinson's Disease and dementia in the world.
AcuraStem is a fast-growing startup company that was formed in 2016 to create an innovative precision medicine platform. We are a team of PhDs, professors, tech entrepreneurs, and successful drug company veterans employing the latest scientific breakthroughs to address one of the most challenging, but we believe tractable, health problems of our time — Amyotrophic Lateral Sclerosis (ALS).

Our best-in-class technology platform consists of complex cellular models from ALS patient cells and sophisticated assays which permit our scientists to model patient tissues in the laboratory. Using this advanced technology, we can evaluate the progression of disease and test existing FDA approved therapeutics, or a combination of therapeutic approaches, to find the most efficacious treatments to slow disease progression.
Advanced Brain Monitoring

Country: United States  
Founded date: 1997  
Number of Employees: 51-100  
Total Funding Amount: $837K  
Category: Neuromonitoring / Imaging

Advanced Brain Monitoring, and over the past 15 years, has challenged conventional thinking by developing innovative medical devices that provide a superior patient experience, lower healthcare costs, and improved quality of care. B-Alert X24 applies all sensors of the standard International 10-20 system simultaneously for efficient set-ups while also providing every subject a comfortable and individualized fit.

The system enables quantitative analysis techniques such as single-trial ERPs, LORETA/sLORETA, functional connectivity, and global brain assessments. All hardware is readily reusable with easy cleaning for repeated recordings in high throughput studies. From biomarker development to neurorehabilitation, B-Alert X24 is enhanced by a suite of robust software to make this the most versatile wireless-EEG system available.
Aerial BioPharma

Country: United States
Founded date: 2011
Number of Employees: 11-50
Total Funding Amount: $19.5M
Category: Neuropharmacology

Moise Khayrallah, Ph.D.
CEO & Co-Founder

Aerial BioPharma is a group of entrepreneurs who have come together to change the way investors and industry think about drug development. Aerial is a privately-held biopharmaceutical company focused on developing biologics and small molecules for conditions that are affected by processes in the Central Nervous System.

Whether we are developing a reformulated product or a new chemical entity, the management team at Aerial is an expert in both identifying regulatory strategies to expedite the path to approval and the efficient implementation of the clinical programs themselves.

We coordinate with the FDA (and other regulatory bodies) early and often to gain agreement on the development programs for our products, minimizing surprises and speeding implementation. The success of our strategy is evidenced by the FDA approval of two NDAs, for 3 indications, over the last 4 years and the successful filing of several INDs that were cleared to proceed with no restrictions by FDA.

Our strategy is simple – identify products for our pipeline that we can expedite through the drug development process while minimizing the regulatory and technical risk associated with the program.
Combining machine learning and neuroscience, AgenT is developing the first blood diagnosis to detect Alzheimer’s disease while it’s still in the silent phase. Its algorithm aims to detect the disease 10 to 20 years ahead of the current diagnosis and stratify it into 3 stages of disease progression.

Drug development in the field of Alzheimer’s disease is certainly among the most challenging and has been suffering dramatic setback regardless of the strategy developed. For 30 years, we targeted a stage of the disease which was too late to restore the cognitive impairment. Our algorithm will allow us to detect patients during the silent phase of Alzheimer’s and stratify them according to disease progression.

- **Country:** France
- **Founded date:** 2018
- **Number of Employees:** 1-10
- **Total Funding Amount:** $490K
- **Category:** Neuropharmacology
Alcyone Lifesciences is a privately-held company passionately committed to applying engineering and science to the fields of neuroscience and oncology to enable transformative therapies.

For many neurologic conditions, there are identified molecular targets, but the blood-brain barrier prevents drugs from addressing those targets from reaching diseased brain regions in a controlled and targeted manner. Alcyone's platforms can be leveraged to utilize established routes of administration and optimize dosing techniques to provide best-in-class delivery.

The Alcyone MEMS Cannula (AMC™) System, a neuro-ventricular cannula is indicated for use in the U.S. and Canada for the injection of Cytarabine or the removal of cerebrospinal fluid from the ventricles of the brain during an intracranial procedure and approved in Europe for injection or removal of substances from the brain and/or ventricles of the brain during intracranial procedures.
Alector is combining state-of-the-art antibody technology and recent discoveries in neuroimmunology and human genetics to develop novel therapeutics for Alzheimer’s disease, other forms of dementia, and mechanistically related neurodegenerative disorders. Alector’s strategy is to efficiently generate and validate antibody drugs with unique functional properties that engage key disease-altering targets.

Alector is deploying immuno-neurology as a therapeutic strategy for the treatment of neurodegeneration. Significant scientific evidence that has emerged in the last decade has shown that the immune system is involved in the development of neurodegenerative.

A deep understanding of human genetics and recent evidence generated in genome-wide association studies led to Alector’s immuno-neurology therapeutic hypothesis. Human genetic evidence supports the importance of the interaction between the brain and the innate immune system. For example, twenty-two of the top 25 risk genes for Alzheimer’s disease regulates immune function in the brain.
Aleva Neurotherapeutics

Country: United States
Founded date: 2008
Number of Employees: 11-50
Total Funding Amount: $65.1M
Category: Neuromodulation

Aleva was founded in 2008 as a spin-off of the Swiss Federal Institute of Technology in Lausanne, Switzerland. It has raised 46 MUSD to date from prominent VCs, strategic and private investors. Aleva Neurotherapeutics has developed a proprietary neurostimulation platform based on MEMS Technology that enables significantly better therapies for neurological diseases.

Deep Brain Stimulation (DBS) therapy, used in indications including Parkinson's Disease, is an existing market growing at over 10% annually and is Aleva’s first target market.

With Aleva’s products, neurosurgeons and neurologists will see reduced surgical and follow-up times, patients will benefit from a decrease in debilitating side effects, and payers will see a reduction in cost-of-care.
Remarkable doctors and scientists around the world are consistently pioneering new research and methods to understand more about the brain, how it functions, and how to help treat different neurological disorders that affect countless individuals. As the years medical communities are finding treatments that help prolong and significantly improve the quality of life for patients. Alpha Omega has a mission to contribute to this progress.

Since our inception, Alpha Omega has played an important role in fostering innovation and development in two main areas - neuroscience research and functional neurosurgery. Over the last two decades, we have pioneered leading-edge technology in both fields, receiving international recognition from global experts in each respective area. Today, our equipment can be found in hundreds of hospitals and research institutions, covering 6 continents.

Our FDA and CE approved functional neurosurgery product line, is focused on providing doctors and surgeons state-of-the-art tools for stereotactic and Deep Brain Stimulation (DBS) procedures.
AlterG is an American medical device company founded in 2005 by Sean Whalen in Fremont, California. The company makes mobility enhancement products for physical therapy and athletic training. The first product, the Anti-Gravity Treadmill, now includes a product line including the M/F320, Via 400 and 400X, and Pro 200 and 500. In 2013 the company acquired Tibion Corporation and added the Bionic Leg to its list of products.

The AlterG® Anti-Gravity Treadmill® is a treadmill designed to help top-level athletes, orthopedic and neurologic patients, pediatric, geriatric patients, and well patients achieve their rehabilitation or training goals without pressure on their joints.

AlterG® Anti-Gravity Treadmill™ training for neurologic patients can help with injury and surgery recovery, motor learning and rehabilitation, managing chronic conditions, and reducing mobility issues: stroke recovery, traumatic brain injury, incomplete spinal cord injury, Parkinson’s disease, and cerebral palsy.
Altoida Inc. is a health technology firm that uses digital biomarkers to drive better clinical outcomes for brain diseases. Led by a team of esteemed neuroscientists, physicians, and computer scientists, the company offers an FDA-cleared and CE Mark-approved medical device and brain health data platform to support early detection of Alzheimer's disease up to ten years prior to onset – with up to 94% accuracy.

Altoida's goal is to discover cognitive outcomes prior to clinical onset. They have validated a novel digital biomarker platform that combines data streams from hands micromovements & micro-errors, gait micro-errors, posture changes, eye tracking, eye pupil dilation, dual-task micro-errors, visuospatial navigation micro-errors and recently voice parameters.

Altoida has developed an instrumental activity of daily living (iADL) methodology based on longitudinal clinical studies. The findings suggest that midlife persons with increased risk for later life dementia already show some subtle cognitive changes principally in navigation, micro-movements & visuospatial functions.
Alzeca Biosciences develops novel advanced imaging agents for the early diagnosis of neurodegenerative diseases, including Alzheimer’s Disease. Early detection of Alzheimer’s is critical, as disease pathology begins to accumulate 10 to 15 years prior to the onset of cognitive symptoms. Early diagnosis would permit extremely valuable and currently unavailable prognostic information to families, and would ultimately facilitate preemptive treatment at a point where the disease is far more treatable.

Alzeca’s agents are based on MRI and CT scanning, technologies that have highly significant advantages over current PET scan methods, including far lower cost and far broader availability world-wide, for screening and diagnosis of these disorders. Alzeca is developing a proprietary intravenous contrast agent that targets Alzheimer’s disease pathology. To date, our targeted agent has shown the ability to detect early-stage disease pathology with exceptional resolution and sensitivity using commonly available imaging techniques.
Amydis, Inc. is a privately-held pharmaceutical company focused on developing innovative chemistry to detect diseases that involve the presence of amyloid proteins. Our mission is to develop a universal, non-invasive diagnostic that is faster, more accessible, and more affordable than current tests for diseases with unmet clinical and medical needs. Amydis has a platform of novel compounds that fluoresces when bound to amyloid proteins, thus enabling the diagnosis of such diseases.

The company’s most advanced program is targeting the detection of early-stage Alzheimer’s disease, a well-known amyloid disease. Other development programs include the detection of Parkinson’s disease, Traumatic Brain Injury, Creutzfeldt-Jakob disease, Pre-eclampsia, TTR Amyloidosis, and Cerebral Amyloid Angiopathy, all of which are associated with the presence of amyloid protein.

Amydis offers you and your loved ones the ability to know whether you are at risk for Alzheimer’s or other amyloid-associated diseases.
Amylyx Pharmaceuticals was founded in 2013 with the mission of improving the lives of patients with neurodegenerative diseases. The company’s lead therapeutic, AMX0035, is designed to simultaneously target pathways originating in the mitochondria and endoplasmic reticulum which lead to neuronal death and degradation. AMX0035 is currently in clinical trials in both Alzheimer’s disease and ALS.

AMX0035 is a drug designed to prevent nerve cell death and degeneration. The drug improved cellular metabolism and promoted protein folding in cellular and animal models of neurodegenerative disease. When metabolism and protein folding are not functioning properly, neurons halt key functions and ultimately can die. Metabolism and protein folding appears to be dysfunctional in ALS, Alzheimer’s and other neurological diseases. AMX0035 helps to boost metabolism and synthesize proteins called heat shock proteins that help to fold other proteins into their proper shapes. Through these mechanisms, AMX0035 prevents neuronal death and degeneration.
Applied Brain Research

Country: Canada  
Founded date: 2014  
Number of Employees: 11-50  
Total Funding Amount: n/a  
Category: Neuroinformatics

Applied Brain Research (ABR) is the maker of the leading compiler and operating system for neuromorphic computing, Nengo.

Nengo is a complete brain maker. In other words, Nengo allows you to develop and run models with deep learning, online learning, static weights, simple linear neurons, complex spiking neurons, and everything in-between.

You can use Nengo to implement pretty much anything: DNNs, CNNs, attractor networks, adaptive motor controllers, SLAM networks, cognitive systems, you name it. It’s used in industry and academia to develop state-of-the-art neural networks – to build brains.

Computing with artificial spiking neurons directly in software and hardware, known as “neuromorphics,” has long been pursued as a means of exploiting how the brain computes intelligence so efficiently.
Atentiv

Country: United States
Founded date: 2012
Number of Employees: 11-50
Total Funding Amount: n/a
Category: Neurofeedback

Atentiv is a virtual behavioral healthcare clinic providing evidence-based digital therapeutics and integrated care that remediates the cause of behavioral disorders – executive skill dysfunctions – for health and success in school, home, career and life.

ATENTIVmynd™ is a software-based therapy engineered to naturally activate and generate physiological changes in the neurological pathways that enable human functioning. The therapeutic application continuously monitors the subject’s attention level through an avatar in an adventure video game.

Atentiv’s products deliver treatments not through a pill but through a captivating action-adventure video game to remediate executive function deficiencies and improve symptoms associated with behavioral disorders.
Autifony Therapeutics Limited is a UK-based company formed in 2011 as a spin-out from GlaxoSmithKline by Charles Large and Giuseppe Alvaro, previously Directors in GSK’s Neuroscience Centre of Excellence for Drug Discovery.

Autifony is using its pioneering approach to develop novel treatments for serious disorders of the central nervous system, such as Schizophrenia, Fragile X, Alzheimer’s Disease and potentially other diseases that represent major unmet medical needs.

The company is also one of the leaders in pharmaceutical approaches to the treatment of hearing disorders.
Avalon Ai builds Deep Learning-based Computer Aided Diagnosis tools to facilitate the detection of brain degenerative diseases like Alzheimer’s and enable better patient stratification in clinical trials.

We use Machine learning to automatically derive accurate brain features (e.g. the volume of the hippocampus) from brain scans and compare them to a normative population. We also provide handy 2D and 3D visualizations of brain features.

We are building the world’s most accurate brain degeneration predictor using brain imaging data. Most brain predictors use only volumetric measurements to predict whether a brain is degenerating, which limits their accuracies. We use data not only from structural MRI scans but also from diffusion and functional MRI scans to maximize the sensitivity and specificity of our prediction. Combining these three types of scans has been shown to reduce the rate of misdetection of Alzheimer’s Disease by half, compared to using only structural scans.
Avaz AAC is an augmentative and alternative communication app that empowers children & adults having speech-related difficulties with a voice of their own. A fully-featured speech app that also includes a training module for new AAC users & caregivers.

Core words, as we know make up for 75% to 80% of what we speak during our typical day. These core words are laid out in an order that is based on extensive years of research. This allows users to grow steadily from using 1-2 word phrases to full sentences using Avaz AAC.

As Avaz was gaining international exposure, the quality of research and innovation behind Avaz came to the notice of MIT's Technology Review. The inventor of Avaz was named one of the MIT TR Innovators of the Year. This prestigious recognition is given to those innovators who are looking at important problems in a transformative way; it was previously awarded to Sergey Brin (the inventor of Google) and Jonathan Ive (Apple's design head) in the past. Avaz was the first product in the disability category to be awarded the MIT TR35 recognition.

Avaz

Country: India
Founded date: 2009
Number of Employees: 11-50
Total Funding Amount: $550K
Category: Cognitive assessment & enhancing

Ajit Narayanan
Founder & CEO

Country:
India
Founded date:
2009
Number of Employees:
11-50
Total Funding Amount:
$550K
Category:
Cognitive assessment & enhancing
Our knowledge of the brain and how it can be affected by illness is growing rapidly, yet the tools that allow us to measure brain activity remain limited to devices. Clinicians need something fast and accessible to provide information that is clinically relevant.

Axem NeuroTechnology is on a mission to meet this need, and empower people with information about their brain and improve their lives. Our first product, the Axem Pro, is designed for rehabilitation professionals who work with people to improve their mobility. Axem uses functional Near-infrared Spectroscopy (fNIRS) to measure brain activity in the motor cortex. This is known as the hemodynamic response (HDR), and it is the basis of many brain imaging technologies such as fMRI. fNIRS detects these changes by shining two wavelengths of light into the motor cortex — each absorbed at different amounts by oxygenated and deoxygenated blood — and measuring how much returns to a detector. The changes in light absorption are then used to calculate the changes in oxygenation in the brain.
Axial Biotherapeutics

Country: United States  
Founded date: 2016  
Number of Employees: 11-50  
Total Funding Amount: $54.5M  
Category: Neuropharmacology

Axial Biotherapeutics is a clinical-stage biopharmaceutical company harnessing the gut-brain axis to develop novel Central Nervous System (CNS) Therapeutics to improve the quality of life for people with CNS diseases and disorders.

Axial's scientific co-founder, Sarkis K. Mazmanian Ph.D., discovered a novel, causal link between the gut microbiome and Parkinson's Disease (PD) and Autism Spectrum Disorder (ASD). In a PD mouse model, gut bacteria were shown to promote hallmark disease processes including motor and gastrointestinal (GI) dysfunction and inflammation of the nervous system resulting in alpha-synuclein aggregation (both in the gut and brain). Evaluation of organisms and genes over-represented in the PD microbiome resulted in the identification of a druggable pathway that is sufficient to induce motor and GI symptoms and brain pathology in a validated disease model of PD.
Axonics Modulation Technologies

Country: United States  
Founded date: 2012  
Number of Employees: 101-250  
Total Funding Amount: $273.1M  
Category: Neuromodulation

Raymond W. Cohen  
Director & CEO

Axonics aspires to be the global leader in Sacral Neuromodulation by providing customer-centric solutions and improve the quality of life for patients and their families.

Axonics Modulation Technologies focuses on the design, development, and commercialization of innovative and minimally invasive sacral neuromodulation solutions which used to treat patients with overactive bladder, fecal incontinence, and urinary retention. The Axonics System features a miniaturized long-lived rechargeable neurostimulator, approved to provide therapy for at least 15 years and reduces the need for frequent device replacement surgeries.
AxoSim's Nerve-on-a-Chip® and Mini-Brain platforms are revolutionizing the way that biopharmaceutical companies develop neurological drugs. Our mission is to enable advancements in human health so that patients in need can get the care they deserve.

AxoSim was founded to address unsustainably high clinical failure rates that cost pharmaceutical companies billions of dollars and patients years of waiting for new medications and therapies for serious neurological diseases. An astounding 89% of all new drugs, and 94% of neurological drugs, fail in clinical trials. A key factor driving this dismal failure rate is that animal testing that is an essential part of preclinical drug development cannot predict human results.

AxoSim has acquired exclusive rights to lab-grown brain miniatures, coined “Mini-Brain,” a technology developed at Johns Hopkins University that uses stem cells to create models of the human brain in a dish. The technique may help speed therapy discovery for many neurological diseases, including Alzheimer’s disease.
Axovant is an agile organization with a sharp focus on the rapid delivery of lasting, transformative gene therapies that transform the treatment of serious neurological and neuromuscular diseases.

Our current pipeline of gene therapy candidates targets GM1 gangliosidosis, GM2 gangliosidosis (including Tay-Sachs disease and Sandhoff disease), and Parkinson's disease. Axovant is focused on accelerating product candidates into and through clinical trials with a team of experts in gene therapy development and through external partnerships with leading gene therapy organizations.

Axovant’s latest news concern nelotanserin (RVT-102), which is proving safe and effective in Phase II trial as a treatment for visual hallucinations in dementia with Lewy bodies (DLB) and Parkinson's disease dementia (PDD).
3Brain is the world's first company to design and produce high-resolution microelectrode arrays (HD-MEAs). Our CMOS-based microelectrode array, also known as a multielectrode array (CMOS-MEA), sets a new standard for studying neuronal networks in brain organoids, slices and tissues and is being used to advance our understanding of brain functions and improve success in drug discovery.

