

\$10G grant for Winthrop Alzheimer's study



Dr. Allison B. Reiss studies the cellular components of Alzheimer's.

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Alzheimer's disease is so complex, it cannot be effectively understood by studying mice or even by examining brain scans of people believed to be affected, Dr. Allison B. Reiss of NYU Winthrop Hospital said Tuesday.

She and her collaborators in the laboratory are re-creating the cellular components of the human brain to better understand Alzheimer's, a disease that steals memories, all higher thinking and sense of self.

The research by Reiss and her colleagues has so intrigued the Alzheimer's Disease Resource Center in Bay Shore that it has given her \$10,000 to further her research.

Reiss is analyzing human stem cells re-engineered to function as neurons, the key cells in the brain involved in all higher thought, learning and memory. In lab dishes, these cells are integrated with other cellular components to re-create a milieu of the human brain. The team hopes to coax lessons from the cocktail of gray and white matter to better understand how the disease damages the most complex organ in the known universe — the source of music, mathematics, politics — and crime.

The human brain is unparalleled in its complexity; human cells, therefore, work best to understand the disease that unrav-

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els it, Reiss said. She calls the approach re-creating a microcosm of the human brain.

"Mice do not work as surrogates for this very human condition," Reiss said. "We are trying to build a system that will help us predict who is vulnerable to Alzheimer's — then to start looking at families to follow over time. We also want to test drugs and treatments."

The leading drugs she and her colleagues hope to test are those most likely to have an impact on the "plaques and tangles" of the disease, two destructive elements seen in brain autopsies of people with Alzheimer's. She also hopes to test medications that can address the loss of energy pro-

duction in the brain, a feature of Alzheimer's.

Beta amyloid is the gummy protein that makes up plaques. Another one, called tau, causes the disastrous unraveling of neurons. But Reiss says beta amyloid is a mystery because some older people have significant plaque formation at the end of life but do not develop Alzheimer's disease.

Her research also is delving into damage of the mitochondria, tiny bean-shaped factories in cells that provide all of the body's chemical energy. Damage in these vital components may help explain why people lose their minds to this form of dementia, she said.

"Oh my God, they surprised me completely," Reiss said of the Bay Shore resource center's \$10,000 grant. "They invited me to talk about my work. Then suddenly [when] I am giving my talk, someone said: 'We have a surprise for you' and they took out this giant check."

"This is so validating. It is such a big struggle every day for every one of us in research," she said of working to find answers to complex medical conditions.

Reiss said she could not take all of the credit for the novel method of investigating a disease that affects more than 5 million people in the United States.

"This is a 'takes-a-village' thing, it's not just me," she said. "This is a collaborative effort."