# LAUNCHING THE PHOTONICS INDUSTRY NEUROSCIENCE GROUP IN SUPPORT OF THE BRAIN INITIATIVE

## LEVERAGE PHOTONICS IN SUPPORT OF THE BRAIN

On September 30, 2014, the National Photonics Initiative's (NPI) Photonics Industry Neuroscience Group was formally assembled alongside officials from the White House Office of Science and Technology (OSTP) in support of President Barack Obama's Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative.

The NPI Photonics Industry Neuroscience Group – consisting of top US industry leaders in optics and photonics including Accumetra, LLC, Agilent, Applied Scientific Instrumentation, Coherent, Hamamatsu, Inscopix, Inc., Spectra-Physics and THORLABS – announced that it is committing upwards of $30 million in existing and future research and development (R&D) spending over the next three years to advance optics and photonics technology in support of the BRAIN Initiative.

Under the leadership of the NPI, the industry consortium will work closely with national BRAIN Initiative leadership and neuroscience research communities to help achieve the administration's objective to revolutionize our understanding of the human brain. The consortium will address neuroscience challenges such as:

- Developing the imaging optics, laser sources, automated scanning technology and high-resolution cameras to provide up to a hundredfold increase in the capability of imaging groups of thousands of active neurons;
- Developing miniature, affordable, portable and implantable microscopes compatible with high-throughput facilities for therapeutic screening based on neural activity signatures;
- Using large-scale, high-throughput protein engineering technology to develop a new generation of fluorescent indicators of neural activity with tenfold improvements in efficiency and temporal response; and
- Developing automated software for detailed mapping of the human brain, architecture, neuronal wiring geometry and dynamic activity from three dimensional data sets generated by magnetic resonance imaging (MRI), computed tomography (CT) and microscopic imaging.

## ABOUT THE BRAIN INITIATIVE

The BRAIN Initiative was established in April 2013 by the Obama administration as a bold new Grand Challenge to cultivate innovative technologies that can create a dynamic understanding of brain function and ultimately help researchers find new ways to treat, cure and even prevent brain disorders such as Alzheimer's disease, epilepsy and traumatic brain injury.

At a White House BRAIN Initiative Conference in late September 2014 – which NPI Photonics Industry Neuroscience Group members attended – new commitments and investments by the federal government, private sector companies, universities and nonprofit organizations to support the goals of the BRAIN Initiative were announced.

The administration recently announced that the BRAIN Initiative is growing to five participating federal agencies as the Food and Drug Administration (FDA) and Intelligence Advanced Research Projects Activity (IARPA) join the National Institutes of Health (NIH), National Science Foundation (NSF) and Defense Advanced Research Projects Agency (DARPA).

## ABOUT THE NPI

The NPI is a collaborative alliance among industry, academia and government to raise awareness of photonics and the impact of photonics on our everyday lives; increase cooperation and coordination to advance photonics-driven fields; and drive US funding and investment in areas of photonics critical to maintaining US economic competitiveness and national security. The initiative is led by top scientific societies including the American Physical Society (APS), the IEEE Photonics Society (IPS), the Laser Institute of America (LIA), The Optical Society (OSA) and SPIE, the International Society for Optics and Photonics (SPIE).

For additional information, please visit the NPI website, www.lightourfuture.org, or e-mail NPI staff Laura Kolton, lkolto@osa.org, and Krisinda Plenkovich, krisindap@spie.org.