Stemming from our passion for technology and scientific progress, our commitment is to boost research in major fields like neuroscience, as well as ophthalmology and cardiology. 3Brain's technology is the result of 15 years of development and experience with CMOS-MEA chips, brought forward by the constant support of our partners.

BioCam X is the most advanced MEA platform for in-vitro electrophysiology. 4096 electrodes sampled at 18kHz to boost your research and to image neuronal network complexity.

Mauro Gandolfo, Ph.D.
CEO
Backyard Brains is an experiment page for scientists, teachers and amateurs alike. Backyard Brains offers a series of exciting and affordable entry-level Brain Recording Kits that provide the ability for students of all ages to learn about neurons.

Studying neuroscience has traditionally been cost-prohibitive, but Backyard Brains is leading the way for a new generation of DIY neuroscientists by creating premium kits, such as The Claw! that lets you dive right into the growing field of neuroprosthetics. The next big breakthrough in neuroscience might come from a school classroom, a community makerspace or even your own backyard.

The affordable neuroscience kit, built with Backyard Brains’ Muscle SpikerShield, lets anyone from grade school students to science-loving adults control a robotic motorized gripping “claw” that looks like a pair of cockroach legs. Using the body’s own electrical signals, a robotic arm and hand are controlled by the power of the motor cortex.
Approximately 30% of community-dwelling adults over the age of 65 fall at least once a year. Among those with Parkinson's disease, mild cognitive impairment, or dementia, this percentage increases to 60%–80%. Reduced motor control while walking may lead to gait impairments. Moreover, most falls occur while walking, and reduced motor control is considered a serious risk factor for falls.

The Balanseat is a motorized chair-like device designed to rehabilitate walking and balance. It applies gentle contralateral movement between the trunk, the pelvis, and the thighs to emulate normal human walking patterns.

Balanseat was developed by a team of entrepreneurs, scientists, physicians, and engineers with purpose to address the needs of the older adults and the neurologically impaired. So it was developed as a unique tool that provides full harmonic movement of the torso while elder people are seated.
BioArctic

Country: Sweden  
Founded date: 2003  
Number of Employees: 51-100  
Total Funding Amount: $80K  
Category: Neuropharmacology

BioArctic is a Swedish research-intensive biopharma company aimed at developing new treatments that address the causes of diseases that affect the Central Nervous System. These types of treatments are commonly referred to as “disease modifiers”. They affect the underlying disease pathology and can hopefully stop or significantly delay disease progression. This is a large paradigm shift from today’s symptom-oriented therapies.

The company was founded in 2003 by Professor Lars Lannfelt and Dr. Pär Gellerfors to develop important breakthrough discoveries made by Professor Lannfelt regarding Alzheimer’s disease. These discoveries – the Swedish mutation and the Arctic mutation – have attracted much attention internationally and explain the central role of amyloid-beta in Alzheimer’s disease, which has led to the development of new treatment strategies.

BioArctic has developed a proprietary technology platform that has proven to be successful when the company’s first drug candidate antibody BAN2401 for Alzheimer’s disease was developed.
BioDirection, Inc. is a privately-held medical device company developing novel and rapid point-of-care products for the objective management of concussion and other traumatic brain injuries (TBI).

BioDirection’s first product is called the Tbit™ system. The Tbit™ system is the world’s first multiplexing platform utilizing patented biosensing nanowire technology that can detect and measure very low concentrations of "biomarker" proteins released from the brain after a concussion or other traumatic brain injury.

This breakthrough platform technology delivers objective information to aid in the diagnosis of a concussion from just a single drop of blood in less than 90 seconds. Additionally, this technology provides emergency responders with new actionable data that can help in reducing unnecessary head CT scans, thereby saving time and costs while eliminating unnecessary radiation exposure to the patient.
Biohaven is a clinical-stage biopharmaceutical company with proven leadership in industry and academic settings. Our portfolio is comprised of innovative, late-stage product candidates targeting neurological and neuropsychiatric diseases, including rare disorders.

Biohaven has combined internal development and research with intellectual property licensed from companies and institutions including Bristol-Myers Squibb Company, AstraZeneca AB, Yale University, Catalent, ALS Biopharma LLC and Massachusetts General Hospital.

Since our initial public offering in 2017 we have made rapid progress with multiple compounds across our CGRP receptor antagonist, glutamate modulator, and myeloperoxidase (MPO) inhibitor platforms. We are poised to achieve a number of clinical and regulatory milestones, including FDA approval decisions for rimegepant, a novel, orally-dosed migraine treatment.
BIONIK is a global pioneering healthcare company on a mission to supply quality-of-life solutions to those with movement impairments. Our goal is to enable the growing millions of people with movement-impairments to lead fuller and more independent lives by fostering hope, recovery, and independence with evidence-based technologies.

The Company’s product portfolio includes three InMotionRobots for rehabilitation following stroke and other neurological conditions and four products in varying stages of development. Resulting from groundbreaking research at the Newman Laboratory for Biomechanics and Human Rehabilitation at the Massachusetts Institute of Technology (MIT), the InMotion robots provide effective, patient-adaptive therapy, intended to restore upper-extremity motor control for a broad range of neurological conditions and recovery stages, including early recovery from acute stroke.

InMotionRobots also provide objective evaluation assessments intended to measure and report the patient’s level of motor impairment and progress during the course of therapy. A home version of the InMotion upper-extremity technology is in development.
Bionure is a clinical-stage biotechnology company that develops new first-in-class disease-modifier drugs able to slow down, stop or reverse the damaging process affecting neurons for the treatment of degenerative, ischemic, toxic and inflammatory diseases of the nervous system.

Since there are very high unmet needs associated to these diseases, Bionure aims at becoming a therapeutic game changer and bringing significant benefit to thousands to millions of patients enduring serious disabilities.

Bionure's lead program demonstrated neuroprotective activity in several preclinical models and has successfully completed a clinical phase 1 study in the UK. In 2020, the company plans to start a phase 2 proof-of-concept trial in optic neuritis (orphan drug designation) and multiple sclerosis, to prove the efficacy of the compound in patients affected by neuronal damage.
BIOS is creating the open standard hardware and software interface between the human nervous system and AI. BIOS combines neural engineering with machine learning to crack the code of the human nervous system. Our neural interface platform interprets the language from the brain to the body to enable more effective treatments for a range of chronic conditions, from heart disease to diabetes.

Through our hardware interface and machine learning software, clinical experts can discover, translate, and scale new algorithmic treatments that are personalized, responsive, and targeted. BIOS is positioned to be the platform on which a new generation of AI treatments can be built, helping millions of people suffering from chronic disease to improve their quality of life.
BioWave is on a mission to empower people to lead fuller, more active, and healthier pain-free lives without the use of opioids. BioWave is alleviating all kinds of pain in most locations in the body, including the back, neck, shoulder, elbow, hand, knee, ankle and foot.

Clinically proven to be the smarter pain blocking technology. Exhaustive testing has gone into making BioWave better than old-fashioned technology. Specialists, surgeons, clinicians, athletic trainers, athletes – hundreds of individuals committing thousands of hours have made BioWave the pain relief breakthrough it is today.

BioWave's BioWavePRO neuromodulation pain therapy system is used by athletic trainers and physical therapists. BioWavePro is has been prescribed to over 500 professional athletes and hundreds of college teams.
Bitbrain was founded in 2010 as a spin-off company of a research team from the University of Zaragoza, a pioneer in approaching brain-computer interface applications outside laboratory investigation settings. Its DNA holds all knowledge in neurotechnology, biomedical engineering, artificial intelligence and data science accumulated at the university since 1998. Nowadays, the R+D+I bet is still strong, which has converted the company into a world reference for B2B neurotechnology solutions.

BitBrain has developed a bio-neurotechnological platform to collect conscious and non-conscious human emotional and cognitive data from a wide range of bio/neural-sensors. The Bitbrain software platforms are for: 1) human behavior research simplifying the synchronized data collection and biometrics analysis; 2) cognitive enhancement in health and wellness, and 3) to speed up the development and programming of real-time neuroscience or brain-computer interfaces application.
Blackfynn is uniquely poised to drive the development of a whole new class of precision therapeutic neuromodulation devices. Devices that treat neurological diseases like epilepsy and Parkinson's disease are limited by their large size, lack of specificity and inability to respond in real-time to the changing therapeutic needs of patients. Further, it is difficult to predict which patients will get better, and which may get worse, with device therapy.

Blackfynn provides the infrastructure to enable miniaturized, responsive, closed-loop therapeutic devices that can be used to adjust therapy in a personalized way for each patient based on their own brain activity. And, by analyzing integrated data from patient populations over time – EEG, MRI, neurochemistry and clinical data – it may be possible to predict which patients will benefit most from device therapy before they undergo risky surgical procedures.

Blackfynn helps the neuroscience and neurology communities make optimal use of data by powering an innovative platform that integrates and puts complex data in context.
BlackThorn Therapeutics, Inc., is a clinical-stage neurobehavioral health company pioneering the next generation of artificial intelligence technologies to advance its pipeline of targeted therapeutics for treating brain disorders. The company has engineered PathFinder™, cloud-based computational psychiatry, and data platform, to enable the collection, integration, and analysis of multimodal data at great speed and scale.

BlackThorn Therapeutics is a computational sciences company with capabilities to develop proprietary therapeutics focused on neurobehavioral disorders. They have pioneered the development of a computational psychiatry platform to advance our robust pipeline of novel therapeutics.

BlackThorn Therapeutics drug discovery and development approach build upon recent advances and insights they have generated in understanding neurobehavioral disorders through a circuit-based approach vs. the historical categorical approach. By viewing neurobehavioral disorders in this new construct, they believe they can more successfully advance targeted therapeutics.

Country: United States  
Founded date: 2015  
Number of Employees: 11-50  
Total Funding Amount: $130M  
Category: Neuropharmacology  

Bill Martin  
President and CEO
Boundless Mind

Boundless Mind is an artificial intelligence platform for behavior design. Use our analytics to understand your users' real behavior in your app and our reinforcement API to reward them as they build great new habits.

We are a team of neuroscientists using brain-hacking to help people be healthy, wealthy, happy, and wise. You know that little hit of dopamine you get from some apps? It doesn't just feel great: it makes us stick around longer and do more in an app. We have engineered a way to bring that hit of dopamine into any app.

With just a few lines of code, any app can keep its users around longer and doing more. Way more. Up to 160% more. Powered by neuroscience - and you don't even have to get a Ph.D. to use it. We work with apps in fitness/wellness, finTech, productivity/enterprise, social, and education.
Brain Power is building Glass software to help autistic children learn some of the skills they need to interact with those around them. With its “heads-up display,” Glass can provide instruction while kids are engaging with other people, and its accelerometer can track how well they’re responding. That makes Glass an ideal means of tackling autism, which now affects about one in 68 children, according to the Centers for Disease Control.

Yes, Google released Glass too soon—particularly when you consider that the company was so determined to portray it as a consumer device that you wear at all times. And, yes, this went a long way toward undermining public perception of Glass. But Glass can be a remarkably useful thing when it comes to treating autism.

In December 2019 Google publicly announced they will release a fundamental and final update to the operating system inside Google Glass. The update decouples Glass from “back-end” servers at Google. This means the Brain Power device becomes fully standalone and secure.
Brain Stimulation

Brain Stimulation addresses the global challenge of rehabilitating the need for cognitive and upper limb impairments from Stroke, Dementia, Traumatic Brain Injuries, Parkinson and other degenerative brain diseases by using Enriched Rehabilitation.

Cognitive impairments as in the Neglect Syndrome are not easily discovered using traditional tests nor treated in a suitable way or time and the normal hospital stay is too short to reach effect from training.

VR-DiSTRO product consists of a standard desktop computer, a CRT monitor and eye shutter stereoscopic glasses, a force feedback interface, and software developed to create an interactive and immersive 3D experience.

The VR-DiSTRO quickly and with a high accuracy identified visuospatial neglect in patients with stroke in this construct validation.
BrainCheck

Country: United States
Founded date: 2015
Number of Employees: 11-50
Total Funding Amount: $14.7M
Category: Cognitive assessment & enhancing

BrainCheck is the result of 20 years of research conducted at the Eagleman Laboratory for Perception and Action at Baylor College of Medicine.

For decades, doctors and scientists have relied on pencil-and-paper tests to measure brain health. But modern technology enables us to bring these tests into the 21st century and offer people everywhere easy, affordable access to their brain health from wherever they are.

Today, we provide cognitive health solutions to over 100 healthcare and athletic organizations around the country. And more than 40,000 individuals are using BrainCheck to assess and monitor their cognitive health and share changes with clinicians.
BrainCo was founded in 2015, transforming the most advanced technologies from the Center for Brain Science at Harvard, and Mcgovern Institute for Brain Research at MIT into research and development of wearable wireless EEG brain wave detector.

FocusEDU by BrainCo provides teachers with feedback that is real-time in class, contextually relevant, and ongoing, enabling them to make sustained improvements in their skills. At the same time, students develop ownership of their learning experience. Students and parents can track learning improvements, while administrators can identify the most engaging activities and methods to quantify and spread best practices.

Through brain-controlled games, students gain better control over their ability to both concentrate effectively in and outside of class. These games use the science of neurofeedback to promote better cognitive control.

BrainCo

Country: United States
Founded date: 2015
Number of Employees: 11-50
Total Funding Amount: $6M
Category: Neurofeedback

Bicheng Han
CEO

Country: United States
Founded date: 2015
Number of Employees: 11-50
Total Funding Amount: $6M
Category: Neurofeedback
BrainFx

BrainFx creates innovative neurological assessment software platforms that detect mild to moderate brain dysfunctions, with immediate real-time analytics and insights. Quicker decision support to measure, help diagnose and track brain health.

We combine leading neuroscience data with cutting edge software to allow evaluating the complex cognitive skills needed for daily activities, school/work, and sport/leisure that can be impacted by a concussion, brain injury, or another neurodegenerative disease.

Early detection and management of declining cognition and Alzheimer’s are important as it can slow or reverse the disease process and alleviate the burden on individuals, their families, and the health system.

The BrainFX screening tool can be used for patients during the study to identify cognitive decline earlier than conventional tools and allow for earlier personalized treatment planning. Anonymized data from these patients can be aggregated with data from the Canadian Institute for Health Information and analyzed for early risk factors using machine learning and AI. This early identification algorithm can be used by healthcare providers to scan their electronic records and flag at-risk patients.

Country: Canada
Founded date: 2012
Number of Employees: 1-10
Total Funding Amount: n/a
Category: Cognitive assessment & enhancing

Tracy Milner
Co-Founder & CEO

Country: Canada
Founded date: 2012
Number of Employees: 1-10
Total Funding Amount: n/a
Category: Cognitive assessment & enhancing
BrainKey is a personal brain dashboard built by neuroscientists with the goal of empowering people who have had a brain MRI. Clinicians are able to examine brain images and draw useful conclusions about eyeball-observable conditions such as large brain tumors. However, it is humanly impossible to interpret millions of complex multidimensional brain images and draw rapid, insightful conclusions about complex disorders such as Alzheimer’s disease or schizophrenia.

BrainKey was founded by two scientists in 2018 while at Stanford University. They were amazed by the progress being made to understand the brain. BrainKey was started to democratize access to brain research so that anyone, anywhere in the world can benefit from developments in brain science. BrainKey empowers individuals to better understand themselves with a cloud-based brain scan visualization and analytics solution.
Brainomix, an award-winning medical diagnostics software company, was founded in 2010 as a spin-out from the University of Oxford and is dedicated to improving outcomes for patients with neurological and cerebrovascular disorders. Brainomix is currently focusing on acute stroke.

By developing and equipping physicians with world-class, artificial intelligence-based medical imaging software, Brainomix aims to help them in making life-saving treatment decisions by supporting the selection of the right treatment for the right stroke patient. Company’s products are marketed under the e-Stroke Suite which acts as a standardized and fast decision support tool that helps physicians choose an appropriate treatment based on the quantitative analysis of plain CT, CTA and CT/MR perfusion scans.
BrainScope Company is a medical neuro-technology company that is pioneering the future of traumatic brain injury (TBI) assessment. The company's innovative BrainScope One system is an easy-to-use, non-invasive, hand-held platform that empowers physicians to quickly make accurate head injury assessments at the point-of-care.

The BrainScope® One device, utilizing Electroencephalogram (EEG) technology cleared by the FDA, is the first objective, an adjunctive device capable of assessing the full spectrum of mild traumatic brain injury (mTBI/concussion). Its ability to rapidly identify the likelihood of both structural brain injury and functional brain impairment at the point of care offers an opportunity for a dramatic improvement to the current treatment path for evaluating mTBI/concussion patients.
BrainSpec is a comprehensive web-based software platform designed to make MRS technology accessible to clinicians and researchers alike. The software combines a linear combinations model-based post-processing back-end that represents the most accurate method of measuring brain metabolites with a highly intuitive and user-friendly front-end web-based user interface.

Magnetic Resonance Spectroscopy (MRS) provides a ‘virtual biopsy’ by measuring the concentrations of chemicals in the brain. MRS is safe, non-invasive, radiation-free, and can be performed on any standard MRI scanner by adding 5 to 15 minutes of scan time to a routine MRI exam. It goes beyond traditional imaging techniques to observe tissue metabolism, measuring biochemicals at concentrations 10,000 times lower than conventional MRI. To date there are over 28,000 academic publications that detail the use of MRS for a wide range of clinician diagnoses including Alzheimer’s Disease, epilepsy, traumatic brain injury, multiple sclerosis, schizophrenia, and metabolic disorders.
BrainStorm Cell Therapeutics

**Country:** United States  
**Founded date:** 2004  
**Number of Employees:** 11-50  
**Total Funding Amount:** $36.5M  
**Category:** Neuropharmacology

BrainStorm Cell Therapeutics Inc. is dedicated to developing innovative cellular therapies for highly debilitating neurodegenerative diseases.

BrainStorm's investigational cellular therapy is being studied in ALS and progressive MS. Autologous mesenchymal stem cells secreting neurotrophic factors (MSC-NTFs) are being studied as an investigational treatment for ALS and MS. Autologous MSC-NTF cells are manufactured from a patient's own bone marrow cells. Briefly, we isolate mesenchymal stem cells (MSCs) from the patient's bone marrow and then grow them under special conditions to induce the cells to secrete multiple growth factors known to be important in the nervous system. The autologous MSC-NTF cells are then injected into the cerebrospinal fluid.

BrainStorm has completed three clinical trials of our investigational cellular therapy in ALS. All three trials were designed to determine the safety and tolerability of autologous MSC-NTF cell administration.
Brainsway is dedicated to developing and providing advanced solutions for brain disorders. BrainsWay's flagship technology, which is based on Deep Transcranial Magnetic Stimulation (TMS), launches a new era in brain disorder treatment.

