Study tracks Alzheimer's

Genetic marker could pave the way to isolating cause

By Ronald Kotulak
Science Writer

New findings have confirmed the presence of a genetic marker for the inherited form of Alzheimer's disease, Harvard researchers report, and scientists are hopeful they will soon identify the actual gene that causes this debilitating mental disorder.

The marker, which occurs on chromosome 21, has now been found in more than 30 families, according to Dr. Rudolph Tanzi, a member of the team of scientists from Harvard Medical School and the Massachusetts General Hospital who first reported the discovery of the genetic marker in 1986.

"It's encouraging to know that we are working on the right chromosome," Tanzi said. "We have a better idea of the location of the [Alzheimer's] gene, and as we get more families, we should get closer to isolating the gene."

Isolating the gene that is responsible for causing the inherited form of Alzheimer's would allow doctors to identify people at risk for developing the disease, and could eventually enable researchers to develop therapies to prevent the disease from occurring, he said.

"Once we pinpoint the gene, we can develop genetic tests to indicate who is at increased risk for the disease and we may eventually find drugs that could turn off the gene or counteract the abnormal protein it produces," explained Dr. Clifford Saper, head of the University of Chicago's committee on neurobiology.

People who inherit the genetic marker for Alzheimer's apparently have an extremely high risk of developing the disease, Tanzi said. Research indicates that the gene is dominant and that the children of patients with inherited Alzheimer's have a 50 percent chance of also developing the disease, he explained.

At least 15 percent of Alzheimer's cases are believed to be inherited. The inherited form of the disease begins at about age 40, while the more common form normally strikes after age 65. It is estimated that 25 percent of people older than 85 are afflicted with the disorder.

Alzheimer's disease, which affects an estimated 2.5 million Americans, is marked by a progressive destruction of brain cells that cause memory loss and impairment of thinking and behavior.

"Our goal is to use these markers to isolate the Alzheimer's gene itself," said Tanzi. "We want to find out what the gene does to cause the disease and to see whether it is related to the more common form of Alzheimer's disease. Our expectation is that the common form and the inherited form probably have similar pathological pathways."

Discovering the gene that causes the inherited type of the disease could also lead to a genetic link to the more prevalent form of the disorder. Scientists believe that genetic abnormalities increase a person's susceptability to a particular mental disorder when they are exposed to environmental toxins, such as harmful chemicals.

Tanzi, who reported the research team's latest findings at a medical symposium last Friday at the University of Chicago, said progress in the search for the Alzheimer's gene is moving rapidly because of new advancements in molecular biology. Other members of the Harvard team are Dr. James Gusella and Dr. Peter St. George-Hyslop.

Genetic markers are genes that have already been identified and that are inherited along with a defective gene that causes a disease. Generally, the marker genes are close to the disease-causing gene, thereby giving scientists a general location on a chromosome in which to look for the defective gene.

The Harvard team began their search for the Alzheimer's gene on chromosome 21 because patients with Down's syndrome have an extra copy of that chromosome and usually develop Alzheimer's disease in middle age. Autopsies of Down's patients show the same type of destructive buildup of amyloid plaques that are found in the brain's of Alzheimer's victims.

Early last year, scientists discovered a gene on chromosome 21 that makes the amyloid protein, an essential component of cellular structure. This gene, however, did not turn out to be the Alzheimer's gene.

Some researchers believe the Alzheimer's gene sends a wrong message to the nearby amyloid gene, causing it to produce too much of the amyloid protein. The amyloid protein then accumulates in brain cells.

"The Alzheimer's gene may trigger the amyloid gene to cause Alzheimer's disease," said Tanzi. "We know that in many cases of Down's syndrome the amyloid gene is overexpressed. We know that Down's syndrome patients, by the time they reach middle age, show amyloid plaques in autopsies.

"The presumption is that the overexpression of the amyloid gene leads to amyloid plaque formation," he said.

Free AIDS book took team effort

BOSTON (AP)—A book about AIDS from a small, gay publishing house is being offered free to the public this month at bookstores around the country in a unique joint effort by the publishing industry.

The 126-page volume, "You Can Do Something About AIDS," contains 35 short chapters written by such celebrities as Elizabeth Taylor, Whoopi Goldberg and Abigail Van Buren, who writes "Dear Abby."

It was published as a "pro bono" book with the help of publishing houses and companies like the Book-of-the-Month Club, Random House, Bantam Books, Simon and Schuster and Waldenbooks.

"It's absolutely unprecedented," said Rep. Gerry Studds (D.,Mass.) who helped the book along by contacting some publishing companies. "Nobody's been able to pull together the publishing industry like this before—much less for a free book."

There are chapters on stopping the spread of AIDS, acquired immune deficiency syndrome, and others that discuss ways to cope with the disease or help AIDS victims.

Olympic diving champion Greg Louganis, in a chapter titled "Be a Buddy," encourages people to make contact and build friendships with AIDS victims. Since 1984, Louganis has been a friend of 17-year-old AIDS victim Ryan White of Cicero, Ind., who caught the disease from infected blood products he took for hemophilia.

"The thing I respect most about Ryan is that someone in his position could be very angry or bitter. But he isn't," writes Louganis. "In spite of his own difficulties, he's trying to help others. . . ." There's no reason to delay making contact and letting someone know you care."

"You Can Do Something About AIDS" is the brainchild of 36-year-old Sasha Alyson, the owner of Alyson Publications in Boston. He started his company 11 years ago.

Inspiration for the project came from the grief of losing 35 friends to AIDS, Alyson said.