

# BrainGate™ Neural Interface System

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October 19, 2005

Cyberkinetics Neurotechnology Systems, Inc. is developing the BrainGate Neural Interface System. It is brain-machine interface technology. Brain-Machine interface technology is when the brain accepts and controls a mechanical device as if it were a part of the body. The products being developed by Cyberkinetics' have the ability to sense, analyze, and transmit the language of neurons to an external device. The goal of the company today is the develop products designed to "turn thought into action."

The BrainGate™ System is a system that is designed to restore functionality to severely motor-impaired individuals. The system uses a personal computer as a gateway to activities. The activities that can be accomplished with this technology range from basic computer use to the control of everyday items such as a telephone, a television, and lights in a room.

The technology of Cyberkinetics Neurotechnology Systems, Inc. senses, transmits, analyzes, and applies the language of neurons. The device is made up of a sensor implanted on the motor cortex of the brain, and a device that analyzes the brain signals (a computer). The technology is able to sense the electrical activity of many individual neurons at one time; the data is transmitted from the neurons in the brain to computers where it is analyzed; and the thoughts are used to control an external device.



Advantages of the BrainGate™ System are that the speed, accuracy, and precision are comparable to a non-disabled person; there is no training necessary (just the ability to think of an

action); and the device can be used in an interactive environment. Activity surrounding the patient will not affect the accuracy of the device.

The disadvantage of the BrainGate™ System is that at this time, while still being perfected, the switches must be frequently adjusted which is a time consuming process. As the device is perfected this will not be an issue. There is also a worry that devices such as this will "normalize" society.



Clinical Trials are currently being conducted on patients with spinal cord injury, muscular dystrophy, stroke, motor neuron disease, and Lou Gehrig's disease. Cyberkinetics is hoping to demonstrate the ability of the system to reliably record neural activity and translate the thoughts directly into the computer.

The BrainGate™ Neural Interface System has not been approved by the FDA, but has been approved for IDE status, which means that it has been approved for pre-market clinical trials. There are no estimates on cost or insurance at this time.

#### Sources:

- <http://www.cyberkineticsinc.com>
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