BrainsWay's treatment is FDA-cleared for treating depressive episodes in adult patients suffering from Major Depressive Disorder, who failed to achieve satisfactory improvement from previous antidepressant medication treatment in the current episode.

BrainsWay runs clinical research programs with leading scientists worldwide, collaborating with prominent institutions and researchers in clinical trials covering various neuropsychiatric and neuroscience applications.

The company's technology has already helped thousands of people worldwide in both private clinics and clinical studies. It has also been enthusiastically embraced by leading research institutions worldwide, with over 60 clinical trials held around the globe.
BrainWaveBank’s multidisciplinary and highly experienced team is made up of 20 engineers, scientists, and commercialization experts, more than half of whom have advanced degrees in psychology, computational neuroscience, data science, and engineering. BrainWaveBank makes it possible to measure and track brain activity and cognitive performance for anyone, anytime, anywhere. This easy-to-scale and distributable approach will help clinical professionals to transform our understanding of brain health and develop the next generation of treatments.

BrainWaveBank has developed first-in-class wearable electroencephalography (EEG) device to conveniently and non-invasively measure the mechanisms that underpin neurological disorders and therapies. Our platform can securely gather, store and analyze data from many thousands of users, building neurocognitive profiles of individuals and populations or demographic groups. BrainWaveBank enables affordable, objective cognitive research outside of the lab.
C8 Sciences develops a neuroscience-based cognitive assessment and development products that have the potential to solve some of the most significant problems in childhood education and in our aging population. C8 Sciences is the only company to offer integrated computer and physical exercises.

C8 Sciences is a scientifically-based cognitive cross training program shown to increase test scores. Designed by neuroscientists from Yale University, the program integrates web-based computer games and physical exercise, and strengthens core cognitive capacities such as attention, memory, and focus. This K-3 program includes a series of cognitive assessments taken from the National Institutes of Health's Cognitive Toolbox, and creates a comprehensive cognitive assessment on every child, identifying special gifts, areas in need of intervention, and recommended teaching strategies. Students in the program have demonstrated significantly increased math and reading test scores, and doubled working memory. A flexible implementation model makes the program easy to adopt during school, after-school or in summer.
Cala Health is a bioelectronic medicine company transforming the standard of care for chronic disease. The company's wearable neuromodulation therapies merge innovations in neuroscience and technology to deliver individualized peripheral nerve stimulation. The first indication for Cala Health's wearable therapy is an essential tremor, a disease experienced by more than seven million people and characterized by severe hand tremors.

Cala ONE, by Cala Health, is a non-invasive, neuro peripheral therapy device that aims to provide transient relief of hand tremors in adults with essential tremor. Cala ONE looks quite similar to a fitness tracker or smartwatch, delivers patterned electrical stimulation to the median and radial nerves— part of the peripheral nervous system— in the wrist, through the skin.
Cambridge Cognition is a leading neuroscience technology company optimizing the assessment of cognition for better brain health with scientifically validated digital health solutions. Our software enables gold standard research and efficient clinical trials, accelerating safe and effective treatment development and helping to improve patient outcomes in conditions affecting brain health.

For over 30 years, our technology has been at the forefront of scientific discovery, delivering value to research institutions, healthcare providers and pharmaceutical and biotechnology companies worldwide. From digital health tools to mobile applications for drug development, we provide the best in class, interactive and innovative digital cognitive assessment technologies that capture meaningful, reliable data anytime, anywhere.
Cell Cure Neurosciences

Country: Israel
Founded date: 2005
Number of Employees: 11-50
Total Funding Amount: $4.8M
Category: Neuropharmacology

Cell Cure Neurosciences is a biotechnology company focused on developing cell therapies for retinal and neurodegenerative diseases. Our technology is based on human embryonic stem cells (hESC), which open the door to the industrial-scale manufacture of any cell type in the human body. Cell Cure is using this powerful stem cell technology to develop processes and for GMP production to manufacture cell-based therapeutics.

Cell Cure is currently conducting in process development and production for two of products in Lineage Cell Therapeutics’ pipeline:

OpRegen® – a cell replacement therapy comprised of retinal pigment epithelium cells and currently being tested in Phase I/IIa multicenter clinical trial for the treatment of advanced dry age-related macular degeneration (dry AMD) with geographic atrophy.

OPC1 – a cell replacement therapy comprised of oligodendrocyte progenitor cells and currently being tested in Phase I/IIa multicenter clinical trial for the treatment of acute spinal cord injuries (SCI).
Cerecor is building a global biopharmaceutical enterprise with our Research, Development, and Commercialization of novel products. Our focus is on the development of innovative therapies in areas of high unmet needs within the fields of Neurology and Pediatrics.

The Company's neurology pipeline is led by CERC-301, a Glutamate NR2B selective, NMDA Receptor antagonist, which Cerecor is currently exploring as a novel treatment for orthostatic hypotension. The Company is also developing CERC-406, a CNS-targeted COMT inhibitor for Parkinson's Disease. The Company also has one marketed product, Millipred®, oral prednisolone indicated across a wide variety of inflammatory conditions and indications.
Cerego is an adaptive learning technology platform based on principles of neuroscience and cognitive science. The platform predicts how you best learn. This is a new kind of adaptive learning software that automates and personalized learning for students and employees. Cerego's patented technology uses the scientific method of spaced rehearsal as the basis for memory retention for content available via their website.

Learning is a subject often fraught with frustration, angst, and pressure. But it really doesn't have to be that way. The traditional school system, conceived long before the advent of computers and modern learning methodologies, isn’t really the best way to learn.

Cerego uses AI and machine learning to scale proven cognitive science and make learning possible, for anyone. Using years of detailed learning data, scientific models of memory decay, and the user’s own learning history, Cerego sums up the perfect learning schedule for each individual so learners can optimize what they learn.
Ceribell focuses on making electroencephalography (EEG) widely accessible, more efficient, and more cost-effective. The company creates and validates an FDA cleared instant EEG system that does not require an EEG technologist or specialist interpreter, which allows for faster results and clinical decision making.

Ceribell announced the launch of Clarity, a new 24/7 bedside EEG monitoring and alerting technology, at the American Epilepsy Society Annual Meeting 2019. Ceribell’s Rapid Response EEG system made bedside EEG possible for critically ill patients by simplifying the EEG system and reducing the time from ordering EEG to set-up from an average of 4 hours to under 10 minutes.

Ceribell is again revolutionizing EEG tools for critically ill patients with the launch of the new Clarity technology. Used with the Ceribell Rapid Response EEG, Clarity is the first and only 24/7 EEG monitoring and alerting system that automatically detects seizures and alerts clinicians for the presence of brain activity consistent with status epilepticus.
Cerora is a healthcare information technology company focused on providing accessible and affordable neurodiagnostic information with a particular focus on concussion and Alzheimer's disease.

Cerora is devoted to alleviating suffering and empowering people by transforming antiquated opinion-based methods into enlightened biosensor-based neurodiagnostic.

The Cerora Borealis medical device platform is subject to FDA review and designed to measure and record brainwave activity (EEG) as well as other biosensor data, including cognitive data and voice-based data streams. The platform provides state of the art, mobile, and versatile multimodal biosensor data. The first release is intended as an adjunct to standard clinical practice to aid in the evaluation of the subject’s medical or psychological state. Cerora's next-generation devices are intended to aid in the diagnosis and management of various brain disorders.
CerSci Therapeutics was founded to deliver much needed new medicines through understanding the underlying mechanisms behind pain, and by conquering the core problem of neuronal sensitization. CerSci Therapeutics is poised to deliver a new generation of non-opioid medicines to treat acute postoperative and chronic neuropathic pain.

Understanding how pain starts can lead to new medicines to treat or even prevent pain. Rather than concentrating on ion channel and GPCR targets that blunt pain, our science is focused on interrupting pathways that cause neuronal sensitization, the cause of pain.

CT-044 works at the source of pain, unlike opioid and other analgesic painkillers, which work by binding to the opioid receptors in the brain. In practical terms: CerSci’s pain drug does not affect the central nervous system, so no high and no addiction.
Cognixion

Country: United States
Founded date: 2014
Number of Employees: 11-50
Total Funding Amount: $1M
Category: Brain-computer interfaces

Cognixion is developing a wearable sensor that translates brain-signal data into commands that can control mobile devices and other connected/smart environments.

Tom Gruber, creator of Siri teams up with Cognixion: “An interface like Cognixion’s that watches your eyes and listens to your brain allows you to control a computer, and therefore allows you to express yourself, when you would be otherwise limited by physical impairment. This is a godsend for those who need it. But this new capability goes beyond accessibility. The same AI and neurotech that can make sense of these signals for control can also offer any human user an unprecedented opportunity to know thyself. Closing this loop of self-awareness is one of the great opportunities for technology to help us improve our physical and mental well-being.”
Conscious Labs

Country: France
Founded date: 2015
Number of Employees: 11-50
Total Funding Amount: $900K
Category: Neuromonitoring / Imaging

Conscious Labs is a neurotech startup based in Paris and Limoges, France. The company is developing breakthrough noninvasive brain-sensing technology for head wearables.

CES 2020 groundbreaking neurosensory for consumer segment brain-computer interfaces (BCI) is an innovation that made possible by a patent-pending, ionically conductive solid polymer that can be integrated into headphones, earbuds, and XR headsets to deliver the highest level of comfort and a research-grade electroencephalographic (EEG) signal quality.

Conscious Labs also is developing a headphone add-on powered with its next-gen EEG sensors. The only brain-sensing headphones that exist today have metallic sensors fitted on the hoop or in the ear cushion. The technological breakthrough consists in embedding in a flexible polymer the critical chemical characteristics of the ionically conductive gel commonly used in medical EEG. This removes the need for metallic sensors or signals amplification altogether.
Cortexyme

Cortexyme is a clinical-stage biopharmaceutical company pioneering a novel disease-modifying therapeutic approach to treat what we believe to be a key underlying cause of Alzheimer’s and other degenerative diseases. Cortexyme is targeting a specific pathogen found in the brain of Alzheimer’s patients that causes neurodegeneration and other pathology in animal models.

Cortexyme is currently testing its lead small-molecule COR388 in Phase 2/3 clinical study for the treatment of Alzheimer’s disease. COR388 is a novel virulence factor inhibitor targeting gingipains from P. gingivalis that have been found in the brain of Alzheimer’s patients. Infection of mice with P. gingivalis results in brain infiltration and downstream pathology of AD including Abeta42 production, neuroinflammation, and neurodegeneration that can be blocked by COR388. Additional compounds from the proprietary protease inhibitor library are moving forward in preclinical development.
CTRL-labs development is essentially an EMG wristband. It senses the changes of electrical potential in the user's arm muscles, the signal that motor neurons are sending into the muscles in the arm that'll pull on the tendons that connect to the fingers. This information is then fed back into a machine learning algorithm which enables the system to reconstruct what the hand is doing, whether it's typing, swiping or gesturing.

The wristband would enable users to leverage their hands as in-game controllers as well. The idea would be that the device would learn whatever gesture the user's doing, and use that to control something inside of the game. CTRL-Labs' EMG wristbands may spell the end for keyboards and mice. Why type when you can just think about typing?

CTRL-labs was acquired by Facebook.
Demiurge Technologies

Country: United States
Founded date: 2015
Number of Employees: 1-10
Total Funding Amount: $9.5M
Category: Neuroinformatics

Demiurge is a Swiss artificial intelligence, neuroscience, and pharmaceutical company with a focus on translating exponentially growing neuroscience data into a new generation of deep neural networks (Deep Learning 2.0) whose learning performance and learning efficiency match those of animal brains. Demiurge’s Deep Learning 2.0 is the enabling technology of breakthrough pharma products that could spare the 1 billion aging population from neurodegenerative diseases and brain disorders, such as and Alzheimer’s and Parkinson’s diseases.

We are a global family of focused craftswomen and craftsmen solving brain diseases and artificial intelligence at the interface of neuroscience and deep learning. Our mission is to deliver universal benefits to the entire mankind and to bring humanity to the universe. Every Demiurger leads independently with head and interdependently with heart.
Dreem is a sleep device that monitors, analyzes, and claims to enhance the quality of sleep. It’s a miniaturized and autonomous headband that monitors the quality of sleep and then uses sound to help fall asleep faster, get deeper sleep, and wake up at the optimal time through the smart alarm.

Dreem is a headband that collects, reports data and also claims to enhance the user's behavior in real-time according to the data collected. The sensors include dry EEG electrodes, accelerometer and pulse oximeter. The five EEG electrodes include O1 and O2 electrodes in the occipital part of the head and Fpz, F7, and F8 on the forehead. These electrodes are meant to pick up EEG frequencies common in sleep, such as sleep spindles, slow waves, and k-complexes.
EBS Technologies is a medical device company that has developed a stimulation system for the treatment of neurologically caused impairments such as visual field loss. Such impairments can be the result of stroke, traumatic-brain-injury, glaucoma or several other diseases.

The therapy is based on the knowledge that tissue is not completely destroyed when the optic nerve is damaged. Retinal ganglion cells may survive but are malfunctioning. By applying gentle alternating pulses that are individually adapted to the patient, the Eyetronic Therapy stimulates the metabolism of the neurons in order to restore their function and to stop further cell degeneration. The efficacy of this non-invasive therapy has been proven in clinical studies.
Electrical Geodesics

Country: United States  
Founded date: 1992  
Number of Employees: 51-100  
Total Funding Amount: n/a  
Category: Neuromonitoring / Imaging

Electrical Geodesics, a medical device company, designs, develops, and commercializes a range of non-invasive neurodiagnostic products used to monitor and interpret brain activity. Its product includes dense array electroencephalography (dEEG), which provides high resolution, millisecond time frame data on the changes in brain activity.

This 25-year old company was recognized globally as a leading neurodiagnostic medical technology company and has recently been acquired by the Royal Philips company, based in The Netherlands. The acquisition of EGI is a part of Philips's health strategy. Philips recognized the cutting edge EEG and computational neurology research and clinical products that EGI had developed and is investing further in the company, which will stay in Eugene, Oregon, to enhance development and accelerate adoption.
electroCore is developing non-invasive vagus nerve stimulation (nVNS) therapy for the treatment of multiple conditions in neurology and metabolic disorders. In 2005, electroCore was founded on a unified belief that neuromodulation could be used in novel ways to help patients break free from treatments they aren't happy with.

For years we have been focused on innovating nVNS technology with the goal of treatment some of the most challenging diseases in the world. gammaCore has become an answer for many people. For migraine and cluster headache pain gammaCore is an FDA-cleared, safe, and effective treatment. gammaCore™ (non-invasive vagus nerve stimulator) is indicated for adjunctive use for the preventive treatment of cluster headache and for the acute treatment of pain associated with episodic cluster headache and migraine headache in adult patients.
ElMindA has developed the BNA™ technology platform, which for the first time allows high-resolution visualization and evaluation of the complex neuro-physiological interconnections of the human brain at work.

BNA™ processes post-hoc neural patterns of time, location, amplitude and frequency data points in the brain related to specific functions evoked by repeatable tasks to create high-resolution, three-dimensional representations of the functional neural pathways. While most brain monitoring systems require the invasive insertion of a sensor inside the head, ElMindA's BNA takes its measurements using a sensor-laden futuristic-looking “helmet” that contains dozens of electrodes that measure activity through the skull. The sensors are able to measure the electronic activity of the brain at different points, with each sensor recording the activity associated with a specific brain function – thought, memory, activity, etc.
Emotiv is a privately held bioinformatics and technology company developing and manufacturing wearable electroencephalography (EEG) products including neuro headsets, SDKs, software, mobile apps, and data products.

Cutting-edge enterprise neurotech from the leaders in EEG Emotiv develops scientifically-validated technology once constrained to clinics and labs. Most workplace wellness strategies only involve tracking nutrition and exercise and rely on inaccurate self-reports. Emotiv harnesses the potential of neuroscience to measure stress and attention to help boost wellness, productivity, and safety in the workplace.

Today, Emotiv’s award-winning technology (Red Dot Award, AutoVision Innovations Award, Australian International Design Awards, Australian Engineering Excellence Awards) is a recognized world leader and pioneer in the field of mobile EEG & brain-computer interfaces with researchers in over 100 countries.
eNeura, Inc. is a privately held medical technology company that is pioneering the use of portable, non-invasive Transcranial Magnetic Stimulation devices for the treatment of migraine. The clearance from the U.S. Food and Drug Administration (FDA) states: “The eNeura Spring TMS is indicated for the acute and prophylactic treatment of migraine headache.” With this FDA clearance, the SpringTMS is the only product in the United States indicated both for the acute and prophylactic treatment of migraine headaches.

SpringTMS is a prescription-only device that utilizes single-pulse Transcranial Magnetic Stimulation (sTMS) to induce very mild electrical currents that can depolarize neurons in the brain. This process is thought to interrupt the abnormal hyperactivity associated with migraine. Prescribed by physicians but designed for patient use, it is the first truly portable, convenient TMS product that will allow migraine patients to administer treatment as needed—at home, in the office or on the go. SpringTMS is now approved in the U.S. and Europe for both the acute treatment of migraine and migraine prevention.
Eodyne Systems

Country: Spain
Founded date: 2014
Number of Employees: 1-10
Total Funding Amount: n/a
Category: Neurofeedback

Eodyne's expertise is based on the development and integration of complex architectures of advanced interactive systems involving technologies for virtual and augmented reality, ambient and wearable sensors, robotics, machine perception, cognitive processes and user experience.

Our team has expertise in developing and validating technologies in different domains including neurorehabilitation, cultural heritage, education, and entertainment linked to the long track record of SPECS in these areas.

Eodyne's flagship product is the unique Rehabilitation Gaming System (RGS), a novel science-based solution for the integrated treatment of deficits resulting from stroke. RGS has been validated in a large number of clinical studies and is in daily use in a number of hospitals serving the recovery of stroke patients.
Fisher Wallace Laboratories

Country: United States  
Founded date: 2007  
Number of Employees: 11-50  
Total Funding Amount: $1.8M  
Category: Neuromodulation

Fisher Wallace Laboratories, Inc., headquartered in New York City, markets the Fisher Wallace Stimulator, a cranial electrotherapy stimulation (CES) device. The company was founded in 2007 by entrepreneur Charles Avery Fisher, son of electronics pioneer Avery Fisher, and Martin Wallace.

The Fisher Wallace Stimulator® works by stimulating the brain to produce neurochemicals such as serotonin, while modulating the default mode network and entraining alpha waves. The device treats insomnia but is not a sedative - instead, the device modulates the brain to produce a restful state that accelerates sleep onset and restores longer periods of sleep.
Flow offers a safe, effective and affordable treatment for depression. This is achieved by applying scientifically validated psychology, neuroscience, and technology to make treatment simple and accessible for everyone anytime, anywhere. Our mission is to find new ways to treat mental health issues with the help of science and technology.

