Brain-machine interfaces offer improved options for prosthetics and treatments after injury

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Two experimental brain-machine technologies — deep brain stimulation coupled with physical therapy and a thought-controlled computer system—may offer new therapies for people with stroke and brain injuries, new human research shows. In addition, an animal study shows a new artificial retina may restore vision better than existing prosthetics.

The findings were announced today at Neuroscience 2010, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news on brain science and health.

Brain-machine interface is an emerging field of neuroscience that aims to translate basic neuroscience research on how the brain packages and processes information to develop devices that help people regain functions lost to disease or injury.

Today's new findings show that:

- Researchers have developed a faster, more accurate way to control cursors with thoughts alone. This scientific advance gives "real-time" feedback of brain activity and may provide more therapeutic options to people with brain injuries or syndromes that limit communication abilities (Anna Rose Childress, PhD, abstract 887.27, see attached summary).

- Brain stimulation and physical therapy restores the use of paralyzed limbs — at least temporarily — in people recovering from a stroke. Few people recover completely after a stroke, and the new method may help in developing therapies to increase range of motion in affected limbs (Satoko Koganemaru, MD, PhD, abstract 898.5, see attached summary).

- Scientists have constructed an artificial retina that incorporates the signals the eye normally sends to the brain. The new prosthetic may be capable of reproducing normal vision more effectively than existing technologies (Sheila Nirenberg, PhD, abstract 20.1, see attached summary).

"Harnessing the brain's ability to process, decode, and utilize information has untold therapeutic possibilities," said press conference moderator Miguel A. Nicolelis, MD, PhD, of Duke University and an expert in neurotechnology and brain-computer interfaces. "Today's research advances clearly demonstrate neuroscience's ability to expand our understanding of how the brain works, and translate that knowledge into better treatments, therapies, and technologies."

More information: www.sfn.org/am2010/press/OmniP … s/data/press/007.pdf

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