



John Donoghue is known for translational research in human brain computer interfaces to restore movement for people with paralysis (known as 'BrainGate', as well as for fundamental research to explain how networks of cortical neurons compute actions from plans. At Brown, he was the founding Chair of the Brown Department of Neuroscience, the founding director of the Brown Institute for Brain Science (now the Carney Institute) and the Department of Veterans Affairs Center of Excellence in Neurorestoration and Neurotechnology. Donoghue was a member of the US B.R.A.I.N. initiative's first NIH Working Group and is a fellow of the National Academy of Medicine, American Academy of Arts and Sciences, as well as several other academies.

ABSTRACT:

Two decades ago, the first human demonstrated the ability to control a computer using signals from tiny array of microelectrodes in the motor cortex. Over that time BCIs have shown the ability to control robotic limbs and to enable reach and grasp by person with arm and hand paralysis. These implanted BCIs, still at a pre-commercial stage, are useful in many disorders producing paralysis including ALS, spinal cord injury and stroke. BrainGate is a promising BCI system that also allows efficient communication for those who cannot speak and may provide a new way to promote motor rehabilitation and other therapies. The future for this and other neuroelectronic medicines is very promising as a set of new ways to overcome devastating neurological and mental health diseases.