Depression is associated with lowered activity in a brain area called the DLPFC (Dorsolateral Prefrontal Cortex). It’s located in the frontal lobe. The Flow headset delivers gentle electrical signals to the DLPFC to help activate the brain cells. As a result, depressive symptoms decrease or disappear. The technology used in the Flow headset is called transcranial Direct Current Stimulation.
At Formula, we honor the unique mind. We work together to build a nootropic blend tailored to you, so you can break through your personal barriers and achieve what you’re after. Based on proven science and meticulous testing, we thoughtfully select our ingredients from three uniquely effective categories:

Racetams & Peptides. Used by astronauts for stress relief, laser-like focus, and increased stamina, racetams & peptides are the most potent and well-studied nootropics on the market.

Choline Sources. Acetylcholine is the neurotransmitter derived from the essential nutrient choline. It’s known for memory, learning, and protecting the brain from symptoms of aging.

Vitamins & Amino Acids. We’ve concentrated various amino acids, vitamins, and plant-based adaptogens that protect the brain from toxins, fatigue, and stress while promoting memory and learning.
FreeOx Biotech is an innovative company born to discover and develop medicines addressed to reduce the effects of the oxidative stress in the organism, and especially those related to the neurological and cardiovascular system.

We are focus mainly on Stroke, a condition characterized by the interruption of blood flow to the brain which is a leading cause of death and disability worldwide.

Based on the knowledge of oxidative stress and uric acid, FreeOx Biotech is developing neuroprotective therapies to reduce the damage resulting from ischemia and in this way improve the recovery of the patients.

Ox-01 is Uric Acid used as a medicinal product. Ox-01 has a proven effect in preventing the damage caused by reperfusion after stroke.

Ox-02 Uricoline is a molecule resulting from the association of Ox-01 and Citicoline. Citicoline is an intermediate in the generation of phosphatidylcholine from choline.
g.tec medical engineering develops and produces high-performance brain-computer interfaces and neurotechnologies for invasive and non-invasive use with the brain in research and clinical environments.

g.tec medical engineering develops and produces invasive and non-invasive brain-computer interfaces (BCIs) and neurotechnology that are used worldwide to measure and analyze brain waves with the highest possible resolution. A key factor is the real-time data analysis which enables many new applications and experiments in neuroscience.

g.tec’s hardware and software is perfect for recording signals from different parts of the body in many different experiments. In combination with TMS (Transcranial Magnetic Stimulation) and tDCS (transcranial Direct-Current Stimulation) pulses, the impact of stimulation on the human body can be studied.
Generable

Country: United States
Founded date: 2016
Number of Employees: 1-10
Total Funding Amount: n/a
Category: Neuroinformatics

Generable’s mission is to change the way companies and individuals evaluate and make decisions about new and existing therapies. Our team members are core developers of Stan, a popular probabilistic programming language with a large and growing user base.

In collaboration with the leading neuroscientist from the University of Marseille, we are modeling the brain dynamics of epileptic seizures with stochastic differential equations.

Neuroscientists have spent years learning about the processes that govern signal propagation in the brain including the conditions that result in pathologies including epilepsy. Even though these systems are still not completely understood, enough progress has been made to develop a model for the human brain. By using simulations, reparametrizations, and the ability to quickly fit hundreds of model variations, we are able to sufficiently approximate the data generating process.
GliaCure

Country: United States
Founded date: 2011
Number of Employees: 1-10
Total Funding Amount: $11.1M
Category: Neuropharmacology

GliaCure is a pioneer in the development of novel therapeutics aimed at treating neurological and neuropsychiatric disorders of the brain. The company’s approaches are based on glial targets, a cell type in the brain that has previously been overlooked in drug discovery.

The company has developed a small molecule clinical candidate – GC021109 – for a glial target that has two primary actions downstream of target engagement: the stimulation of phagocytosis and anti-inflammatory actions in which levels of pro-inflammatory cytokines are reduced.

GC021109 is currently being developed primarily as a disease modifying treatment of Alzheimer’s disease; however, its dual phagocytosis and anti-inflammatory actions have the potential to affect other disorders.
Global Kinetics Corporation is the maker of the Personal KinetiGraph, a wearable that tracks movement in Parkinson's patients. The device reminds patients when to take their medications and even helps their doctors make an accurate diagnosis. The FDA-approved device is worn by 14,500 patients in more than 200 clinics around the world.

The PKG® system provides continuous, objective, ambulatory assessment of movement disorder symptoms, such as tremor, dyskinesia, and bradykinesia during activities of daily living and in the patient's home environment.

Consisting of an interactive watch that collects movement data, proprietary algorithms, and a detailed report, the PKG® system also correlates the frequency and severity of symptoms with respect to the consumption of prescribed medication.

Going forward, Global Kinetics says its technology can be expanded to other diseases, including Huntington's disease, Alzheimer's disease, and epilepsy.

John Schellhorn
President & CEO
Great Lakes NeuroTechnologies develops diagnostic and therapy systems for movement disorders such as Parkinson’s disease and essential tremor.

Great Lakes NeuroTechnologies’ wireless physiology systems address the need for hassle-free, reliable instrumentation for research and laboratory education. Our BioRadio provides a compact, user-worn, and wireless solution to capture physiological signals such as EEG, EMG, ECG, EOG, and more. The BioRadio can be utilized for general-purpose physiological research when combined with our BioCapture software packages for display, processing, and analysis.
GTX is a medical device company focusing on the development of a unique neurostimulation therapy. We aim to use our technology to treat persons with spinal cord injury (SCI). We see a future where people with SCI will be able to walk again, increasing their independence and improving their quality of life.

Using a targeted neuro-stimulation implant with real-time motion feedback, combined with bodyweight support assisting training tools, our technology has the potential to restore the function of the spinal cord and improve the rehabilitation of individuals with SCI.

We call this approach Targeted Epidural Spinal Stimulation (TESS). The therapy allows remodeling of neural pathways, repairing the connection between brain, spine, and lower extremities – with the potential of improving other symptoms related to spinal cord injuries.
Halo Sport is a brain stimulator that helps you develop muscle memory faster. Halo Sport increases the brain's neuroplasticity, so you can create and strengthen motor pathways faster. It is called hyperplasticity or hyper learning.

Headset is meant to be used before or during training and generates a mild tingling sensation when in use. The device, which resembles a pair of overly sized headphones, works by applying a small electric current to the part of the brain that controls movement, activating neurons so they fire more often when you train. The more neurons fire, together, the faster pathways are built in your brain. That means you can learn any movement faster — from playing the piano to performing a muscle-up. Playing guitar, lifting weights, and running may seem different — but your brain learns each of these movements the same way: via the motor cortex. While the pathways in the brain that produce each movement differ, they're all created through neuroplasticity.
Headversity is the only resilience training app in Canada with a validated measurement tool and is steeped in evidence-based principles from the fields of neuroscience, psychiatry, and performance psychology. Our machine learning algorithm, headscan, measures and tracks your resilience, offering a custom learning path to train each of the 6 resilience skills.

Headversity helps companies get ahead of adversity with preventative training designed for the entire workforce. Our resilience platform blends the very best of today’s mental wellness education and data technology so that you can easily and effectively manage change.

Headversity is a workplace resilience training program that aims to help everyone think, feel, and be better. Companies like ATB Financial, Copeman Healthcare, PBA Land & Development, and the Canadian Olympic Committee have participated in pilot programs with Headversity to measure, track, and train resilience.
Healium is the world's first virtual and augmented reality platform powered by brainwaves and heart rate via consumer wearables. Healium is a biometrically-controlled, drugless solution for stress.

In today's competitive world stress has become very common which leads to health-related issues such as headaches, chest pain, cardiovascular diseases, depression and several other mental and physical illnesses. To relieve these increasing stress levels, the world's first virtual and augmented reality platform HealiumXR, was developed to power by brainwaves and heart-rate.

Healium stories drive humans to an immersive world where their feelings of positivity and calmness are evoked and they feel stress-free as they see themselves healing the virtual world with their positive attitude. In a broad sense, it can be said that immersive technologies have pain-relieving power.
Hocoma is the global leader for the development, manufacturing, and marketing of robotic and sensor-based devices for functional movement therapy.

We improve millions of lives by providing functional and efficient solutions that set the standards for human movement therapy and robotic rehabilitation for neurological movement disorders. We offer efficient solutions and services with advanced technologies for human movement therapy across the entire continuum of rehabilitation. All our solutions are developed, manufactured and continuously improved in close cooperation with researchers, clinical partners, and patients.
Horama is a clinical-stage biopharmaceutical company developing gene therapy treatments based on recombinant adeno-associated viral vectors (rAAV) and targeting rare diseases of the retina.

Recessive inherited retinal dystrophies are ideal targets for gene therapy. HORAMA develops rAAV-based gene therapy products for inherited ophthalmic diseases.

The end goal of gene therapy is to provide diseased cells with cDNA corresponding to a non-mutated targeted gene. To achieve this goal, HORAMA uses vectors, which penetrate the target cells and transfer cDNA into the nucleus (a process termed transduction). Once there, the non-mutated gene can then produce the functional protein it encodes. These vectors are generally viruses stripped of their infectious or viral activity. To develop these vectors, HORAMA uses recombinant-adeno-associated viruses (rAAV), the first-in-class vectors in the gene therapy race.
Humm mission is to replace medication and supplementation for the brain with healthier, better technology that nurtures and improves our mental capabilities. Humm's team comes from disparate backgrounds in neuroscience, medicine, business, and engineering, but they are united by a passion for empowering people to live better lives.

Humm is a wearable patch that gently stimulates the brain's natural rhythms to strengthen memory. Humm's core technology allows for greater efficacy of stimulation than existing techniques, representing an important step forward for the field of non-invasive brain stimulation. Results in a randomized, double-blind trial were of very high statistical significance, demonstrating significant validation of the technical capabilities of Humm and providing a foundation for further development of the technology.
ImStar Therapeutics

Country: Canada  
Founded date: 2012  
Number of Employees: 11-50  
Total Funding Amount: $1.8M  
Category: Neuropharmacology

ImStar’s research and development team are dedicated to discovering therapies that render amyotrophic lateral sclerosis (ALS), which came to be known as Lou Gehrig’s disease, treatable, not terminal, bringing life and hope where none currently exists.

The only approved drug currently available to patients, riluzole, extends survival by a mere 2 to 3 months – seemingly inadequate until you realize that for patients living on borrowed time and their loved ones, every single day is precious.

But we’re closer than ever to understanding the treatment mystery. ALS research has come further in the past decade than in the previous century as key pieces of the puzzle have come to light giving researchers – and patients – more hope than ever. ImStar’s Chief Scientific Officer, Dr. Jean-Pierre Julien’s research with withanolides is at the forefront of recent discoveries with the potential to unlock the treatment puzzle.
INSIGHTEC is a fast-growing medical technology innovator transforming patients' lives through incisionless surgery. The surgeon is equipped with a workstation, keyboard, and mouse – no scalpel in sight.

For thousands of years, surgeons have been cutting away diseased tissue. With INSIGHTEC's focused ultrasound technology and magnetic resonance imaging (MRI), sound waves precisely treat deep in the brain. No incisions. Little to no risk of infection. Minimal hospitalization.

INSIGHTEC's proven focused ultrasound technology is based on over 20 years of research, development and clinical experience. For the innovation in treating essential tremor with no incisions, INSIGHTEC was ranked the #1 Most Innovative Company in Israel by Fast Company and won a Gold Edison Award for the Exablate Neuro™ focused ultrasound device in 2018.
Inspire Medical Systems

Country: United States
Founded date: 2007
Number of Employees: 11-50
Total Funding Amount: $186M
Category: Neuromodulation

Inspire Medical Systems develops implantable therapeutic devices for the treatment of obstructive sleep apnea. Inspire device is the only FDA approved obstructive sleep apnea treatment that works inside your body to treat the root cause of sleep apnea with just the click of a button.

Inspire is placed under the skin of the neck and chest during a short, outpatient procedure. When you’re ready for bed, simply click the remote to turn to Inspire on. While you sleep, Inspire opens your airway, allowing you to breathe normally and sleep peacefully.

Inspire treats the root cause of sleep apnea by applying gentle stimulation to key airway muscles during sleep, allowing you to breathe normally, and more importantly, sleep without a mask, hose, or machine.
Intendu

Country: Israel  
Founded date: 2012  
Number of Employees: 11-50  
Total Funding Amount: $3.4M  
Category: Cognitive assessment & enhancing

The Functional Brain Trainer provides personalized and adaptive brain training within game environments using natural body interaction. The platform includes multiple video games designed for training functional cognitive skills such as behavioral control, attention, multi-tasking, self-initiation, working memory, planning and more.

Intendu is a functional brain-body training console for people with brain impairments. It was designed by an interdisciplinary team of neuroscientists, rehabilitation clinicians, computer scientists, and gaming experts, creating an unparalleled training tool for home use that adds to the user’s rehabilitation process.

The Intendu console is revolutionizing the treatment of people with brain dysfunctions, by providing an effective, accessible, and affordable solution for training functional cognitive skills. The console was designed to train patients in clinical settings such as rehabilitation hospitals and clinics in addition to the patient’s home environment.
Intheon's vision is to embed advanced neurotechnology into everyday life. We offer a middleware platform for biosignal processing and analysis, which is easily integrated into existing mobile and desktop applications through a cloud API.

Country: United States  
Founded date: 2015  
Number of Employees: 1-10  
Total Funding Amount: n/a  
Category: Neuroinformatics

We accelerate scientific research and empower developers to create transformative brain- and body-aware applications impacting health and wellness, human performance, learning, interactive experiences and entertainment, and more. Upload EEG/biosignal recordings to the cloud, choose from a collection of turnkey pipelines, and generate HTML reports with a variety of quality and feature extraction analytics, complete with interactive figures. Reports can be generated for individual, multi-session, and multi-subject analysis. Upload EEG/biosignal recordings to the cloud, choose from a collection of turnkey pipelines, and generate HTML reports with a variety of quality and feature extraction analytics, complete with interactive figures. Reports can be generated for individual, multi-session, and multi-subject analysis.
Preventing Alzheimer's disease progression remains a critical unmet need for millions of people worldwide.

Kalgene is developing a novel fusion protein therapeutic for slowing the progression of Alzheimer's disease, with technology licensed from the National Research Council of Canada. The therapeutic targets the toxic soluble amyloid and the clinical program will focus on patients with early clinical signs of cognitive decline before progressive neural damage causes dementia.

Today we've completed pre-clinical proof of concept work in partnership with the NRC and McGill University. These studies have shown that the development candidate passes through the blood-brain barrier and rapidly induces CSF-amyloid-beta clearance.
Karuna Labs has been using VR technology for years to provide personalized chronic pain management programs for patients suffering from chronic pain in their lower and upper limbs, neck, and lower back that’s neither invasive or pharmacological.

Composed of a team of neuroscientists, pain medicine doctors, physical therapists, and healthcare IT experts, the company offers both an in-home solution, Karuna Home, as well as a more advanced clinic-based option, Karuna Pro.

At Karuna Labs, we are pioneering a new approach to managing chronic pain in the face of increasing opioid dependence/addiction and expensive and invasive surgical treatment. We have combined proven biopsychosocial treatments and moved them into the virtual environment where we’re seeing more effective plans of care thanks to improved range of motion and adherence.
Keapstone Therapeutics is developing a novel series of small molecule activators of the Nrf2-ARE pathway for neuroprotection in Parkinson's and amyotrophic lateral sclerosis (ALS).

Keapstone Therapeutics is a single asset biotech developing drugs that target the Nrf2 signaling pathway ( KEAP1 inhibitors) for two devastating conditions – Parkinson's and Motor Neuron Disease (MND) – which together affect more than 130,000 people in the UK.

The company's strategy is to utilize proprietary chemistry and biology to deliver CNS-penetrant molecules targeting disease-modifying mechanisms in these debilitating conditions.

Keapstone was co-founded in February 2017 by the University of Sheffield, Parkinson's the UK and scientists Richard Mead and Pamela Shaw of the Sheffield Institute for Translational Neuroscience (SiTraN).
Kernel, a neuroscience company focused on developing non-invasive mind / body / machine / interface (MBMI) technology. We can count our steps, track our sleep, and sequence our genome, but our brain remains inaccessible to each of us in our day to day activities today.

Johnson admits the difficulties Kernel must reckon with to even begin working on these types of technologies. He says that working with brain implants is a requirement right now. “There’s no tech that exists in the world that allows you to be outside the brain and gain access to critical data,” he says. “You need to be inside the brain, inside the skull.” Down the line, Kernel would like to explore less invasive ways of working with the human brain.

Johnson’s idea, at least at first, is to have his team at Kernel explore and better understand core brain functions like information recall, memory, and neuronal communication. To do this, the company is developing its own hardware and software to try and alleviate the devastating effects of neurological and degenerative diseases like epilepsy, dementia, and Alzheimer’s.
Kineta, Inc. is a clinical-stage biotechnology company committed to developing disruptive life science technologies that address unmet patient needs.

Significant unmet medical needs persist for patients suffering from chronic pain. Current therapies have limited efficacy and unfavorable side effects, while opioid-based therapies lead to tolerance and addiction. There are 259 million opioid prescriptions written every year and ~50 people die every day from prescription opioid overdose in the US1.

Kineta is developing a novel non-opioid therapy for the treatment of chronic pain that is derived from the venom of the Conus regius, a small cone snail native to the Caribbean Sea. Our conopeptide drugs are highly potent α9α10 nAChR antagonists that have demonstrated robust analgesic, anti-inflammatory and neuroprotective effects across multiple animal chronic pain models. It offers the potential of a disease-modifying therapy that may slow the progression of chronic pain.

**Kineta**

**Country:** United States  
**Founded date:** 2007  
**Number of Employees:** 11-50  
**Total Funding Amount:** $36.7M  
**Category:** Neuropharmacology

Shawn Iadonato, Ph.D.  
Co-Founder & CEO

[Image of Shawn Iadonato, Ph.D., Co-Founder & CEO]
Koniku Kore is a co-processors made of biological cells able to detect the smell of explosives and cancer cells. It is a computer-based on the living neurons of mouse stem cells that have been fused into a silicon chip.

As a sensory system, it is able to sense and recognize the smell of explosives due to the particles they transmit. Koniku Kore can also sniff out different diseases.

However, Koniku main goal is to use this device to increase airport security all over the world, as they are vulnerable to high risks of terrorism. As well as other places where bombs are a real threat to humans.

Oshiorenoya Agab is adamant about the benefits of neurotechnology and hopes that in the future it can be used on robots. "We think that the processing power that is going to run the robots of the future will be synthetic biology-based and we are laying the foundations for that today," he added.
Limbic

Country: United Kingdom  
Founded date: 2017  
Number of Employees: 1-10  
Total Funding Amount: $80K  
Category: Neurofeedback

Limbic AI is a team of scientists and software engineers seeking to understand the neuroscience of emotion. Mental health is a growing problem, fuelled by social media and unhealthy online behavior. But technology is not inherently 'bad'. What if it was more human? 1 in 4 people will experience a mental health issue in 2020.

