Computer chip helps man take first steps

BRUSSELS, Belgium (AP) — Ten years after a car crash paralyzed him from the waist down, an implanted computer chip is helping Marc Merger regain the ability to walk.

The 39-year-old financial consultant from France is the first patient to undergo the implant procedure, which was developed by a consortium of European researchers to help people who have lost the use of their legs.

Last December, surgeons implanted 15 electrodes on nerves and muscles in Merger's legs, connecting them with wires to a computer chip embedded in his abdomen. The procedure had to be repeated in February after problems arose.

Merger was able to stand up by himself in early March, and he took his first steps last Friday.

"There are a whole lot of people like me who need this," Merger said during a news conference at European Union headquarters Monday. "It's hard to imagine not being able to walk."

Professor Pierre Rabischong of Montpellier University in France, a project coordinator, said the implanted chip allows Merger to create artificial muscle movement.

"We are trying to reproduce what happens in the brain ... with electrodes to nerves and muscles," said Rabischong. "We are not working miracles here, but allowing patients to stand up using their own muscles."

Eventually, scientists hope patients will be able to control their movements by pressing buttons on a walking cane now under development that will act as a remote control.

For now, scientists transmit instructions to the chip via computer. The signals are transmitted to the electrodes in the legs and converted into muscle movement.

"We are by no means at the end of the road. A lot of work is still required," Rabischong said.

Merger was living proof of that Monday. A demonstration of him walking at EU headquarters had to be postponed because a computer glitch failed to communicate commands to the computer chip, meaning he could not walk.

Gabrielle Tronconi, 23, is one of six people due to receive implants later this year.

"I hope I will be able to reduce my disability and to be able to do more things than I can do right now," the 23-year-old Italian said. "I hope to walk because of the research developments," he said.

Rabischong said that there are more than 300,000 people in Europe with paralysis of the lower limbs. Their average age is 31, he said.

The European Union and six governments — France, the Netherlands, Germany, Denmark, Italy, and Britain — have been working on developing the technology since 1996.

Previous electronic systems have allowed paralyzed people to stand and walk with a walker, sometimes for more than a mile, said Naomi Kleitman, director of education at the Miami Project to Cure Paralysis at the University of Miami School of Medicine. Those systems use electrodes taped on the skin.

Systems that implant computer-controlled electrodes have tested in the lab for many years as well, she said. They may allow more sophisticated control over leg nerves and muscles, although there has been some problems with long-term maintenance of the implanted electrodes, she said.

Kleitman said she couldn't comment directly on the European system without knowing more details.

Research Week presenters compete for scholarships

BY YOLANDA LUKASZEWSKI AND SCOTT JENKINS
The Battalion

Student Research Week opened Monday with a reception to honor the almost 200 undergraduate and graduate students competing in the poster session.

Students will present their research today in Rudder Exhibit Hall from 9 a.m. until 3 p.m. and compete for $10,000 in scholarships . Winners will be honored on March 27.

Two of the projects are featured here.

Touchy-feely drug design

Designing new drugs may become a more touchy-feely experience with research aimed at adding a sense of "touch" to studies on how drugs and proteins interact on the molecular level.

Senior biochemistry major Jocylin Williams and a group from the biographics laboratory seek to enhance current computer modeling by adding a tactile feedback mechanism to give scientists more information about intermolecular forces that come into play in drug-protein interactions.

The project combines computer models of drug and protein molecules with a so-called "haptic device" that can provide the user with tactile information about an environment.

Today's faster, more powerful computers are now making this approach practical.

Williams, working with biochemistry professors Dr. Stanley Swanson and research group leader Dr. Edgar Meyer, has developed computer programs to model intermolecular forces like the attraction and repulsion of positive and negative charges, as well as fleeting attractive forces based on shifting electron clouds, called Van der Waals interactions.

Information about these molecular forces would be fed back to drug designers as they manipulate the computer-generated molecules, helping them determine which types of molecules would be most effective at fitting together with the protein in the desired way.

"The user could 'feel' how an untested [chemical] inhibitor might fit into an active site of a protein," Williams said.

The additional information obtained by applying haptic devices to molecular modeling can save time and money in laboratory work by ruling out possibilities for drugs that do not look promising and focusing attention on those that do, Williams said.

The role of rice wetlands for migrating birds

The rice field is a flat, silvery sheet when the sun hits it.

From overhead, birds recognize the field as a place to rest and eat before continuing their migration south along the Gulf Coast.

April Conkey is studying the relationship between rice acreage and the numbers of resident and migratory birds using Texas rice fields.

A doctoral student in the Department of Wildlife and Fisheries Sciences, she compared the number of birds seen in rice fields with rice acreage, and found that as rice acreage decreased, waterfowl populations declined slightly, migratory bird populations remained stable, and ground bird populations increased.

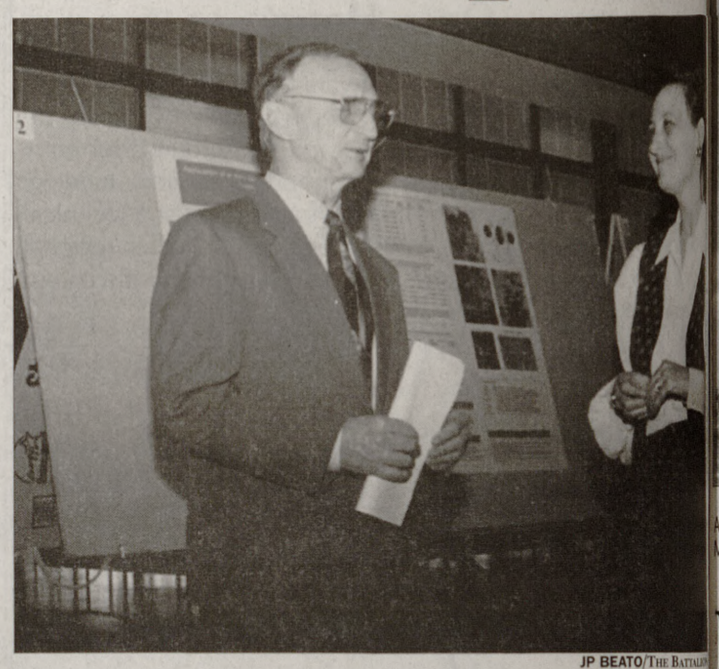
Although rice fields are artificial wetlands, they constitute 30 percent of wetlands in Texas, and might serve some of the same functions as natural wetlands.

Many animals, including the migratory birds that stop over on their way to South America, use rice fields as habitat.

Rice farming in Texas is not very profitable, and landowners can make more money by selling their land to developers.

If this were to happen, Conkey said Texas could lose up to 30 percent of its wetlands. Conkey wants to study the wetland functions of rice fields as the next step in her project.

"If rice fields provide wetland functions and supplement the loss of natural wetlands, then we need to preserve rice agriculture and recognize and compensate the farmer, *the landowner, and the* general public for this conservation effort," Conkey said.



JP BEATO/The Battalion

Student Week co-chair **Robert Kennedy**, vice-president for research and associate provost for graduate studies talks with crowd at a Monday reception to open Research Week. Research week is sponsored by the Graduate Student Council, the Office of the Vice President for Research and Associate Provost for Graduate Studies and the Department of Student Life.