

Brain implant gives hope to the paralysed

Oliver Moody Science Correspondent

Paralysed monkeys have recovered the ability to walk thanks to a brain implant that bypasses their spinal injuries.

Scientists are preparing to test the devices on humans after giving two rhesus macaques wireless electrodes that beam the instructions for movement down the length of their backs.

In healthy people the brain sends these messages to the limbs through nerves in the spinal cord. When this route is damaged, it can be exceptionally difficult to repair surgically. Researchers have been trying to replace the broken nerves with electronic signals for four decades, but it is only thanks to remarkable advances in neuroscience that they have been able to decode the dance of electrical activity directly from the brain.

Scientists in Switzerland, Germany and the United States drilled into the macaques' skulls and inserted a pill-sized panel of electrodes.

The implant reads the leg-movement signals as they emerge in the monkey's brain and then relays them to a sensor at the bottom of its spine, where the message is translated into electrical pulses that tell the legs how to move.

Writing in the journal *Nature*, the team said one significant problem that remained to be solved was how to feed a sense of touch back into the brain.

Jocelyne Bloch, a neurosurgeon at Lausanne University Hospital who led the operations, said: "The link between the decoding of the brain and the stimulation of the spinal cord ... is completely new. For the first time, I can imagine a completely paralysed patient able to move their legs."