UT SOUTHWESTERN MEDICAL CENTER NEWS

Media Contact: Aline McKenzie
214-648-3404
aline.mckenzie@utsouthwestern.edu

EMBARGOED UNTIL 4 P.M., CST, WEDNESDAY, MARCH 1, 2006

Multiple sclerosis research into reparative cells offers new avenue for fighting disease, UT Southwestern researcher reports

DALLAS – March 2, 2006 – Plaques that form around the nerve cells of people with multiple sclerosis are apparently what disable people with the disease. But partly developed reparative cells within the plaques provide hope for a treatment, a UT Southwestern Medical Center physician reports in the *New England Journal of Medicine*.

Dr. Elliot Frohman, professor of neurology and ophthalmology, is lead author on an overview of MS. It is the first time in five years that *Journal* editors have had researchers provide an overview of the debilitating disease.

Presently, the primary focus of research is on plaques, which are now known to contain certain predictable features consistent with tissue injury, such as loss of nerve insulation, scarring, inflammation and loss of the ability of nerves to transmit electrical and chemical information to other nerves.

"Recognizing these different injury cascades has catalyzed novel investigations into strategies for treatment that are aimed at promoting preservation of tissue architecture (neuroprotection) and even potentially neurorestoration," said Dr. Frohman, who directs the Multiple Sclerosis Program and Clinical Center at UT Southwestern.

MS is an autoimmune disease in which the body attacks its own tissues and afflicts about 400,000 Americans and 2.5 million people worldwide. People with the disease develop problems with coordination and eyesight and, in some cases, lose mental sharpness.

In MS, nerve cells lose their insulating fatty covering, called myelin. Myelin comes from nearby cells called oligodendrocytes, which send out projections that wrap around nerve cells. Myelin allows electrical signals to travel quickly and with high fidelity.

The damaged area becomes surrounded by plaques, which contain a wide variety of cells. Although much of the content of a plaque is harmful to nerves, there are some cells that provide hope, Dr. Frohman said.

Even though the oligodendrocytes are damaged, there exists a reservoir of oligodendrocyte precursor cell, or OPCs, left over from development that could be activated to repair the damage, he said. The problem is how to trigger them to grow.

"Those are progenitor cells that will grow up into mature cells," Dr. Frohman said. "We know more why they don't grow up."

Proteins called repressor proteins keep the OPCs in an immature state. Activating the OPC, however, might help a severed or demyelinated nerve in the central nervous system become the target for repair.

Treatments for MS are difficult, but researchers are examining the regulation of the genes *Nogo, Lingo-1, Jagged* and *Notch* for potential treatment.

The proteins Nogo and Lingo-1 appear to have the ability to block nerve cells from growing, so if they can be blocked, the nerve cells might be able to recover.

"With the advent of new technologies, we have a much better understanding of the events that occur during the MS disease process," said co-author Dr. Michael Racke, professor of neurology and in the Center for Immunology. "In particular, we will see a much greater emphasis on the molecular events that occur during MS and will likely see new strategies to intervene in the disease."

Dr. Cedric Raine at the Albert Einstein College of Medicine was also an author of the review.

The paper was supported in part by the National Multiple Sclerosis Society, Once Upon A Time ..., the Hawn Foundation and the Department of Health and Human Services.

###