Limbic’s team believes that information is power. We come from neuroscience, machine learning, software engineering, and psychology. Together, we’re using cutting-edge AI and beautiful product design to drive information within psychological therapy.

A simple chat interface prompts patients to answer clinical questions at therapeutically significant moments. Streamlined mood journaling tools + NLP makes it easier than ever to articulate symptoms and feelings. Mood charts and personalized insights help the patient track progress and understand themselves better. Routine health questionnaires delivered through the app, reducing admin during therapy sessions.
Lumos Labs

Country: United States
Founded date: 2005
Number of Employees: 51-100
Total Funding Amount: $67.5M
Category: Cognitive assessment & enhancing

Lumosity is a leading brain training program, brought to you by Lumos Labs, Inc. Lumosity's web and mobile games are designed by scientists to challenge core cognitive abilities.

Lumosity's scientists take neuropsychological and cognitive research tasks, or design new ones, and work with game designers to transform them into 50+ cognitive games. Designed to be both fun and adaptively challenging, Lumosity's training program is accessible to people of all ages — helping them stay challenged to the full extent of their abilities.

Lumos Labs also has a collaborative research initiative, the Human Cognition Project, which currently partners with over 90 university collaborators. Through the HCP, we grant qualified researchers free access to Lumosity's cognitive training tasks, assessments, research tools, and, in some cases, limited access to data on cognitive task performance — helping them conduct larger and more efficient studies.
Magnolia NeuroSciences is a drug discovery and development company focused on the creation of a novel class of neuroprotective medicines. The company endeavors to make life-changing medicines for the benefit of patients and their families suffering from serious CNS diseases.

Neurodegenerative diseases and neuronal injuries continue to be an area rife with substantial unmet medical needs. Targeting the underlying mechanisms of these diseases is an area of active research for effective therapeutic interventions, but extensive preclinical and clinical efforts have unfortunately resulted in limited success.

Magnolia Neurosciences aims to discover and develop proprietary, potent, and selective therapies for the prevention of neuronal cell death, thereby providing novel treatment options for patients suffering from neurodegeneration and related conditions.
Magstim

Country: United Kingdom  
Founded date: 1990  
Number of Employees: 51-100  
Total Funding Amount: n/a  
Category: Neuromodulation

Magstim® is a leading supplier of Transcranial Magnetic Stimulation (TMS) stimulators and packages used for Magstim® TMS therapy and neuromodulation research.

The majority of TMS research published has used Magstim® stimulators. The Magstim® product range provides the versatility and capability needed for a wide range of research applications.

FDA cleared and NICE approved, Magstim® TMS Therapy is non-invasive, non-systemic and has few known adverse effects; resulting in better patient outcomes.
Mainstay Medical

Mainstay is a European medical device company focused on bringing to market an innovative implantable neurostimulation system, ReActiv8, for people with disabling Chronic Low Back Pain.

Low back pain affects a large number of working adults all around the world – Chronic low back pain is a major health problem of the modern world and can affect anyone at any age, but is most common between the ages of 35 – 55. Approximately two-thirds of people will have low back pain sometime during their life and each year 15%-45% of the population will experience an episode of low back pain.

A new solution is needed – Mainstay Medical is dedicated to helping the millions of people with chronic low back pain by developing ReActiv8 which is designed to facilitate their return to an active and productive life. Importantly, helping people with chronic low back pain return to work will help reduce the associated global economic burden of health care, lost workdays, and productivity.
MaxWell Biosystems AG is an electronics and biotechnology company based in Basel that provides instrumentation and solutions to advance neuroscience research and accelerate drug discovery.

MaxWell Biosystems AG provides solutions to advance basic neuroscience research and accelerate preclinical drug discovery. We have built MaxOne, the most powerful electrophysiology platform for recording and stimulating electrogenic cells (brain, retina, and heart cells) in vitro. MaxOne is a CMOS-based high-density microelectrode array with 26,400 electrodes, 1024 low-noise readout channels, and 32 stimulation channels. MaxOne allows extracting single cell and network parameters that facilitate phenotypic screening and drug toxicity/efficacy testing.

MaxTwo, a high-throughput, high-resolution electrophysiology platform for recording and stimulating electrogenic cells in vitro. MaxTwo combines 6 or 24 MaxOne high-density microelectrode arrays in a multiwell format.
mBrainTrain

Country: Serbia  
Founded date: 2012  
Number of Employees: 1-10  
Total Funding Amount: $120K  
Category: Brain-computer interfaces

mBrainTrain is a company with the main purpose of improving medical services and quality of life through electroencephalography software and hardware development.

As a group of enthusiasts and world-renown experts we thrive to transfer innovations and ingenious new ideas from labs into the real-world, make them available for the broader population, and show that the future is already here. One of these concepts, that has become the focus of our research and especially appeals to us, is the matter of interaction between a person and computer that would work in any state and environment, a mobile Brain-Computer Interface system.

Small light-weight EEG device for high-quality recordings with an accompanying mobile app for real-time brain activity monitoring, out of the lab, in real life. Whether paired with a PC or smartphone, SMARTING provides superior data quality and high time-precision.
Meltin MMI

Country: Japan  
Founded date: 2013  
Number of Employees: 11-50  
Total Funding Amount: $20M  
Category: Neural prostheses & simulators

MELTIN MMI is a research and development venture that aims to create cyborg technologies that incorporate bio-signal processing. We need to be able to receive and process these bio-signals in order to make cyborgs move, but existing technologies simply weren't accurate enough to process the diverse movements of the human body.

The unique bio-signal processing algorithm that MELTIN has produced, however, allows for highly-accurate real-time analyses of these movements. It can also distinguish between adjacent muscle movements, as well as composite motions such as "Bending fingers while twisting the wrist". All of this allows for intuitive control of cyborgs in a way that requires no special training.

It is a completely new technology that reproduces traits unique to human hands such as delicateness, dexterity, and strength, while still maintaining the same form factor as a hand.
meQuilibrium is the engagement and performance platform that harnesses behavioral psychology to unleash your workforce resilience, agility, and full potential.

Rooted in cognitive science, the meQuilibrium suite, powered by the #1 resilience platform, uses predictive data-driven insights and collaborative technologies to deliver cognitive performance gains that accelerate growth.

meQuilibrium is the only resilience solution that provides continually updated, data-based population insights. Our quarterly reports provide visibility into your workforce's strengths and weaknesses and give you the information necessary to help improve every facet of your business. An increase in resilience results in very real, very personal benefits. meQuilibrium's solutions are available on any device and are customized to each individual's needs and resilience level, resulting in remarkably high adoption and engagement.
The image above illustrates the therapy in action. While the patient is performing a rehabilitative exercise, the physical therapist pushes a button, which triggers the wireless transmitter to send a signal to the implanted device to deliver a small burst of electrical stimulation to the vagus nerve.

MicroTransponder has developed the Paired Vagus Nerve Stimulation System (Paired VNS™ System) based on decades of neuroscience research.

The Vivistim® System stimulates the vagus nerve while the patient is undergoing a rehabilitative movement, which tells the brain to “pay attention” to that movement. This simultaneous pairing of a specific movement with vagus nerve stimulation (VNS) strengthens motor circuits associated with the physical movement. Consistently pairing VNS with specific neural circuits helps rebuild those circuits and the brain relearns the commands to enable the muscles to perform specific tasks and can strengthen those muscles as well. This simultaneous pairing of muscle movement with VNS strengthens the neural circuits in the brain. Over time, a patient may regain upper limb function.
MindImmune Therapeutics, Inc. is a pharmaceutical company developing first-in-class drugs that target the immune system to treat diseases of the central nervous system, including Alzheimer’s and Huntington’s disease, pain, and psychiatric disorders.

MindImmune scientists are at the forefront in recognizing the therapeutic opportunities in targeting the immune system to treat brain disease. It is increasingly clear that the central nervous system and the immune system are intimately integrated. Consequently, immune system dysfunction is a critical, often causative, factor in brain dysfunction.

MindImmune is based in Kingston, RI and is building an affiliation with the George & Anne Ryan Institute for Neuroscience at the University of Rhode Island to leverage the rapidly expanding Rhode Island ecosystem of academic neurosciences resources to advance its drug development programs.

MindImmune Therapeutics

Country: United States
Founded date: 2016
Number of Employees: 1-10
Total Funding Amount: $500K
Category: Neuropharmacology

Stevin Zorn, Ph.D.
President and CEO

MindImmune Therapeutics
MindMaze was founded in 2012 to create digital therapies for neuro-restoration. More recently, the company has developed new immersive digital therapies and brain chip technology that have major applications in sports, human performance, transport, security, and healthcare. Now MindMaze is the billion-dollar, brain technology company that builds intuitive human-machine interfaces through its breakthrough neuro-inspired computing platform. The company's innovations are at the intersection of neuroscience, mixed reality, and artificial intelligence. Founded in 2012 by CEO Dr. Tej Tadi, the company's U.S. headquarters is in San Francisco, CA, with technology development based in Lausanne, Switzerland.

The US Food and Drug Administration has approved the company's first products in healthcare which help patients with post-stroke disabilities and brain injuries. MindMaze has a presence in 20 countries and with its subsidiaries, MindMaze operates across the Healthcare, Media and Automotive industries.
Mindstrong

Country: United States
Founded date: 2014
Number of Employees: 51-100
Total Funding Amount: $60M
Category: Cognitive assessment & enhancing

Mindstrong is a healthcare company dedicated to transforming brain health through measurement science. Mindstrong science begins with the smartphone. With over three billion smartphones globally and more than 75% of American adults owning a smartphone (92% between ages 18–29), this powerful mobile computer has become ubiquitous. Digital phenotyping collects data from the smartphone to provide measures of cognition and emotion.

Mindstrong has a captivating idea: that its app, based on cognitive functioning research, can help detect troubling mental health patterns by collecting data on a person's smartphone usage — how quickly they type or scroll, for instance.

By measuring brain function passively and continuously through individuals’ interactions with smartphones, Mindstrong’s platform helps individuals and health care providers detect brain health deterioration early and deliver preemptive care. With early detection and preemptive intervention, Mindstrong Health reduces unnecessary healthcare utilization and provides better care and outcomes.
Minerva Neurosciences, Inc. is a clinical-stage biopharmaceutical company focused on the development and commercialization of a portfolio of products to treat central nervous system (CNS) diseases. According to the World Health Organization (WHO), the burden of brain and central nervous system (CNS) disorders constitutes 35% to 38% of the total burden of all diseases, compared to 12.7% for cancer and 11.8% for cardiovascular disease.

Minerva's mission is focused on developing new therapies for CNS diseases with extensive unmet medical needs. Toward that end, we are applying the knowledge and expertise our team has accumulated over more than 30 years working in both clinical facilities and on pre-clinical and clinical research projects.

Minerva's proprietary compounds include roluperidone (MIN-101), in clinical development for schizophrenia; seltorexant (MIN-202 or JNJ-42847922), in clinical development for insomnia and Major Depressive Disorder (MDD); MIN-117, in clinical development for MDD; and MIN-301, in pre-clinical development for Parkinson's disease.
Monteris Medical

Country: United States
Founded date: 1999
Number of Employees: 101-250
Total Funding Amount: $126.6M
Category: Neuromonitoring / Imaging

Monteris is a private equity-backed neurosurgical company focused solely on diseases of the brain. The company was founded in Winnipeg, Canada in 1999 to create neurosurgical technology that, when used by neurosurgeons, would allow them to ablate brain tumors and lesions that may be difficult to approach via traditional methods.

The NeuroBlate® System by Monteris Medical is indicated to ablate, necrotize, or coagulate soft tissue in the brain through interstitial irradiation or thermal therapy in neurosurgical procedures with 1064 nm lasers.

NeuroBlate uses a robot-guided laser to ablate brain tissue during MRI scans. Some brain surgeons find NeuroBlate a useful surgical option for certain epilepsy and brain cancer patients who don’t have many other alternatives.
Muse is the maker of brainwave-controlled computing technology and applications. The company is based in Toronto and the team is made up of a diverse set of individuals who possess backgrounds in neuroscience, fashion, engineering, music, in addition to several Ph.D.’s on staff. Muse provides consumers with applications that use these brainwaves to perform activities such as: meditation, gaming, ADHD assistance, and many others to come.

Muse is a wearable device in the form of a headband that senses the electrical rhythms of the brain. The headband is coupled with a smartphone app that monitors the user’s brain electrical activity and gives immediate feedback so that a “calm” or meditative pattern can be achieved. The use of this device over time to help reduce distractibility, improve stress control and improve mood.
Myndlift is based on neurofeedback which relies on training your brain via your measured brain activity in real-time. Using a headset that can sense your brain activity, Myndlift responds to the changes in your brainwave patterns and helps you balance your brain by playing games or watching videos.

Myndlift offers therapist-guided neurofeedback in an affordable, accessible, and safe way from the comfort of your own. Children, teens, and adults are able to treat ADHD, anxiety, depression and more and improve their brain states by completing specific training on the Myndlift system.

Our diverse team of scientists, engineers, and designers are committed to make a convenient and reliable home neurofeedback a reality for people around the world.

Myndlift has been widely recognized for its significant impact and was listed as a Gartner Cool Vendor in Health and Wellness for 2018, and is backed by clinical partners such as Miami Children’s Hospital.
MyndYou developed leading technology that delivers targeted, data-driven care to older adults while enabling healthcare professionals to better serve their patients. We envision a revolutionary change in today’s healthcare — bringing new, cognitive functioning measurement into the equation.

Our platform is at the forefront of brain wellness research, helping healthcare providers and therapists to manage and prevent general cognitive and behavioral change, in addition to improving dementia and Alzheimer’s care.

MyndYou is a leading voice and activity analysis technology with AI that promotes independent aging.
MyoPro is a powered arm and hand orthosis (brace) designed to help restore function to upper extremities paralyzed or weakened by neuromuscular and neurological disease or injury. While there are many prosthetic products for those who have lost their arms, hands or legs, and while there are orthotic products to support weak legs, MyoPro is the only wearable robotic device on the market to help restore function for those who still have their arms and hands but are unable to use them.

Originally developed at MIT with Harvard Medical School, the MyoPro arm and hand orthosis device works by reading the faint nerve signals (myoelectric signals) from the surface of the skin (no implants) then activating small motors to move the limb as the user intends (no electrical stimulation).

The user is completely controlling their own hand, wrist, elbow, and arm; the robotic arm brace amplifies weak muscle signals to help move the upper limb.
Navega Therapeutics is a preclinical stage company pursuing a radically different approach to treat chronic pain and tackle the opioid epidemic.

We have developed a gene therapy to target pain that is non-addictive, highly specific, and long-lasting. We were inspired by nature: there are humans that have a mutation in their genome that feel no pain whatsoever. We have imitated this process by utilizing a novel gene therapy to target pain. In our proof of concept, we have demonstrated our therapy increases pain tolerance and lowers pain levels.

Our gene therapy platform has the advantage of being highly specific and long-lasting, which has not been achieved by small molecules thus far. Our pipeline includes different types of pain to improve the quality of life of millions of patients.
Neofect offers innovative smart rehabilitation solutions to help patients with neurological and musculoskeletal injuries. About 2/3 of stroke survivors receive rehabilitation services. Depending on the level of medical care required, a patient can receive inpatient, outpatient, or home therapy. The RAPAEL products suite of rehabilitation therapy solutions provides fun stroke rehabilitation cognitive training exercises using games.

Neofect Smart Glove is a stroke therapy device for stroke physical therapy treatment at home. This high-tech rehab device provides stroke exercises for your hand using hand motions and measuring movements in your hand with accelerometer and bending sensors. Starting the training is as simple as wearing the glove, connecting to the “Neofect” app and proceeding to play the rehabilitation games.

Neofect Rehab Solution provides various kinds of motion tasks such as ADL-related tasks with entertainment while considering both clinical effectiveness and fun factors. The learning algorithm automatically adjusts to the optimal level of difficulty as you play to balance challenge and motivation.

Neofect

Country: United States
Founded date: 2010
Number of Employees: 11-50
Total Funding Amount: $28.6M
Category: Neural prostheses & simulators

Scott Kim
Co-Founder & CEO

NEOFECT

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Neotiv develops unique cognitive tests – embedded in a digital platform – to enable early medical assessment and follow-up of memory problems in the context of Alzheimer's disease.

Neotiv's tests are easy to understand. They involve memorizing and remembering visual information. Test design and usability enable tracking of memory performance over time, longitudinally. Neotiv also provides customizable health questionnaires and adapted versions of established neuropsychological.

With the NeotivTrials web portal, the Neotiv platform offers an intuitive graphical user interface in which individual configurations of a study can be created. These setups are directly available to the participants of the study as apps for mobile or on-site assessments.
NeuCyte

NeuCyte is an innovative biotechnology company focused on CNS drug discovery. NeuCyte puts an emphasis on the biology insight of the disorders to develop novel drugs that truly address the altered biological state of the patients.

Based on its proprietary SynFire® technology for generating human iPSC-derived neurons, NeuCyte has developed a highly functional in vitro platform for target identification and validation, efficacy testing, neurotoxicity assessment, and disease modeling. The team is actively pursuing drug discovery programs on Fragile X Syndrome, Epilepsy, ALS and more.

NeuCyte Laboratories is the product and service division of NeuCyte. NeuCyte Labs offers iPSC-derived induced neural cells and drug discovery and nonclinical safety assessment services.

Country: United States
Founded date: 2015
Number of Employees: 11-50
Total Funding Amount: $6.7M
Category: Neuropharmacology
Neurable builds full-stack neurotechnology tools that interpret human intent, measure emotion and provide telekinetic control of the digital world. Neurable products enable computers to understand the human mind.

Neurable's software uses machine learning to measure and classify EEG signals in real-time. By combining the proprietary algorithms with deep neuroscience knowledge, Neurable achieves levels of performance that far exceed the current state-of-the-art for detecting brain activity.

NeuroSelect SDK device enables natural and intuitive user interactions by translating control signals from the brain into human intent. Today, Neurable's software controls VR, AR, and XR environments. In the future, the company will enable hands-free, voice-free control of mobile devices.
Neuralink is a startup company developing implantable human-computer interfaces such as a neural lace. Since its founding, the company has hired several high-profile neuroscientists from various universities. By July 2019, it had received $158 million in funding (of which $100 million was from Musk) and was employing a staff of 90 employees.

Brain-machine interfaces (BMIs) hold promise for the restoration of sensory and motor function but clinical BMIs have not yet been widely adopted, in part because modest channel counts have limited their potential.

Neuralink’s first steps toward a scalable high-bandwidth BMI system are to built arrays of small and flexible electrode “threads”, with as many as 3,072 electrodes per array distributed across 96 threads. Neuralink’s approach to BMI has unprecedented packaging density and scalability in a clinically relevant package.
Neuro-Bio is a privately-owned biotech out of Oxford University with a therapeutic focus on neurodegenerative disease. The company has discovered a novel 14 amino acid bioactive peptide (T14) derived from the C terminus of AChE. T14 is neurotoxic in the adult brain and published data shows it to be a potential key driver of neurodegeneration.

