B.R.A.I.N. Prize

Breakthrough **R**esearch **A**nd **I**nnovation in **N**eurotechnology

FINALISTS ANNOUNCED FOR ISRAEL BRAIN TECHNOLOGIES' $1 MILLION GLOBAL B.R.A.I.N. PRIZE

Israel Brain Technologies (IBT) has announced the ten finalists for its $1 million Global **B.R.A.I.N.** (**B**reakthrough **R**esearch **A**nd **I**nnovation in **N**eurotechnology) **Prize** competition – an international R&D award for breakthroughs in the field of brain technology with potential for significant impact on humanity.

Finalists include leading researchers from the world's elite institutions as well as companies addressing the world's most critical brain-related health issues. They were chosen from amongst entries from eleven different countries.

The finalists will present their breakthrough developments at BrainTech Israel 2013, Israel's 1st International Brain Technology Conference, on October 14th-15th in Tel Aviv. The winner will be chosen at the conference by an international judging committee of distinguished neuroscience and life science industry leaders, including Nobel Laureates.

"The Global B.R.A.I.N. Prize is our way of recognizing breakthrough achievements and helping brain-tech innovators bring their solutions to society faster, " said Miri Polachek, Executive Director of IBT. "The $1 million prize will go a long way towards developing tomorrow's promising brain technologies, today."

About Israel Brain Technologies

Inspired by the vision of Israeli President Shimon Peres, Israel Brain Technologies (IBT) is a non-profit organization whose mission is to advance Israel's neurotechnology industry, to establish Israel as a global hub of brain technology innovation and to increase collaboration between the Israeli neurotechnology ecosystem and its counterparts around the world.

Building on Israel's position as a global technology powerhouse, IBT aims to make Israel both the "Startup Nation" and the "Brain Nation."

IBT is led by a team of technology entrepreneurs and life science professionals and is advised by a panel of renowned academic, industry and public sector representatives including two Nobel Prize Laureates.

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B.R.A.I.N. Prize Finalists (in alphabetical order)

Dr. Hagai Bergman

http://basalganglia.huji.ac.il/

We have shown that closed loop adaptive deep brain stimulation (DBS) of the basal ganglia (the part of the brain which is affected during Parkinson's and other brain diseases) is superior to current stimulation methods. We conclude that the basal ganglia can be observed and controlled, and suggest that closed loop adaptive DBS is the optimal treatment for a range of severe basal ganglia disorders including Parkinson's disease, depression, obsessive-compulsive disorders and schizophrenia.

Dr. Edward Boyden

http://syntheticneurobiology.org/

The brain is made out of an incredible number of cell types, which change in different ways to cause diseases, raising the question of how to identify optimal targets in the brain for therapeutic purposes, as well as how to resculpt the dynamics of the brain for clinical benefit. We propose to adapt a technology that we and our collaborators developed earlier, optogenetics, which enables cells to be activated and silenced by light, towards the systematic identification of clinically relevant targets in the brain, and towards deployment as a fundamental new neuromodulation technique for treating brain disorders.

BrainGate Team Led by Dr. John Donoghue

www.braingate2.org

The BrainGate Research and Development team, based at Brown University with collaborators at the Massachusetts General Hospital, the Department of Veterans Affairs Medical Center (Providence, Rhode Island), Case Western Reserve University, and Stanford University, has demonstrated the first human uses of an implanted neural sensor and neural interface system to control robotic and prosthetic arms in three-dimensional space, in one case by a woman with tetraplegia who served herself a bottle of coffee nearly 15 years after a stroke. The BrainGate research, which previously resulted in the first human neural control of a computer cursor, has enabled a new understanding of human brain function and the development of a novel, fully-implanted platform neurotechnology capable of wirelessly transmitting large numbers of neural signals from multiple types of sensors for use in Brain Computer Interface, epilepsy monitoring, and neuromodulation applications.

ElMindA & Soterix (Collaboration)

http://www.elminda.com/

About one third of the world's population suffers from acute or chronic pain with the effects of pain exact a tremendous cost on health systems and impose emotional and financial burden on patients. Diagnostic and clinical management of pain still heavily rely on clinical symptoms and patient's subjective reporting while the common treatment for pain is not based on personally customized pain relief. The proposed project (based on a multi-national collaboration) aims to develop a closed loop pain treatment platform, with the goal of offering a focused, specific and personalized approach for the effective treatment of pain.

B.R.A.I.N. Prize Finalists (in alphabetical order) - continued

Dr. Itzhak Fried
www.cnl.ucla.edu
Brain pacemaker to treat memory impairment in early Alzheimer's Disease and other memory disorders including traumatic brain injury, epilepsy and stroke. Neurotechnology is based on site-specific, on-demand brain stimulation coupled to information processing and regulated by neural signal feedback.

