Local Researcher Makes Breakthrough In Concussion & Brain Injury Treatment

By EILEEN PAGE

Dr. James Lechleiter, professor of cellular and structural biology at the UT Health Science Center San Antonio, has received a patent for a discovery that could be good news for injured soldiers, athletes and other trauma victims.

Lechleiter discovered that a class of compounds actually protects neurons in the brain after a traumatic brain injury.

The research on cell and animal models has shown that two compounds stimulate the brain's caretaker cells, called astrocytes, to do their job.

"What this patent does is reveal a way that we can enhance [the astrocytes'] ability to protect neurons after an injury," Lechleiter said.

He said the stimulated astrocytes can then better protect the brain from deeper injury.

"One of the greatest injuries after a trauma is actually increased swelling -- brain edema," Lechleiter said. "And so it turns out that the astrocyte is a very important cell type to control that cell swelling."

Lechleiter said because the brain continues to suffer injury after an event, the compounds could be administered after an injury to prevent long-term damage.

The next step is phase one clinical trials to make sure the compound stimulates only the desired response and doesn’t affect other cells. Phase two is tricky because the compounds would have to be administered to patients who actually have a recent brain injury.

"Say you’re hit on the head or fall on your head, or are in a car accident or suffer from a traumatic injury in the battlefield, you could take the compound within 30 minutes,” Lechleiter said. "And that’s how we’ve tested it so far."

Lechleiter said the compounds don’t undo the damage to cells that have died, but they have the ability to stop further injury. He said he hopes the compounds one day will be used on the battlefield as well as made available for use by paramedics and hospital emergency rooms.

*Additional information on the image: The specimens are shown five days after ischemic trauma that usually results in killing of neurons and astrocytes. 2-methylthio-ADP preserved many neurons and astrocytes in the treated specimen.