This new distinct mechanism is being exploited by Neuro-Bio to discover oral drugs to treat Alzheimer’s disease. T14 can also be measured in blood and Neuro-Bio is developing this biomarker as a companion diagnostic.

The company is developing its pipeline of potential therapeutic drugs using the linear peptide variants as templates to design small molecules that will access the brain and for the first time stabilize cell loss by inhibiting the excitotoxic effect of T14 and hence eventually treat this debilitating disease effectively.
Neuro Device Group S.A. is one of the world's leading players shaping the development of neuroscience. We create pioneering technological solutions, while at the same time, many of those that already exist, we improve and discover their new applications in terms of diagnostics and therapy of nervous system disorders. We are currently conducting advanced work on prototypes of several solutions that have the chance to change the quality of life of people suffering from serious neurological disorders. Among them is the device supporting the rehabilitation of speech disorders (aphasia), which was awarded the first prize in the Polish edition of the global Chivas The Venture competition.
Neurogene is accelerating the development of new genetic medicines to improve the lives of neurologically impaired and developmentally delayed children and their families. Our most advanced programs have a strong body of preclinical proof-of-concept data generated by our academic collaborators, a team of passionate and committed experts in adeno-associated virus (AAV) vector design and CNS delivery, neurology, neuroimmunology, and neurodevelopment.

As industry enthusiasm for gene therapy grows across the medical landscape, a key challenge of developing our gene therapy medicines is the increasing manufacturing capacity constraints, leading to high costs and long wait times for products from contract manufacturers. At Neurogene, we are partnering with academic institutions to produce our initial product candidates. We are also beginning to build out our own capabilities in order to develop internal expertise in these highly specialized programs and to better control costs and timelines.
Neurogenx Treatment safely uses cutting-edge, patented, high-frequency electronic waves to gently reach deep down through muscle and tissue to relieve neuropathy symptoms and severe neuromuscular pain. Neurogenx technology is FDA-cleared and clinically-proven as an effective treatment for nerve pain in the feet, legs, hands, and arms.

The Neurogenx 4000Pro is a cutting-edge electromedical treatment tool that is patented as the only device of its kind. It generates a sophisticated electronic signal with a wide frequency band to safely treat the pain, tingling, burning and numbness that are the hallmark symptoms of neuropathy and chronic nerve conditions. Neurogenx is a conservative standalone treatment that does not require surgery or narcotics.

NeurogesX

Country: United States
Founded date: 1998
Number of Employees: 11-50
Total Funding Amount: $135.4M
Category: Neuromodulation

Stephen Ghiglieri
CFO, COO & Executive President

Country:
United States
Founded date:
1998
Number of Employees:
11-50
Total Funding Amount:
$135.4M
Category:
Neuromodulation

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NeuroInitiative is utilizing cutting edge computing and simulation technology to improve the cost, timeline, and accuracy of therapeutic drug discovery.

NeuroInitiative is creating a computer simulation software for scientists to observe and manipulate molecular interactions that occur inside brain cells. This empowers researchers to perform virtual experiments before going into the laboratory, reducing the timeline and cost and increasing the likelihood of successful therapeutic drugs.

Building on the wealth of scientific knowledge accumulated in recent years, NeuroInitiative brings this data to life with biologically accurate simulations, rich 3D visualizations, and the ability to interact directly with the molecules in the system. Recent advances in computing technology will allow for highly parallel processes that can accurately determine and simulate the millions of interactions of molecules within the neuron. The focus and immediate impact of this software are that researchers can unravel therapeutic targets and shorten research timelines.
Neurolens

Country: United States
Founded date: 2012
Number of Employees: 11-50
Total Funding Amount: $20.2M
Category: Neurofeedback

Inspired by a discovery linking optometry and neurology, neurolenses are the first and only prescription lenses that add a contoured prism to bring the eyes into alignment, relieving stress on the trigeminal nerve. This nerve is the most complex nerve connected to the brain, and when stimulated causes many of the symptoms people experience when using devices, reading or doing near work.

Contoured prism has been shown in studies to relieve the headaches, neck/shoulder pain and eyestrain that many patients experience when using digital devices, reading or doing detail work. Ninety-three percent of patients prescribed neurolenses found symptom relief.
NeuroLutions

Country: United States  
Founded date: 2007  
Number of Employees: 11-50  
Total Funding Amount: $1.3M  
Category: Neural prostheses & simulators

NeuroLutions is developing a brain-computer interface to control a computer with thoughts. The Company offers an implantable brain mesh that allows severely disabled patients to activate prosthetics or mobility devices such as wheelchairs through thought alone. 795,000 people suffer a stroke every year in the United States.

NeuroLutions has developed a robotic exoskeleton they call IpsiHand. The use of the IpsiHand causes the brain to send signals to the limb immobilized by a stroke. This continuous firing of brain signals eventually establishes new synaptic connections restoring function to the affected side of the body.
Neuromore closes the gap between the scientific disciplines. We use biosensors like EEG, heart rate monitors and galvanic skin response to help find meaningful metrics for determining human emotions. Our software provides easy access to bio-sensed data and offers all tools for the journey from raw data to meaningful feedback metrics.

Neuromore Studio has fully customizable signal processing pipelines and state of the art algorithms for data classification and feature extraction. Our data flow modeling editor will make it easy to find, tweak and debug the custom feedback metrics you want.

Define your own neurofeedback metrics using intuitive data flow modeling or use one of our presets. Neuromore Studio is a cross-platform and real-time bio data acquisition, analysis and visualization tool.
Neuronetics, Inc. is focused on designing, developing, and marketing products that improve the quality of life for patients who suffer from psychiatric disorders.

Severe depression is a serious illness that affects approximately 350 million people worldwide. While medications may help manage symptoms of depression, many patients are not satisfied with the results they get from standard drug therapy due to lack of efficacy or intolerable side effects. NeuroStar TMS Therapy® is a proven, non-drug treatment for major depression that is bringing new hope to patients every day.

NeuroStar TMS Therapy is a safe and effective treatment for patients with depression who have not benefited from antidepressant medications. This novel treatment approach to achieving remission works through transcranial magnetic stimulation (TMS), in which highly focused magnetic pulses stimulate the areas of the brain that are underactive in patients with depression.
NeuroPace was founded to design, develop, manufacture and market implantable devices for the treatment of neurological disorders with responsive stimulation. The company's initial focus is the treatment of epilepsy, a debilitating neurological disorder affecting approximately 1% of the population worldwide.

The RNS® System is an award-winning technology developed and manufactured in Silicon Valley that has been recognized for its innovation. Similar to a pacemaker that monitors and responds to heart rhythms, the RNS System is the world's first and only medical device that can monitor and respond to brain activity.

In addition to treating epilepsy, responsive neurostimulation holds the promise of treating several other disabling medical disorders that impact the quality of life for millions of patients around the world.
NEUROPHET was established by computational neuroscientists specialized in the electrical brain stimulation. It is a brain disease diagnostics company. The company provides technology that automatically segments brain magnetic resonance (MR) images.

The company aims to develop technologies in the field of neuroscience and apply them to actual medical fields. NEUROPHET tES LAB is a simulation research software based on computational analysis for effective tDCS / tACS research and can be applied to any kind of tES device. With the help of this, your time and efforts can be largely saved in tDCS/tACS effect analysis and research.
NeupsyAI supports clinicians for a more timely and confident diagnosis. By applying artificial intelligence to brain scan data (in specific, magnetic resonance imaging), NeuroPsyCAD is able to recognize disease ‘signatures’ in a new patient’s brain scan.

Medical signals and images (such as electroencephalography - EEG, magnetic resonance imaging - MRI, and positron emission tomography - PET) from patients are processed using our proprietary software engine and are statistically compared with large databases of patients and healthy subjects data using artificial intelligence (AI) algorithms in order to derive a risk probability of a particular patient having or developing a particular neuropsychiatric disorder (e.g. Alzheimer's Disease, Parkinson's Disease, Schizophrenia, Autism).

NeuroPsyCAD’s analysis pipeline is automated, with a report being produced in a few hours since we receive the patient’s data. Given the high sensitivity and specificity of our approach, subtle changes in brain structure and function can be detected early and accurately at the disease onset, enabling clinicians to diagnose and, thus, treat patients earlier and with more confidence. We aim to replace the so far relatively subjective and metrics-independent practice of psychiatry and neurology with a more quantified, objective, accurate and personalize one.
NeuroTech Analytics

Neuros Medical is focused on the development of proprietary therapies for unmet needs to patients worldwide. The Company's patented platform technology, High-Frequency Nerve Block, is focused on the treatment of chronic post-amputation pain (Phantom Limb Pain and Residual Limb Pain).

Chronic pain is characterized as pain lasting more than 3 months in duration. Post-amputation pain includes phantom limb, residual limb and neuroma pain. There are nearly two million amputees in the U.S. with 185,000 new amputations occurring every year.

Neuros Medical technology, created by Drs. Kevin Kilgore and Niloy Bhadra of Case Western Reserve University's Department of Biomedical Engineering and MetroHealth Medical Center delivers a high-frequency electrical signal to sensory nerves in the peripheral nervous system to block the pain signal. The system consists of an electrode (also known as a lead) placed around a peripheral nerve and an implantable pulse generator (IPG).

Country: United States  
Founded date: 2008  
Number of Employees: 11-50  
Total Funding Amount: $37.4M  
Category: Neuromodulation
NeuroScouting

Country: United States  
Founded date: 2007  
Number of Employees: 11-50  
Total Funding Amount: n/a  
Category: Neuromonitoring / Imaging

NeuroScouting is led by neuroscientists Dr. Wesley Clapp and Dr. Brian Miller. Their passion for sports and healthcare along with deep knowledge of neurological systems influenced their research into the brain and technologies that could interface to improve performance in the day to day lives of its users.

Over the last decade, NeuroScouting has collected, analyzed, and cataloged comprehensive neural metrics from tens of thousands of professional athletes. The team has been awarded multiple NIH grants to develop software technologies that are non-pharmacological interventions for patients with Attention Deficit Hyperactivity Disorder (ADHD) and patients recovering from mild traumatic brain injury (e.g. concussion).
NeuroSky's mission is to make innovative biosensor technologies available on a mass-market scale. Our leadership in electroencephalogram (EEG) biosensors has produced hundreds of breakthroughs in consumer-level brainwave monitoring. And recent advances in our electrocardiogram (ECG) biosensors and biometric algorithms are now enabling OEMs, ODMs, and service providers to develop solutions that can monitor and analyze a vast array of cardio bio-signals previously not available in consumer wearables.

NeuroSky partners with organizations that are building next-generation wearable, and mobile products. Our partners choose us for our leading technologies, innovative product reference platforms, and our suite of tools that enable fast time to market.

The MindWave Mobile headset turns your computer into a brain activity monitor. The headset safely measures brainwave signals and monitors the attention levels of individuals as they interact with a variety of different apps. This headset is useful for OEMs and developers building apps for health and wellness, education and entertainment.
NeuroTech International is focused on developing neuro-stimulation and neuro-diagnostic solutions. NeuroTech's primary mission is to improve the lives of people with neurological conditions, with a vision of becoming the global leader in home-use and clinical neurotechnology solutions that are both accessible and affordable. Through flagship device Mente and its associated platform, NeuroTech is focused on the development and commercialization of technological solutions for the screening and treatment of symptoms associated with conditions such as autism.

Mente is a soft, easy to use and portable headband that was developed as an autism spectrum disorder treatment to help ASD children better self-regulate. The device is being used as an autism treatment by ASD children in more than 15 countries worldwide.
NeuroTechnia is a company focusing on the improvement of wellbeing using sound and light technologies.

NeuroTechnia is the developer of Sonic Drops, a rest acceleration pod that uses sound, vibration, and light technologies to deliver a full-body experience to help the user feel well-rested in just 20 minutes.

**Country:** Chile  
**Founded date:** 2017  
**Number of Employees:** 1-10  
**Total Funding Amount:** $40K  
**Category:** Neurofeedback
Neurotrack is building the cognitive health platform of the future, giving people direct access to tools and technology to assess, strengthen, and monitor their cognitive health. The company was co-founded in 2012 by Elli Kaplan, and leading neuroscientists and researchers Stuart Zola, Ph.D., Elizabeth Buffalo, Ph.D., and Cecelia Manzanares.

Brain health may not be something we think about as frequently as our physical health, but Neurotrack wants to change that. We believe in the importance of monitoring your cognitive health regularly. You can keep your mind active and make the right changes today to keep memories intact tomorrow.

Neurotrack has the only digital platform that combines scientifically-validated cognitive assessments with a personalized cognitive health intervention program. Measure your cognition with our clinically-validated assessments and make impactful changes on your brain through our cognitive health program. We deliver all of this to you through our comprehensive digital platform. All you need is a mobile device.
NeuroVigil

Country: United States  
Founded date: 2007  
Number of Employees: 1-10  
Total Funding Amount: n/a  
Category: Neuropharmacology

NeuroVigil enables pharmaceutical companies to use EEG recordings to analyze drug efficacy and screen for biomarker data indicating neuropathologies.

Many drugs are known to affect sleep even though they may initially have been developed for other purposes. For example, antidepressants, the most prescribed drugs in the U.S., are known to profoundly affect the latency and duration of REM sleep. A focus of NeuroVigil's clinical program is to assist drug companies in isolating hidden drug-induced contamination of brain activity before these drugs are commercialized.

NeuroVigil's technological advance dramatically improves the quality and lowers the costs of sleep testing. Our technology not only automates current manual tasks but also more than quadruples the amount of useful information obtained from current EEG data, which leads to neural signatures or correlates of important disease states, that are useful in early detection and diagnosis of important medical conditions.
NeuroVision Imaging

Country: United States  
Founded date: 2010  
Number of Employees: 51-100  
Total Funding Amount: $21.2M  
Category: Neuromonitoring / Imaging

NeuroVision is a leader in imaging equipment that provides early detection of Alzheimer’s Disease markers. NeuroVision Imaging is focused on delivering a novel and breakthrough measurement of retinal autofluorescence.

The company is developing a low-cost, noninvasive eye imaging system for measuring retinal autofluorescence that can detect amyloid-beta (Aβ) plaque in the eye. Aβ plaque deposits in the brain are a hallmark sign of Alzheimer’s disease, and histological evidence shows that Aβ plaque also accumulates in the retina, the photoreceptor, and nerve complex at the rear of the eye.

NeuroVision’s groundbreaking technology provides for the important possibility of detecting neurodegenerative diseases earlier through the discovery of symptoms in the eyes. In the end, this is about leading to better health outcomes and more coordinated patient care.
Nevro has developed HF10™ therapy, an innovative, evidence-based non-pharmacologic neuromodulation platform for the treatment of chronic pain. Many patients spend years in painful trial and error with treatments that seek a single way to manage their chronic pain. But chronic pain is unique to each individual. That's why treatment needs to be tailored to the needs and circumstances of each patient.

Spinal cord stimulation (SCS) works to relieve pain by delivering mild electrical pulses to the spinal cord to mask the transmission of abnormal pain signals traveling along the spinal cord to the brain. The pulses are delivered by small electrodes placed near the spinal cord that connects to a compact battery-powered generator, which is implanted under the skin.

HF10 therapy is the next-generation spinal cord stimulation device. It is just as safe as traditional systems, but also offers long-term relief for both back pain AND leg pain. It also has none of the driving or sleep restrictions typical of traditional SCS.

Country: United States
Founded date: 2006
Number of Employees: 51-100
Total Funding Amount: $355.8M
Category: Neuromodulation

Michael DeMane
President and CEO
Nexstim is using decades of scientific research to help treat depression without the use of drugs. People don't know what causes depression, but they are learning how to treat it. If antidepressants don't help, TMS might be the answer. A non-drug option, TMS only influences the brain and doesn't alter the rest of the body's chemistry. TMS used without image-based navigation simply estimates a spot for stimulation. Nexstim team believes it is important that TMS targets the right location in your brain – otherwise, you may not get the benefit you truly need.
NEXT is a social impact enterprise dedicated to enabling people to overcome life's biggest challenges: how to achieve and maintain a high level of performance, positivity, happiness, and fulfillment in our fast-paced modern world.

The NEXT System™ combines proven methodologies for enhancing personal performance with recent breakthroughs in neuroscience and neuroplasticity. By stimulating the brain's natural ability to adapt, the NEXT System enables any literate adult or young person to manage their feelings, thoughts, and behaviors in new ways that really work. We call this Self-Directed Neuroplasticity.

The NEXT System™ is a life training system. It trains you to self-direct your own neuroplasticity - to change the way your brain works - so you can feel, think, and perform better. It then guides you to remove brain-based barriers that keep you stuck in unproductive behaviors and prevent you from realizing your potential.
NextMind, France-based neurotechnology startup, unveiled a wearable device that can control any device using just a person's thoughts. Launched at Slush 2019, a conference of startups and investors in Helsinki, this groundbreaking technology is a first-of-its-kind, noninvasive, brain-computer interface that translates brain signals instantly from the user's visual cortex into digital commands for any device in real-time.

The round-shaped wearable device is small and light-weight. It can fit into the back of a cap or headband and rests gently on the user's head. Patented dry active electrodes provide high-quality signals. It captures data from the electrical signals created by the user's neuron activity in the visual cortex, and using machine learning algorithms, transforms that output into communication that enables easier interaction and control with a computer, AR/VR headset or any device within the Internet of Things.
NICO Corporation is an Indianapolis-based leader in modern interventional technologies used in a new way of performing less invasive brain surgery. It is an outcomes-based company dedicated to revolutionizing minimally invasive neurosurgery through a new approach using the natural folds of the brain as a path to the surgical site.

The approach respects the fiber tracts and critical structures of the brain by integrating a combination of standardized technologies to achieve non-disruptive access to the surgical site with BrainPath, automated tumor removal and clot evacuation with Myriad, and intraoperative collection and preservation of all tumor tissue.

The BrainPath's obturator has a minimally disruptive tip that is designed to minimize tissue damage by displacing tissues of the brain during advancement to the targeted abnormality. The sheath remains in the brain after the obturator is removed to serve as a protective portal for surgeons to easily maintain access to the surgical site.
Novoron Bioscience is a private biotech company developing novel therapeutic approaches to address disorders of the central nervous system. The company has made proprietary scientific discoveries in treatment of various pathologies of the central nervous system and is advancing a pipeline of biologic therapeutics for multiple sclerosis, spinal cord injury and glaucoma.

Novoron Bioscience was founded in 2013 to advance pioneering research on spinal cord nerve regeneration. The company's mission, however, has evolved to fully exploit the potential of its intellectual discoveries to develop novel therapeutic approaches for the treatment of multiple disorders of the central nervous system (CNS): multiple sclerosis (MS), spinal cord injury, glaucoma and stroke.