Inscopix
www.inscopix.com
Research on brain disease stands poised to achieve conceptual breakthroughs due to recent technological advances. There are now mice that provide models of human disease for study, tools to target specific brain regions, and ways to adjust certain patterns of brain functioning. However, science has yet to uncover the normal patterns of neural dynamics and how these go awry in disease states. Dr. Mark Schnitzer and the company he co-founded, (with Drs Kunal Ghosh and Abbas El Gamal) Inscopix Inc, have created a technology to fill this gap by providing the necessary data to guide therapeutic strategies for re-tuning neural dynamics. Specifically, Inscopix has created brain imaging devices for use in freely behaving mice, by using mass producible optoelectronics, thereby enabling researchers to observe the dynamics of large numbers of individual, genetically identified neurons and in many mice in parallel. This innovation will yield crucial knowledge of how circuit dynamics differ between normal and diseased brains, a key toward creating corrective strategies.

Insightec
www.insightec.com
Focused ultrasound enables focal effects in the brain with sub millimeter accuracy with no impact to surrounding tissue using MRI image guidance. It is currently applied to the treatments of movement disorders (Parkinson's and Tremor). Beyond that it is being evaluated as the world first noninvasive deep brain focused Neuromodulation technology which will revolutionize our understanding of the human brain.

Nano-Retina
www.nano-retina.com
Interfacing with retinal neurons, Nano Retina's artificial retina prosthesis is designed to use the natural mechanisms of the eye to convert images into neural stimulation. Neural stimulation is delivered through more than 600 electrodes, which can be recognized by the brain, thereby restoring vision to persons blinded by retinal diseases, such as macular degeneration.

B.R.A.I.N. Prize Finalists (in alphabetical order) - continued

Dr. Andrew Schwartz
http://motorlab.neurobio.pitt.edu
In the last 30 years we have developed an effective approach for decoding the intention component of volitional movement. Using these results, we have now demonstrated the ability to translate recorded brain signals to coordinated, natural movement of a prosthetic arm and hand by a quadriplegic individual who uses this technology to perform tasks of daily living.

Team Led by Dr. Phillip Starr
http://neurosurgery.ucsf.edu/index.php/about_us_faculty_starr.html
By recording brain signals from the cortex in persons undergoing surgery for Parkinson's disease, we recently discovered a biomarker of abnormal brain synchronization that can be detected using a clinically practical electrode that does not penetrate or damage brain tissue. Our next step is to utilize this signal to improve the effectiveness of neurostimulation therapies by incorporating feedback control.

B.R.A.I.N International Judging Committee

Prof. Gerald Fischbach
Committee Chair. Scientific Director, Simons Foundation

Prof. Eric Kandel
2000 Nobel Prize in Physiology or Medicine
University Professor &Kavli Professor of Brain Science, Columbia University
Director, The Kavli Institute for Brain Science
Co-director, The Mind Brain Behavior Initiative, Senior Investigator, Howard Hughes Medical Institute.

Prof. Daniel Kahneman
2002 Nobel Prize in Economic Sciences Princeton University – Senior Scholar; Eugene Higgins Professor of Psychology, Emeritus; and Professor of Psychology and Public Affairs, Emeritus.

Prof. Bert Sakmann
1991 Nobel Prize in Physiology or Medicine
Inaugural Scientific Director, Max Planck Florida Institute for Neuroscience

Prof. Moussa Youdim
Professor Emeritus, Technion-Israel Institute of Technology
Director of Eve Topf and NPF Centers of Excellence For Neurodegenerative Diseases
Rappaport Family Faculty of Medicine and Institute.

Dr. Husseini Manji
Global Therapeutic Area Head of Neuroscience at Janssen Research & Development
Touch base with Joni from J&J: jcatalan@its.jnj.com.

Dr. Frans Gielen
Medtronic Neuromodulation Research

Prof. Helen Mayberg
Professor of Neurology and Psychiatry at Emory University School of Medicine, Atlanta, GA and the Dorothy C. Fuqua Chair of Psychiatric Neuroimaging and Therapeutics

Prof. Karl Diesseroth
D.H. Chen Professor of Bioengineering and of Psychiatry and Behavioral Sciences Stanford University

Prof. Fred Gage
Professor Laboratory of Genetics Vi and John Adler Chair for Research on Age-Related Neurodegenerative Disease.

B.R.A.I.N. Screening Committee & Conference Scientific Committee

Prof. Alon Friedman
Director, Zlotowski Center for Neurosciences, Ben Gurion University

Prof. Moshe Bar
Director, Gonda Multidisciplinary Brain Research Center, Bar Ilan University

Prof. Michal Beeri
Director, Sagol Center for Neuroscience Research, Chaim Sheba Medical Center

Prof. Tamir Ben Hur
Director, Department of Neurology, Hadassah University Hospital

Prof. Yadin Dudai
Chairman of the Neurobiology at the Weizmann Institute & Distinguished visiting Prof. of Neural Sceince at NYU

Prof. Nir Giladi
Director, Neurology Department, Tel Aviv Sourasky Medical Center

Prof. Ilana Gozes
Director, Adams Super Center for Brain Studies, Tel Aviv University

Prof. Jackie Schiller
Rappaport Faculty of Medicine, Technion

Prof. Gal Richter-Levin
Head of Haifa Forum for Brain and Behavior, and Co-Director of the Institute for the Study of Affective Neuroscience (ISAN), University of Haifa

Prof. Eilon Vaadia
Director, Edmond & Lily Safra Center for Brain Sciences, Hebrew University

Prof. David Yarnitzky
Director, Department of Neurology, RAMBAM Healthcare Campus