Miracle worker's new aim to help paraplegics walk.
By Kate Jones  🇦🇺THE AUSTRALIAN

January 31, 2007 12:00am

The Melbourne scientist who pioneered the bionic ear is working to help paraplegics walk again.

Professor Graeme Clark, who developed the cochlear implant, is developing a spinal cord implant. The implant relies on the same bionic technology that has restored hearing to more than 50,000 people around the world. Prof Clark, 71, leads a team of cell biologists, biophysicists, plastic specialists and electrical engineers from the Australian Research Council's Centre for Excellence, seeking bionic solutions for spinal cord injuries.

"The ultimate goal is to get people to walk, to feel and to function properly," Prof Clark said.

Using "smart plastics", the team is developing an implant that would be surgically inserted into the damaged area of a patient's spinal cord. "Smart plastics" conduct electricity and are combined with carbon nanotubes - thousands of microscopic fibres that touch nerve endings. The implant receives radio waves through the skin from a transmitter pack worn outside the body on the patient's back. The electrical stimulus received by the implant allows it to release nerve growth hormones that encourage damaged spinal nerves to regrow and eventually reconnect with other nerves.

Once the nerves are reattached, Prof Clark said patients should begin to feel their legs and walk again. The project has received $1 million in federal funds over five years. Researchers at St Vincent's Hospital, the Bionic Ear Institute and the University of Wollongong are working on the implant. Prof Clark said developing the implant was just as challenging as making the bionic ear.

"With the bionic ear, 99 per cent of the world's scientists said it wouldn't work and I was severely criticised," he said.

"There's now more of a sense of optimism with the spinal cord project, but the problems are just as complex."

Prof Clark said a major hurdle was the scar tissue that develops in the spinal cord, which can block nerve pathways. Scientists also need to figure out how to encourage nerves to grow far enough along the nerve pathways to reconnect. The spinal cord implant will be tested on animals this year, while human tests are expected to start in a few years. At the same time as they develop the bionic implant, scientists are also perfecting the cochlear ear implant.

About 8500 Australians have debilitating spinal cord injuries, preventing them from walking and, in some cases, even breathing independently. More than half of all spinal cord injuries are caused by road accidents, while 35 per cent are the result of falls and sports accidents. Spinal cord injuries cost Australia $285 million in health care costs each year.