TESTIMONY OF ZACK LYNCH, M.A., BEFORE THE SUBCOMMITTEE ON House Appropriations Subcommittee on Commerce, Justice, Science and Related Agencies ON BEHALF OF THE NEUROTECHNOLOGY INDUSTRY ORGANIZATION

March 26, 2015

Mr. Chairman, Ranking Member Fattah, and Members of the Subcommittee: I am Zack Lynch, Founder and Executive Director of the Neurotechnology Industry Organization ("NIO"). I thank you for the opportunity to provide testimony on behalf of NIO on how to maximize the societal return on federal investments in neuroscience research.

NIO is a non-profit trade association that works to accelerate the development treatments and cures for neurological diseases and psychiatric illnesses. With over 100 members, NIO represents emerging neuroscience companies, academic brain research institutes and patient advocacy groups across the United States and throughout the world.

Today, more than 100 million Americans – one in three – suffer from a brain or nervous-system illness. These include Alzheimer's, autism, addiction, depression, chronic pain, epilepsy, multiple sclerosis, Parkinson's, schizophrenia, stroke, and many others. They also include post-traumatic stress and traumatic brain injury, which disproportionately affect members of our armed services.

The combined economic burden of these diseases, generated through health care costs and lost income, is well over $1.0 trillion annually. This economic burden is accelerating as the population ages and expands, creating unprecedented demand for treatments.

In neuroscience, federally funded research has always provided the scientific foundation on which the private sector builds the next generation of therapeutic products. The National Institutes of Health continues to be the largest and most innovative funder of basic neuroscience worldwide.

This investment in basic science and the SBIR program is critical for ensuring that the pipeline of neuroscience innovation remains as robust as possible. **Accordingly, NIO requests that Congress appropriate at least $30.7 billion for the NIH for FY 2016. This 2.2% increase keeps real purchasing power flat, adjusting only for the increase in the Biomedical Research and Development Price Index *(BRDPI*).**

When it comes to the brain, however, we must do more than simply fund basic science. We must improve public health, stimulate broad economic growth, and create new jobs.

Two years ago, recognizing both the unique challenge and opportunity in neuroscience, President Obama launched the BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative. This ambitious effort aims to invigorate investment in neuroscience, in much the same way as the Human Genome Project and National Nanotechnology Initiative did previously. Our industry is tremendously optimistic about this program's prospects to spur innovation, and we thank Congressman Fattah for all of his efforts to advance this initiative

I think it is most important to note that unlike any other area of life science research, investing in neuroscience will create direct economic benefits far beyond reducing healthcare costs and human suffering.

Let me provide two brief examples.

Information Technology – A multi-trillion global industry that is at the cusp of being transformed by brain inspired computing. Neuroscientists are researching the human brain for clues on how to design computers that can modify their hardware and software based on

experience (like the brain does) as well as create radically energy efficient computers (the brain consumes less energy than a single light bulb). This area of Cognitive Computing represents a competitive advantage for American companies and will significantly impact economic growth, job creation and national security if we choose to invest wisely today.

Education – The total expenditure for education is over $1 trillion annually and yet the results are not helping our citizens remain globally competitive. Neuroscience can help us leap frog the education performance gap. By developing fully personalized learning systems that leverage our natural neuroplasticity we safely accelerate learning, knowledge creation and innovation.

Looking forward, the convergence of neurogaming and neuromodulation with advances in self-learning computing opens up a new frontier of value creation for purely digital experiences that can be created and consumed with virtually no impact on global physical resources. For example, one could sell virtual experiences complete with emotional stimulation within unique landscapes or immersive health environments that enhance mental well-being.

NIO believes that the BRAIN Initiative can and should play an essential role in accelerating translation and commercialization of breakthrough neurotechnology. **Accordingly, we ask that Congress allocate $300 million to the BRAIN Initiative in the FY 2016 Budget.**

Additionally, we recommend the consideration of a budget neutral program modeled on the Orphan Drug Act, which will increase private investment into much needed cures for currently untreatable neurodegenerative diseases.

Investing in neuroscience offers both new treatments for terrible diseases but also a grand opportunity for economic revitalization and dramatic improvements in individual resiliency.

Today's neuroscience funding is inadequate if we want to lead the 21st Century and beyond. I call on your Subcommittee to strengthen our commitment to take advantage of the opportunities associated with the brain. I'm confident this approach will provide treatments for brain-related illnesses, transform industries, and create entirely new drivers for economic growth and jobs if we invest properly.

Thank you for your attention. I would be happy to answer any questions you may have.