A Wireless Brain-Computer Interface

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A new wireless brain implant could be an important step toward technology that lets people with mobility problems control a computer or wheelchair with their thoughts.

The implant was developed by a team at Brown University in Providence, Rhode Island. The researchers recently reported in the *Journal of Neural Engineering* [1] that their fully implantable brain sensor can record the activity of dozens of neurons in freely moving subjects. And they showed that the device continued to work after more than a year in pigs and macaques.

The next goal for the team is to test the device in humans. The promise of brain sensors that help paralyzed people regain some mobility is slowly being realized: last year, two groups reported that quadriplegic volunteers had used brain implants to control robotic arms (see "Brain Chip Helps Quadriplegics Move Robotic Arms with Their Thoughts [2]" and "Patient Shows New Dexterity with a Mind-Controlled Robot Arm [3]").

"We are trying to develop devices to connect the brain back again to the outside world or to the body," says John Donoghue [4], a neuroscientist at Brown, who led one of the projects involving quadriplegics but was not involved with the new work. "Currently, this is set up with a plug in the head through a hole in the skin," he says. This is cumbersome and introduces the risk of infection. Furthermore, it requires a technician to hook the patient up to the external equipment. If these kinds of systems are to become available to paralyzed people in their homes (still a far-off prospect), then a fully implanted, wireless device will be needed, says Donoghue.

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