Our founders and scientific advisors are dedicated to understanding nerve regeneration to find new treatments for CNS disorders and diseases.
Nuralogix has developed patent-pending technology for detecting hidden emotions. We developed a technique called Transdermal Optical Imaging™ (TOI™) which utilizes a conventional video camera to extract facial blood flow information from the human face. Applying advanced machine learning algorithms and neuroscience we're able to use this information to model and detect hidden/invisible human emotions regardless of the presence or absence of facial expressions.

Nuralogix solutions allow doctors to monitor patients' health remotely, using just a simple webcam. There is no need for additional equipment since the software gathers all relevant information straight from the camera. Nuralogix's goal is to use Affective AI to improve the lives of people everywhere. We bring together neuroscience, psychology, physiology and Deep Learning to create the world's first Affective AI engine based on facial blood flow.

Nuralogix's product Anura™ can provide a plethora of health information, all in the palm of your hand, just in 30 seconds. Anura™ transforms your smartphone into your personal health AI.
NURO has developed NUOS, the Neural Operating System, which enables calibration-less instant communication and full-scale computing for millions of highly incapacitated patients by using brain signals.

The NUOS system is particularly designed for people who are paralyzed and unable to talk, a situation that can happen after a stroke. In the most extreme cases, patients suffer from “locked-in syndrome,” unable to move anything other than their eyes.

The new technology could help bring a small amount of control back to these patients. By monitoring live EEG signals from the prefrontal cortex, along with electrical signals from the eyes—and then using algorithms to recognize specific patterns in the combined data—the system is able to give a patient control over a user interface.
Nuvectra

Country: United States
Founded date: 2016
Number of Employees: 101-250
Total Funding Amount: $45M
Category: Neuromodulation

Nuvectra is a neurostimulation company committed to helping physicians improve the lives of people with chronic conditions. We are proud to introduce Algovita®, a new spinal cord stimulation system that features a broad set of capabilities to provide a powerful, yet simplified therapy delivery. The Algovita Spinal Cord Stimulation (SCS) System is our first commercial offering and is CE marked and FDA approved for the treatment of chronic pain of the trunk and/or limbs.

At Nuvectra, we know medical technology is complicated and can be difficult to use. Our commitment also includes developing products with intuitive designs and simplified features that make using our systems easier for clinicians and patients.

Although Nuvectra is new to the market, we were built from the more than 40 years of experience of Greatbatch, Inc., a leading supplier of critical technologies to the largest medical device companies in the world.
Obstructive Sleep Apnea (OSA) is the most common sleep disorder and it affects millions of patients worldwide. Not only does it prevent patients from having a restful night, but it is also strongly associated with multiple severe comorbidities.

The current gold standard therapy, known as Continuous Positive Airway Pressure (CPAP) can be uncomfortable and is poorly tolerated by some OSA patients. Up to 50% of OSA patients will abandon the treatment within the first year. Nyxoah is about to shift this paradigm with its disruptive technology.

This new approach first came to light in the early 2000s when it was discovered that the electrical stimulation of the tongue nerve has potential as an OSA treatment. The nerve can be triggered to contract the tongue and open the airway. The neurostimulation system developed by Nyxoah is very small, thus only requiring a minimally invasive procedure.
OccamzRazor is building the first-ever complete map of a disease — in this case, Parkinson's disease. It allows to understand how the disease works, identify biomarkers, develop new therapeutic targets and evaluate the effectiveness of treatments. With this map, we will be able to navigate the intricacies of the brain and reveal new hidden connections to find the quickest path to a cure.

Parkinson's disease is one of the most difficult problems of systems biology, one that will not be solved by a single target approach but requires understanding and fixing of the diseased brain as a whole. This complexity makes it the ideal target for artificial intelligence (AI). Together with the partners, OccamzRazor keeps pushing the boundaries of technology to give hope to millions of patients and their families and develop the first treatments to cure Parkinson's disease.
Oculogica proposes the proprietary, patented technology that transforms the way concussion is diagnosed. Founded by a neurosurgeon and research scientist, Oculogica® has developed the first FDA authorized non-invasive, baseline free, technology to aid in the diagnosis of concussion, also known as mild traumatic brain injury (mTBI). Oculogica is also conducting research with world-class medical institutions to bring personalized medicine to concussion diagnosis and treatment, and, ultimately, improve outcomes for the millions of people who annually suffer TBI and concussion.

With the EyeBOX device, testing is simple, requiring test subjects to place their head on a chin and forehead rest, and watch a video for less than four minutes. There are no literacy or language fluency requirements or even an ability to follow directions other than to watch TV.
OpenBCI stands for an open-source brain-computer interface (BCI). We provide anyone with a computer, the tools necessary to sample the electrical activity of their body. Our versatile and affordable biosensing systems can be used to sample electrical brain activity (EEG), muscle activity (EMG), heart rate (ECG), body movement, and much more. Our 3D-printable EEG headsets can be used to get research-grade EEG recordings.

OpenBCI specializes in creating low-cost, high-quality biosensing hardware for brain-computer interfacing. Our Arduino compatible biosensing boards provide high-resolution imaging and recording of EMG, ECG, and EEG signals. Our devices have been used by researchers, makers, and hobbyists in over 60+ countries as brain-computer interfaces to power machines and map brain activity.

We work to harness the power of the open-source movement to accelerate the ethical innovation of human-computer interface technologies.
P1vital conducts innovative clinical research to enable more efficient CNS treatment development, develop biomarkers, and build evidence-based digital solutions both for clinical research and mental healthcare.

P1vital® ePRO Clinical is an online system developed to prompt, curate, and securely store clinical study data, allowing the collection of high-quality data at the Investigator site and remotely. The flexibility of the system allows for the collection of clinician-reported and participant self-reported data using both questionnaires and behavioral tasks. In clinical studies we have had positive feedback from users about its ease of use, resulting in excellent engagement and high levels of compliance both for researchers and participants with mental health conditions. The P1vital® ePRO Clinical has been developed and validated to meet all regulatory requirements and is in compliance with GCP and Medical Device legislation.
Paradromics is developing an implantable chip that will record and stimulate electrical activity in the brain, allowing brains and computers to directly exchange data. It’s like a broadband modem for the brain and will enable a new industry built on advanced prostheses and bioelectronic therapeutic devices.

Conditions such as blindness, paralysis, and mental illness, which today are considered untreatable, will be reframed as data problems with technological solutions. Our first product will act as an assisted communication device, restoring fluent conversation to people with severe paralysis who have lost the ability to speak or type.
Pharnext is the pioneer of a new paradigm for the discovery of medicinal drugs: PLEOTHERAPY™. The R&D approach protected by Pharnext systemizes new uses of approved drugs. It is based on network pharmacology utilizing complex and extensive genomic data to identify the thousands of molecules possibly involved in a disease.

From this disease molecular network, Pharnext deduces synergistic combinations of drugs already approved but for unrelated indications. These novel therapeutics called PLEODRUG™ are then developed at new optimal doses and under new formulations.

PLEODRUG PXT864 generated encouraging Phase 2 data in Alzheimer’s disease. We also plan to develop the same agent in other orphan and common neurodegenerative diseases such as Parkinson’s disease and amyotrophic lateral sclerosis (ALS).
Pixium Vision

Country: France
Founded date: 2011
Number of Employees: 11-50
Total Funding Amount: $28.9M
Category: Neural prostheses & simulators

Pixium Vision harnesses rapid advances in visual processing, microelectronics, optoelectronics, neurobiology, and intelligent software algorithms to develop Bionic Vision Systems utilizing its competencies in machine brain interface and artificial intelligence. These Bionic Vision Systems are aimed at compensating for profound vision loss and improving independence, mobility, and quality of life for patients suffering from retinal degenerative diseases.

The PRIMA System is intended to partially replace the normal physiological function of the eye’s photoreceptor cells by electrically stimulating the nerve cells of the inner retina, which then transmit the visual information to the brain via the optic nerve. The PRIMA System aims to elicit functional artificial, or bionic, vision in the form of light perception replacing partially the natural central vision loss.
ProMIS Neurosciences

ProMIS Neurosciences, Inc. is a development-stage biotechnology company focused on discovering and developing antibody therapeutics selectively targeting toxic oligomers implicated in the development and progression of neurodegenerative diseases, in particular, Alzheimer's disease (AD), amyotrophic lateral sclerosis (ALS) and Parkinson's disease (PD). The Company's proprietary target discovery platform is based on the use of two complementary thermodynamic, computational discovery engines – ProMIS and Collective Coordinates – to predict novel targets known as Disease Specific Epitopes on the molecular surface of misfolded proteins. Using this unique precision approach, the Company is developing novel antibody therapeutics for AD, ALS, and PD.

PMN310 is a next-generation drug candidate that offers more precise selectivity for AβOs, which is expected to provide greater clinical benefit and safety. Created using a novel drug discovery and development platform that can uniquely and precisely target the toxic forms of the otherwise normal protein, PMN3110 demonstrates a high degree of binding to toxic oligomers without binding to nontoxic forms of amyloid-beta.

Country: Canada
Founded date: 2004
Number of Employees: 11-50
Total Funding Amount: $8.1M
Category: Neuropharmacology
Psylaris

Country: The Netherlands  
Founded date: 2017  
Number of Employees: 1-10  
Total Funding Amount: n/a  
Category: Neuromonitoring / Imaging

The technologies are integrated into almost every aspect of our lives, be it ordering food, commuting or healthcare. However, we are yet to observe any major breakthroughs using tech in the field of mental health care. Psylaris is a startup based out of Maastricht, which aims to change that by infusing the mental healthcare sector with the latest technology on offer.

Psylaris’ services and products make use of Virtual Reality (VR) to enable therapists to treat patients in a more convenient and safer manner. EMDR-VR is the e-health tool for offering a more intensive EMDR process. By supplementing contact moments with the practitioner with independent sessions in virtual reality, a blended care mix is created that offers the best of both worlds. Psylaris is available as an application on the Oculus Go VR headset and it currently features the Eye Movement Desensitization and Reprocessing (EMDR) form of therapy. This treatment is one of the prevalent forms of therapy that’s used when treating patients with trauma or bad memories.

Mike Verhiel  
CEO
Q30 Innovations is a research and development company dedicated to finding innovative head safety solutions. Q30 partners with leading independent science and medical institutions to design cutting edge products that will protect athletes, soldiers, and industrial workers. Traumatic brain injury is the single largest issue plaguing the sports world today. The Centers for Disease Control and Prevention estimates 3.8 million sports concussions annually in the United States alone. Concussions represent 15% of all sports-related injuries reported to high school trainers.

Q30 technology aims to reduce the ability of the brain to slosh/move inside the skull during rapid acceleration and deceleration. Our technology is intended to do what a helmet can not—it protects the brain from inside the skull—without any impact on safety, comfort or performance.

The Q-Collar is the world’s first technology to use the body’s natural physiology that may protect against mild traumatic brain injury caused by head impacts. A revolutionary approach to protecting the brain, the Q-Collar seeks to address the problem from the inside out by mimicking the body’s natural defense.
QMENTA is an advanced medical image storage, processing and visualization company focused on brain data analysis, specifically using MRI and related clinical data. We provide state-of-the-art medical image processing algorithms in a seamless way in order to accelerate the development of new therapies for neurological diseases via scalable and collaborative cloud platform.

QMENTA streamlines the standardization, collection, and storage elements of multi-center imaging, taking on responsibilities that are typically the job of MRI technicians and sponsors. QMENTA has reduced the costs of MR imaging collection and storage in the trial by approximately 50% and has reduced site burden by an estimated 75%.

QMENTA AI Reader offers reliable and robust tools for diagnostics, prognosis, monitoring and decision support for experts and clinicians, freeing up their time by automating manual tasks and extracting valuable information from the unprocessed images to facilitate decision-making.
Reha Technology AG, a Swiss company in the medical devices industry, designs, manufactures and distributes robotic-assisted gait therapy systems in the field of neurological rehabilitation.

Robotic-assisted gait therapy is an effective method in the rehabilitation of neurological and orthopedic patients. The use of gait trainers in clinics and practices has significantly increased the economy and efficiency of gait rehabilitation, eased the physical workload of therapists and helped patients to begin walking independently in a more effective and targeted way.
Relievant Medsystems is a privately held medical device company with headquarters in Minneapolis, MN. Based on two decades of research, we developed the Intracept Procedure — a minimally invasive procedure that targets the basivertebral nerve for the relief of chronic vertebrogenic low back pain.

After a successful Pilot Study,1 we sponsored the SMART Trial — the medical device industry’s first successful large-scale Level I, randomized sham-controlled trial for chronic vertebrogenic low back pain. Relievant then sponsored the INTRACEPT Study — a Level I, a prospective, randomized clinical study comparing the Intracept Procedure to conservative care for patients with chronic vertebrogenic low back pain.

The INTRACEPT Study was initiated in September 2017 and concluded enrollment early in January 2019 due to the highly significant treatment effect of the Intracept Procedure compared to non-surgical management.
Respicardia is a leader in innovative technologies that address the unmet needs in respiratory and cardiovascular disease with safe and effective therapies. Founded in 2006 and headquartered near Minneapolis, Minnesota, Respicardia is dedicated to improving patient outcomes, quality of life and overall cardiovascular health via novel transvenous neurostimulation therapies.

The remedē® System is a safe and effective treatment for moderate to severe central sleep apnea in adult patients. It offers improved patient satisfaction and overall better quality of life.

The remedē System is an implantable system that stimulates a nerve in the chest (phrenic nerve) to send signals to the large muscle that controls breathing (the diaphragm). These signals stimulate breathing in the same way that the brain signals breathing.

The remedē System is placed during a minimally invasive outpatient procedure by a cardiologist. The system is a battery-powered device placed under the skin in the upper chest area with two small thin wires (leads), one to deliver the therapy (stimulation lead) and one to sense breathing (sensing lead).
ReWalk Robotics is an innovative medical device company that designs, develops and commercializes powered solutions that provide gait training and mobility for individuals with lower limb disabilities. We currently offer solutions for stroke rehabilitation and spinal cord injury:

ReStore™ is a powered, lightweight, wearable soft exo-suit for use in the rehabilitation of individuals with lower limb disabilities due to stroke. ReStore is a versatile and efficient gait training solution that provides both dorsiflexion and plantarflexion assistance to facilitate functional gait training.

ReWalk™ systems enable the device user to sit, stand, walk, turn and have the ability to climb and descend stairs*. ReWalk users are able to independently operate the systems.

ReWalk received FDA clearance to market in 2014. It was the first exoskeleton in the United States to earn this clearance. CE and additional regulatory approvals exist in select geographies.
Rex Bionics designed and developed the REX robotic exoskeleton, the world's first hands-free, a self-supporting robotic exoskeleton. Patients are able to stand and walk without crutches and with minimal effort, giving them an unprecedented sense of freedom whilst undertaking robot-assisted physiotherapy and weight-bearing exercise.

REX is designed for rehabilitation centers and hospitals and can be quickly adjusted to fit multiple users, it is used for robot-assisted physiotherapy and can be used by a wide range of people with mobility impairments. REX P is custom-fitted to one user and can be used either in the home or at work. REX offers a wide range of exercises specifically designed for patients with mobility impairments and provides patients with safe and effective movements.
Saluda Medical is a global medical device company focused on patient outcomes, science, and engineering to transform the neuromodulation industry with a platform of closed-loop technologies based on the Evoked Compound Action Potential (ECAP).

Saluda's first device, Evoke®, is designed to be the first ECAP-Controlled Closed-Loop Spinal Cord Stimulation (SCS) System.

Essentially, Evoke is designed to listen to the spinal cord, compare the spinal cord response to the target level chosen by the patient, and adjust stimulation in real time to provide the optimum dose. We believe this is the first step for the field of neuromodulation to move toward an interactive, mechanism-based, individualized therapy founded on an objective outcome measure.
SAGE Therapeutics

Country: United States
Founded date: 2010
Number of Employees: 501-1000
Total Funding Amount: $438M
Category: Neuropharmacology

SAGE Therapeutics is dedicated to the health and wellbeing of patients with central nervous system (CNS) disorders. Their mission is to discover, develop and deliver novel medicines for many of today's most debilitating and disabling CNS disorders by leveraging compelling science, a robust clinical foundation, strong partnerships, and a world-class team of founders, advisors, investors, scientists, and managers.

SAGE's lead program, SAGE-547, is in clinical development for super refractory status epilepticus and is the first of many compounds the company is developing in its portfolio of potential seizure medicines. In addition to status epilepticus, the company's initial pipeline includes programs in neuroanesthesia and orphan genetic CNS disorders where currently available therapies poorly address the areas of most urgent patient needs and may also be accompanied by considerable side effects.

In May 2019 Sage Therapeutics Announces FDA Approval of ZULRESSO™ (brexanolone) Injection, the First and Only Treatment Specifically Indicated for Postpartum Depression Approval based on results from three pivotal trials showing treatment with ZULRESSO provided significant and rapid reduction of depressive symptoms.
The Sana device combines an intervention lasting 16 minutes with proprietary algorithms that restore balance in the brain and induce a therapeutic "flow state".

The Sana Sleep Mask is comprised of a mask with earbuds. The device is worn over the eyes (earbuds in ears) when the user is ready for bed and pulses specific algorithms of light and sound to effect neuromodulation, which is tailored to each individual by a skin contact heart rate variability (HRV) sensor built into the forehead area that measures HRV throughout its use.

The HRV information allows the system to determine when a patient becomes more relaxed, and thus adjusts the algorithm to ensure that the patient remains in, or transitions to, the next section. This feedback loop, therefore, treats each patient according to their state of relaxation, efficiently placing them in a progressively more relaxed state, resulting in sleep. The device can be used temporarily when relaxing and falling asleep or worn throughout the night.
Second Sight is the recognized global leader in neuromodulation devices to treat blindness, the company leverages its 20 years of technology innovation to develop devices to treat the broadest population of sight-impaired individuals. Second Sight has researched, designed and created the world's first FDA and CE Mark approved device for providing artificial vision in people with late-stage RP.

The company is actively developing a cortical stimulation device that bypasses the diseased eye and has the potential to provide a new form of vision to individuals blinded due to a wide range of causes.

In 2011, Second Sight achieved the first-ever regulatory approval for technology able to restore useful vision to people with retinitis pigmentosa. FDA approval followed in 2013.

**Country:** United States  
**Founded date:** 1998  
**Number of Employees:** 51-100  
**Total Funding Amount:** $51.4M  
**Category:** Neural prostheses & simulators
SensArs is a world-pioneering company delivering unique solutions in neuroprosthetic technologies. The company's mission is to improve the life of amputees and people with damages to the peripheral nerves.

Amputees cannot control the prosthesis without having to continuously stare at it. This causes mental and body fatigue. Because of these limitations, users often stop using the device.

