



Arto Nurmikko, left, and John Donoghue accepted the B.R.A.I.N. Prize, the first to be awarded, from Israeli President Shimon Peres at the BrainTech 2013 Conference held in Tel Aviv, Israel, in October.

BrainGate team wins \$1M prize in Israel

PROVIDENCE — The team that created the investigational BrainGate brain-computer interface has won a major international award, the \$1-million Moshe Mirilashvili Memorial Fund B.R.A.I.N. Prize, at a brain science technology conference in Israel Oct. 15, 2013.

Israeli President Shimon Peres presented the prize, including a bronze brain statue, to John Donoghue and Arto Nurmikko, two Brown University researchers who represented the BrainGate collaboration in the competition for the prize.

"We are deeply honored to receive this award," said Donoghue, co-director of the BrainGate team, a researcher at the Providence V.A. Medical Center and the Henry Merritt Wriston Professor at Brown, where he directs the Brown Institute for Brain Science. "It will support our continued research to help people with paralysis, some of whom cannot speak, to restore their connection to the world around them."

The prize is awarded "for a recent breakthrough in the field of brain technology for the betterment of humanity," according to a statement by Israel Brain Technologies (IBT), a nonprofit organization inspired by Peres that grants the award. The contest's panel of judges — experts in neuroscience and technology, including two Nobel laureates — considered presentations from 10 finalists before selecting BrainGate.

Clinical trials

The investigational BrainGate system, initially developed at Brown and now being studied in clinical trials with partners including Massachusetts General Hospital, Stanford University and Case Western Reserve University, employs a baby aspirin-size device with a grid of 96 tiny electrodes that is implanted in

the motor cortex. The electrodes are close enough to individual neurons to record the neural activity associated with intended movement. An external computer translates the pattern of impulses across a population of neurons into commands to operate assistive devices, including robotic arms.

More recently the team has advanced the work by developing and testing a novel broadband wireless, rechargeable, fully implantable version of the brain sensor. The prototype system, which has been tested in animal models, is designed to allow greater freedom for users of the BrainGate system, who currently must be connected to the system's computers via a cable. Nurmikko, a neuroengineer, has led the effort to develop the wireless implant.

The co-leader of the BrainGate team, Dr. Leigh Hochberg, was not able to join Donoghue and Nurmikko in Israel, as he was in New Orleans to deliver a Presidential Symposium Lecture at the American Neurological Association. He said he shared the team's excitement in winning the prize.

"All of us on the BrainGate research team are deeply honored to receive this award," said Hochberg, associate professor of engineering at Brown, a neurologist at Massachusetts General Hospital, and a researcher at the Providence V.A. Medical Center's Center of Excellence for Neurorestoration and Neurotechnology. "Our team of clinicians, scientists, engineers, and the extraordinary participants in our ongoing pilot clinical trial, continue to work every day toward developing a technology that will restore communication, mobility, and independence for people with neurologic disease or injury." ❖

and payers are saying: 'Let's match treatments that are going to be effective for the individual.'

He said the traditional pharmaceutical model of one drug or one-way fits all patients is "no longer the way we ought to be thinking."

Shortage of physicians/ role of healthcare extenders

Brooks addressed the issue of physician shortage worldwide, exacerbated by the macro trends of a rapidly aging

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population, obesity, and people living longer with chronic diseases.

"Major retailers are putting themselves in a position to become primary healthcare sites – going from just offering flu shots to becoming a healthcare destination. It's one-stop shopping – you'll get your healthcare, prescriptions, food, and think about your health and wellness in the big box stores. Healthcare extenders, not MDs, are delivering this care a lot more. That phenomenon is fast upon us and again it creates some interesting opportunities. How do traditional providers respond to that?"

Data meets healthcare

"We're also seeing the impact of big data," he said. "There are opportunities around analytics and interest in doing deep dives in electronic medical records and finding outliers and identifying anomalies.

"Where do we see problems with patients or patient cohorts or providers that may be not be following the best practices? Where are the opportunities for improvement?"

"We think a lot about risk strat-