Mayo Clinic researchers have developed a method to reduce the production of alpha-synuclein in the brain. Alpha-synuclein is a protein that is believed to be central to the cause of Parkinson’s disease. All patients with Parkinson’s disease have abnormal accumulations of alpha-synuclein protein in the brain.

The new method involves the delivery of RNA interference compounds via injection directly to selected areas of the brain. The RNA interference compounds silence the gene that produces alpha-synuclein, according to the Mayo researchers. The study was published in *Molecular Neurodegeneration*.

“While our research has not yet been tested on humans, we expect that these findings will lead to an effective treatment for slowing or even halting the progression of Parkinson’s disease,” says Demetrius Maraganore, M.D., a Mayo Clinic neurologist.

Drs. Maraganore and Matthew Farrer, Ph.D., a Mayo Clinic neuroscientist, invented a method to treat Parkinson’s disease by reducing alpha-synuclein expression. Mayo Clinic patented and licensed their invention to Alnylam Pharmaceuticals Inc., which is leading the effort to commercialize the Mayo invention using Alnylam RNA interference compounds.

“Our next step with this research is to test the therapy in mice and primates with experimental forms of Parkinson’s disease and prove that we are able to stop the disease progression in those animals,” says Dr. Farrer.

“We are hopeful, as preliminary studies suggest this is possible.”

“It is important to note that there are significant hurdles to this therapy. The compound needs to be directly delivered to the brain through a neurosurgical procedure — it cannot be given by mouth or injection into a vein,” says Dr. Maraganore.