SENSY is a unique device worldwide, which allows amputees, unlike currently available prostheses, to feel again from missing limbs. It is a neuroprosthetic device, which will be implanted within the residual nerves (in amputees), or healthy part of the nerves (in the case of neuro-damaged subjects), restoring the natural-like flow of the neural sensory information. It will enable subjects to feel natural and complete sensations from the missing or non-functional limb.
Sense Neuro Diagnostics’ aim is to aid medical personnel and support them in their effort to detect, monitor, and manage brain conditions in real-time. We strive to improve patient outcomes and increase the efficiency of care through our cutting-edge Sense technology.

We're building a future where SENSE technology can complement subjective methods of assessment and monitor physical brain conditions in real-time. We're making real-time brain monitoring a reality in the field, as well as in the hospital.

Supporting hospitals in managing and monitoring admitted patients. Real-time brain monitoring is a critical need that's currently not being met. And that's why we're here.
Sensum builds empathy AI algorithms that turn human data into emotion, physiology & behavior insights. With real-time, unified modeling of human states, our customers are building products & experiences that are more personal, responsive and more human.
The Sleep Shepherd Blue is a sleep aid and tracker that people use to monitor their sleep - no matter if they tend to have a good sleep or not. The purpose of this device is to lull people to sleep while recording their brain activity - but also to wake them up when they are required to.

The most accurate and reputable way to measure sleep is by measuring your brain rate. When you first go to bed, your brain rate is ~50 Hz. In order to fall asleep, your brain rate needs to drop to ~10 Hz. Simply put, the Sleep Shepherd utilizes EEG Sleep Monitoring and Specialized Binaural Beats to slow your brain rate from an awake state to a sleeping state.

The Sleep Shepherd contains innovative fabric EEG sensors in combination with brainwave filtering technology developed by NeuroSky – the industry leader in commercial EEG sensing technology.
NuCalm is a revolutionary technology proven to remediate chronic stress at the midbrain level. NuCalm is clinically proven to naturally relax the brain and body within minutes, without drugs.

NuCalm works specifically on the body’s inhibitory system, the GABAergic system. This device is bio-mimetic in that it resets the naturally occurring negative feedback loop of the hypothalamic-pituitary-adrenal (HPA) axis, which when properly functioning is supposed to shut off and stop releasing cortisol from the adrenal glands after the end of a stressful event. NuCalm is comprised of three discrete steps that work together to entrain brainwaves to the frequency of the first stages of sleep and create parasympathetic nervous system dominance. People in this state are physically unable to have an anxious response. Within moments of application, users will begin to feel relief from the ‘fight-or-flight’ sympathetic nervous system response and their stress hormone (cortisol) levels will begin to decline as the HPA axis is inhibited.
NeuroTech Analytics

1 out of 5 people in the world has sleeping problems. At this moment, many people rely on addictive sleep medication that has many side-effects. Somnox is on a mission to change that. When spooning the Sleep Robot during the night you will be soothed to sleep by the following functions, tickling the senses to relax body and mind.

The Somnox sleep robot automatically adapts to your personal breathing rate and gradually lowers this rate, bringing your body in relaxation mode. Sounds Dream away with Somnox’ bedtime sounds like guided meditation, lullabies, audiobooks or white noise.

Feeling a breathing rhythm subconsciously influences your own breathing rhythm. If you hold the Somnox Sleep Robot, you will automatically synchronize your breathing to that of the sleep robot. Making it very easy to reach a meditative state of mind that makes you drift off right away. By synchronizing your breathing rhythm to that of the Sleep Robot, you will reach a steady and slower breathing rhythm. This deep breathing is one of the best ways to lower stress in your body because it will send a message to your brain with the command to relax your body.

Somnox

Country: The Netherlands
Founded date: 2016
Number of Employees: 1-10
Total Funding Amount: n/a
Category: Neurofeedback

Stijn Antonisse
Founder and CTO

The Netherlands
2016
1-10
n/a
Neurofeedback
Soterix Medical

Country: United States
Founded date: 2010
Number of Employees: 11-50
Total Funding Amount: $2.5M
Category: Neuromodulation

Soterix Medical is the world leader in non-invasive neuromodulation and brain stimulation technology. Researchers and clinicians choose Soterix Medical devices and accessories where the highest standards in performance are required.

Soterix Medical was founded to support the science of non-invasive electrical stimulation. Our stimulation systems are the only technology designed and optimized for advanced and reliable neuromodulation. From exclusive High-Definition systems, Neurotargeting planning software, to the incredibly adaptable 1x1 platform, researchers choose Soterix Medical when stimulation quality cannot be compromised.

Soterix Medical products are stand-out for their usability, unique features, and precision. Leveraging the most advanced scientific understanding, Soterix Medical technology is at the forefront of neuromodulation clinical trials for the treatment of neuropsychiatric disorders and rehabilitation.
SPR Therapeutics is committed to improving the lives of people living with pain. We believe our PNS platform is poised to become the standard of care and the treatment of choice for managing many types of pain. Our company is led by a world-class team of scientists, physicians, and business professionals, all of whom have experience bringing innovative neurostimulation products to market.

SPR Therapeutics helps patients with pain return to a more active lifestyle without opioids, tissue destruction or permanent implants.

Pain is hard. It compromises sleep, work, and mobility. Treating pain can be just as difficult, especially if you want to avoid opioids and permanent implants—until now. The SPRINT® PNS System is a 60-day implant specifically designed to deliver significantly and sustained pain relief.

The SPRINT PNS System has been studied extensively across a wide spectrum of potential uses including low back pain, shoulder pain, and chronic pain. SPRINT is the first and only percutaneous peripheral nerve stimulation system that is FDA-cleared to treat both chronic and acute pain.
Starlab Neuroscience Research aims to be a world leader in applied neuroscience. Through fundamental and applied research we explore new technologies and techniques in wireless neuromonitoring and neuromodulation with the potential for real world impact as products and services.

Our technology products are being commercialized Neuroelectrics, a creative, high-tech company offering the best in class non-invasive and high definition electrical brain stimulation technology for personalized neuromodulation. By measuring and modifying brain function, we aim to restore brain health, minimize disabilities and create a better life for patients.

Welcome to the next generation of precise recording EEG devices with 8, 20 and 32 channels and an intuitive user interface for real-time visualization of high-resolution EEG data. Enobio is CE medically certified in Europe and FDA-cleared in the US.
Stimwave Technologies Incorporated is a privately held medical device company engaged in the development, manufacture, and commercialization of wirelessly powered, injectable, microtechnology neurostimulators, providing patients with a convenient, safe, minimally invasive, and highly cost-effective pain management solution that is easily incorporated into their daily lives.

Stimwave’s goal is to evolve its patented, cutting-edge platform into the default for neuromodulation, increasing the accessibility for patients worldwide while lowering the economic impact of pain management.

Stimwave Freedom Stimulators provide a safe approach to neuromodulation therapy, reducing the risks associated with Implantable Pulse Generators (IPGs) that contain lithium-ion batteries. IPGs require replacement of batteries that deplete, fail, or worse—can cause significant risk to the patient 1,2,3. Freedom Stimulators are the world’s smallest neurostimulators and are conditional for full-body MRI.
Synaptive Medical Inc., a Toronto-based medical device and technology company, designs hardware and software technologies that cross traditional barriers in hospitals and improve patient care in and beyond the operating room. Synaptive’s Modus V™ and integrated BrightMatter™ solutions—including surgical planning, navigation and visualization, and an informatics platform—give leading clinicians and healthcare systems the information they need to ensure the best possible outcomes for patients.

Synaptive Medical collaborates with top neurosurgeons, radiologists, and healthcare facilities to innovate and integrate these technologies in a way that is cost-effective, clinically relevant, and aims to improve patient care.

From informatics to automated surgical positioning systems and imaging, Synaptive Medical provides the tools needed to focus on what matters.
Synchron is a company developing minimally-invasive technology for safe and rapid implantation of miniaturized electronic medical devices with broadband capability.

Over the last decade, significant advances in brain-machine interfaces have demonstrated that people with paralysis can control assistive technology such as computers, wheelchairs and bionic arms with their minds. However, due to the invasive surgery required to access the brain and implant electrodes, to date, no device has received commercial US FDA approval. But there is hope. Synchron has developed a minimally invasive brain-machine interface that can access the brain using cortical vessels which mitigates the risks associated with open brain surgery.

Stentrode device avoids open brain surgery and scarring because it is inserted using a stent through a vein in the back of the neck. Once in position next to the motor cortex, the stent splays out to embed 16 metal electrodes into the blood vessel walls from which neuronal activity can be recorded.

Country: United States
Founded date: 2016
Number of Employees: 1-10
Total Funding Amount: $10M
Category: Brain-computer interfaces
SyncThink is a neuro-technology company with foundational intellectual property in eye-tracking metrics and devices. The company was founded by Dr. Jam Ghajar, a clinical professor of neurosurgery at Stanford and founder and director of its Concussion and Brain Performance Center. He is also the founder of the Brain Trauma Foundation.

The SyncThink platform is an eye-tracking system that can assess brain health and improve visual performance. The technology is imperative to quantitate changes in the saccades and monitoring or screening concussions as well as provides a fast and accurate assessment of cognitive functions.

Eye-Sync works by having a person wear virtual reality headgear over the eyes. The viewer sees a point of light that rotates clockwise in a circle. The technology tracks how accurately the eyes follow the light. It then produces a chart that can tell doctors whether the person's eyes were off track while following the light, indicating synchronization problems between the eyes and the brain. The company owns 10 patents and has tested 5,000 troops and 5,000 elementary, middle school and college athletes in the Bay Area and the New York area.
NeuroTech Analytics

Syntermed

Country: United States
Founded date: 1999
Number of Employees: 51-100
Total Funding Amount: n/a
Category: Neuroinformatics

Syntermed is a company providing software solutions for diagnostic medical imaging used for the processing, quantitation, interpretation, and reporting of medical images for all medical modalities. Syntermed is a leading provider of nuclear imaging software. We establish alliances with developers, medical centers, and other medical software companies for the purpose of enhancing our product line and the services.

Syntermed software quantifies and delivers decision support for the analysis of SPECT or PET images of the brain. Emory Toolbox, now in its fourth generation, is one of the most widely applied methods of cardiac imaging, used in labs worldwide. Version 4.0 is distinguished by SmartScores™, the industry's first 510K approved image decision support system which automatically produces a natural language and structured report, as well as the industry's most comprehensive set of tools (Synctool™ and Adreview tools) for determining mortality risk and aid in the diagnosis of congestive heart failure.

Michael Lee
Chairman and CEO
Thync is a venture-backed startup that developed a non-invasive, neurostimulation technology that targets the autonomic nervous system. Our non-invasive, bioelectronic platform effectively targets autonomic nerve pathways important in a number of disease processes while providing superior safety relative to pharmaceutical interventions.

Thync’s technology uses proprietary algorithms to electrically stimulate specific cervical and thoracic spinal nerves. Stimulation of these nerves systemically modulates activity in the sympathetic nervous system and this approach has been validated through a number of peer-reviewed studies. The sympathetic nervous system is involved in the body’s stress response and also influences a number of immune processes. By modulating the sympathetic nervous system, Thync’s neuromodulation technology could be altering the immune response underlying the pathogenesis of psoriasis and potentially other autoimmune disorders.

Country: United States  
Founded date: 2011  
Number of Employees: 1-10  
Total Funding Amount: $13M  
Category: Neuromodulation
Tivic Health

Tivic Health is a bioelectronic therapeutics company, focused on empowering those with chronic conditions. The product delivers sinus pain relief to the 40-60 million Americans with allergic rhinitis (allergies to airborne allergens). This includes those suffering from seasonal allergies (dust, pollen, mold) and year-round allergies (pet dander, cleaning products, perfumes) to name a few.

ClearUP Sinus Pain Relief has been cleared by the FDA to be safe and effective for temporary relief of sinus pain from allergic rhinitis. It's not another nasal spray, prescription pill or invasive nasal flush. ClearUP’s state of the art technology emits low-level electrical stimulation called microcurrent to underlying sinus nerve fibers. Sinus sufferers and clinicians like ClearUP because it is 100% drug-free and has no chemical side effects. Just slowly glide ClearUP around your outer cheek, nose and brow bone for a quick five-minute treatment. Studies show that 74% experienced relief after one treatment that lasts up to six hours.

Country: United States  
Founded date: 2016  
Number of Employees: 11-50  
Total Funding Amount: $10.9M  
Category: Neuromodulation
Truust Neuroimaging offers an advanced imaging data analysis platform and premium services enabling significantly higher returns for investments made into EEG related work. This increased resolution provides for increased statistical power of related experiments. The solution utilizes pioneering technology developed in Near-Field Electromagnetic Holography analysis, providing for 10+x more accurate evaluation of brain wave activity.
United Neuroscience is a clinical-stage biotech company dedicated to the development of best-in-class therapies for the brain. We are pioneering a new class of medicine we call endobody vaccines based on our proprietary, commercially proven platform technologies to treat and prevent Alzheimer’s and other neurological disorders.

We envision a world where the incidence of Alzheimer’s is cut in half by 2050 and where neurodegenerative diseases are prophylactically eradicated from the world.

Our proprietary platform technologies have successfully commercialized over 3 billion doses to date in multiple indications and launched 1 of only a handful of licensed vaccines against an endogenous host protein in the world. We are not afraid to be brave and tackle the seemingly impossible. We are committed to transforming the lives of patients and families affected by Alzheimer’s, Parkinson’s, ALS and other neurological diseases.

Country: Ireland
Founded date: 2014
Number of Employees: 11-50
Total Funding Amount: n/a
Category: Neuropharmacology
Verge Genomics is a multi-disciplinary team pioneering a new approach to drug discovery. Verge was founded by a unique combination of the field's top machine learning experts and seasoned neuroscience drug developers.

In the past, most neuroscientists did not have the tools to disentangle the complex genetics of these diseases. Accelerating advances in human genomics, combined with recent insights into neurobiology, have created an unprecedented opportunity for the discovery of breakthrough treatments in the central nervous system (CNS). Verge Genomics platform is specifically designed for neurological diseases and can analyze thousands of datasets to identify new targets, predict effective drugs, and stratify patient subpopulations. Verge's genomic network approach offers a breakthrough opportunity to identify drugs that dramatically improve patient outcomes and fundamentally bend the cost curve of pharmaceutical development.

Country: United States
Founded date: 2015
Number of Employees: 11-50
Total Funding Amount: $36.1M
Category: Gene therapy
Virtuleap has a long-term vision to create a new digital health marker for the early detection of cognitive diseases such as dementia by mining the big data of gameplay patterns over time. They prioritize the scientific design of our games and technology in order to unlock the potential cognitive impact that is possible thanks to the latest research in the fields of neuroscience and behavioral science.

Virtuleap VR brain training app offers a daily cognitive workout of short, intense and fun games designed to help increase attention and concentration levels. Additionally, they have composed music tracks that affect the attentional networks of the brain by applying the technique of "phase locking", which serves to induce increased levels of focus during app exposure. Lastly, Virtuleap has developed an accompanying client dashboard that allows caregivers, companies, and organizations to monitor and manage the performance of its users.
Voyager Therapeutics plans to develop life-changing gene therapies from discovery, preclinical and clinical development, through to commercialization. We focus on people living with severe neurological diseases that lack safe and effective treatment options, particularly in the areas of Parkinson's disease, a monogenic form of amyotrophic lateral sclerosis (ALS) called SOD1, Huntington's disease, Friedreich's ataxia, Alzheimer's disease, and other neurodegenerative diseases related to defective or excess aggregation of tau and alpha-synuclein protein in the brain.

Voyager innovates and invests in novel adeno-associated virus (AAV) vector engineering and optimization, manufacturing that includes a baculovirus production system for producing AAV vectors at scale in insect-derived cells, and dosing that includes intraparenchymal, intrathecal and intravenous delivery techniques.
WeSee delivers safety, security, and integrity across society and business by developing bespoke, practical, flexible, mobile-led solutions using the latest computer vision technology.

Emotions, such as doubt and anger, might be hidden under the surface in contrast to the language a person is using. WeSee's advanced AI technology understands every multi-layered element within images and videos in the same way humans do only better. This allows to recognize and analyze images and faces live and in video content quickly and accurately, even when they are partially obscured. WeSee's AI technology has the ability to detect emotions in real-time through monitoring and analyzing micro-expressions, eye movement, gaze, speech patterns and tone of voice.

It can also identify suspicious behavior by recognizing seven key human emotions through facial micro-expressions, eye movement, and further facial cues.
Drug development in Alzheimer's disease and dementia is hampered by our ability to identify at-risk groups before the onset of clinically significant symptoms. Winterlight Labs is addressing this problem by pioneering a speech-based AI technology that could help accurately predict risk for dementia years before a clinical diagnosis is obtained. Winterlight Labs technology can help detect and monitor subtle changes in cognition by assessing individuals more frequently and more objectively than the assessments used today.

Winterlight Labs develops a novel AI technology platform that can quickly and accurately quantify speech and language patterns to help detect and monitor cognitive and mental diseases. This platform can analyze natural speech to detect and monitor dementia, aphasia, and various cognitive conditions. Using a short one-minute sample of speech, WinterLight can characterize the speaker's cognitive, acoustic, and linguistic state, including lexical diversity, syntactic complexity, semantic content, and articulation.

In August 2019 The Wall Street Journal published an article titled "What Your Voice Reveals About You" about the ability of the voice-based AI to identify individuals in the realm of fraud prevention and medicine. Winterlight Labs was featured as an example of speech being used to detect dementia such as Alzheimer's.
Ybrain

Ybrain, a Korean startup makes wearables for Alzheimer’s patients. The company was founded in 2013 by Kyongsik Yun, a neuroscientist who trained at the California Institute of Technology, and engineers from Samsung. Ybrain is currently conducting clinical trials at Samsung Medical Center in Korea.

Ybrain wearable device consists of a headband with two sensors embedded in the front that emit electronic signals at 2-milli-amperes, which stimulate brain activity to counteract the symptoms of Alzheimer’s. The device is supposed to be used for 30 minutes a day, five days a week, and can be worn at home. The headband is also intended for use by people with “mild cognitive impairment.”

The startup’s clinical trials currently show that its wearable devices are 20 percent to 30 percent more effective than existing oral medication for Alzheimer’s patients.
Zynex

Country: United States
Founded date: 1996
Number of Employees: 251-500
Total Funding Amount: n/a
Category: Neurofeedback

Zynex Medical is a medical device manufacturer that produces and markets electrotherapy devices for use in pain management, physical rehabilitation, neurological diagnosis, and cardiac monitoring.

The NeuroMove™ technique assists in teaching healthy parts of the brain after a stroke to take over lost functionality through Neuroplasticity. Patients no longer have to live with plateau level functionality, the NeuroMove is breaking that barrier.

The NeuroMove™ is a neurological re-learning tool, a therapy device, which has been proven to help stroke and other patients recover lost movement. Once a stroke has occurred, the brain loses neurons which cause limb weakness or paralysis. The NeuroMove™ can train healthy neurons to assume functions lost by damaged brain cells; a concept known as Neuroplasticity. This rehabilitation tool can be used even when there is no muscle movement available.

Thomas Sandgaard
Chairman, President and CEO
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