



Boise State scientist studies a possible trigger for the devastating disease

Unlocking the mystery of Alzheimer's

Alzheimer's disease is not only devastating for the 4 million Americans it afflicts, but it also could bankrupt America's health care system in the next 20 years if effective treatments aren't found.

"It is an epidemic looming on the horizon," says Boise State biology professor and Alzheimer's researcher Troy Rohn. "The largest segment of our population is now moving toward retirement. At age 65 and older, 10 percent will have Alzheimer's. At age 85 and older, 50 percent are affected. Half the people in nursing homes have Alzheimer's."

Those sobering statistics — and the billions of dollars in health care costs behind them — are driving an unprecedented effort to understand Alzheimer's and how to combat it. Boise State has a stake in the battle: Rohn, who

earned a Ph.D. in pharmacology at the University of Washington, is conducting Alzheimer's-related research

U.S. Rep. Mike Simpson, left, looks over Troy Rohn's research.

with \$250,000 in federal and private grants.

Rohn is searching for the mechanism that might trigger Alzheimer's disease. More specifically, Rohn and his collaborators at the University of California-Irvine are investigating whether a small protein called Beta Amyloid is, in Rohn's words, "the match that lights the fire" that causes critical brain cells to essentially self-destruct.

The research is highly technical. But Rohn, who gives tours of his lab to the families of Alzheimer's victims and to Idaho's elected officials, including a recent visit by Congressman Mike Simpson, is adept at helping laypersons understand its significance.

The tours are a great opportunity to showcase the kind of research being conducted at Boise State, Rohn says.

According to Rohn, the overriding feature of Alzheimer's disease is the death of special brain cells called neurons. The destruction of neurons results in memory loss and the inability to recognize people; as more neurons are destroyed, victims become unable to care for themselves and eventually die, usually from a secondary cause such as pneumonia.

"Neurons don't have the ability to divide," Rohn says. "When they're destroyed, a progressive loss of function results."

But what causes these neurons to die in the first place? According to Rohn, there is growing evidence that the cells may die through a process called "apoptosis" or "programmed cell death." The stimulus for apoptosis appears to be



Author researches Idaho history for kids

in plaques, abnormal brain structures in Alzheimer's victims that contain the protein Beta Amyloid. If researchers can learn how apoptosis is triggered, then drugs could be developed that would inhibit it and prevent Alzheimer's from progressing, Rohn explains.

In his university laboratory, Rohn conducts tests with autopsied brain tissue samples sent from UC-Irvine's research center. The tissue samples are from Alzheimer's victims and from age-matched normal individuals who represent a control group. Antibodies synthesized in Rohn's lab are applied to Alzheimer's or control brain sections, and the interactions are then studied. Because these antibodies have specific reactions to specific proteins, they can provide information about whether apoptosis is present and how the protein Beta Amyloid is involved.

Rohn and colleagues at UC-Irvine conduct parallel experiments, compare results and collaborate on analyses. "Getting results from two independent labs makes it believable," Rohn says.

The team's preliminary studies are encouraging and have generated considerable buzz; an article on new leads in the "how" of Alzheimer's published last fall in the prestigious journal *Science* quoted Rohn's colleagues at UC-Irvine and featured several of Rohn's photos of microscopic samples.

But while researchers on a number of fronts have made significant progress in understanding Alzheimer's disease, many questions still need to be answered before a cure is found. For example, Rohn and his colleagues still don't know how early in the onset of Alzheimer's apoptosis may be occurring; if it happens at the beginning, when the disease symptoms are still relatively mild, then there will likely be a much greater interest in developing new drugs.

Meanwhile, the Alzheimer's clock is ticking, and the health care crisis looms closer. Rohn offers another statistic: By the middle of this century, 24 million of today's Baby Boomers will have Alzheimer's disease. For most of them, Rohn says, the process that will destroy their memories, their lives and their savings has already begun.

"The stakes are growing," says Rohn, who serves on the leadership for the Alzheimer's Association of Idaho Council on Aging's Boise chapter. "It's becoming increasingly critical we find effective treatments for the disease."

— Janelle Brown

Carol Lynn MacGregor, (MA, history, '91) an author, historian and Boise State adjunct professor, has always been interested in horses. So it was only natural that she tell the tale of the Shoshone tribe introducing the horse to the Northwest in her first foray into writing children's books.

As a speaker for the Idaho Humanities Council's Scholars in the Schools program, MacGregor found that fourth-grade students studying Idaho history had little written information on the area's earliest inhabitants.

"The Shoshone have been here for more than 1,000 years, but the students are studying only the last 160 years of history," she says.

That realization prompted MacGregor to team with illustrator Dick Lee on *Shoshoni Pony*, a look at how the Shoshone people's introduction of the horse changed their lives and the lives of neighboring tribes. With the horse, she says, "The Shoshone had a better vehicle for moving camp and for making war, and a new value system for trading and the accumulation of wealth."

Now awaiting publication by Caxton Press in Caldwell, MacGregor hopes the book will be the first in a children's series on Idaho history. She's already started a second book, focusing on Lewis and Clark's journey through Idaho — a topic she wrote about once before in a book on the journal of Patrick Gass, a sergeant who traveled with the renowned explorers.

"Idaho was by far the hardest portion of the journey for them — I call it the hungriest part," she says. "At that time, all the game was on the plains, not up in the mountains."

She'll include in the book actual events and details gleaned from the expedition's diaries, avoiding the fictitious conversations found in so many children's history texts.

"Children don't need to be talked down to," she says. "They're interested in what really happened, and as a historian I feel compelled not to make up history."

She'd also like to write a book explaining the role of Chief Joseph as a caretaker of the Nez Perce nation, focusing on his character and the democratic process of the Nez Perce tribe. Finally, she hopes to eventually write about Bonnie McCarroll, the champion bronco-buster who in the 1920s competed equally with men before being killed in an accident at the Pendleton Roundup.

—Kathleen Craven



MacGregor with illustrations from *Shoshoni Pony*.