



## Cognition Therapeutics, Inc.

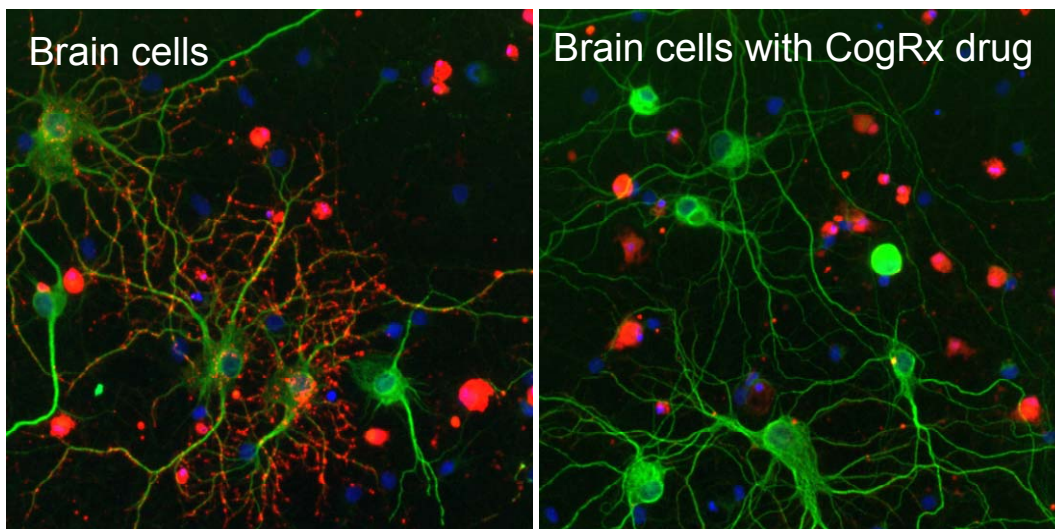
Dr. Susan Catalano  
Chief Science Officer  
(510) 851-5653 Cell  
[scatalano@cogrx.com](mailto:scatalano@cogrx.com)

2403 Sidney St., Suite 261  
Pittsburgh, PA 15203  
(412) 481-2210 Main  
[www.cogrx.com](http://www.cogrx.com)

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### Discovering Drugs for Alzheimer's disease

Alzheimer's disease is causing an epidemic of suffering in the world today. The number of patients with Alzheimer's is currently 5 million, and is expected to rise to 16 million patients by 2050. There are currently 5 approved drugs, and all briefly improve symptoms but do not fundamentally alter the course of the disease, a property that the FDA designates as disease-modifying. The mission of Cognition Therapeutics is to discover disease-modifying drugs for Alzheimer's disease. Alzheimer's disease begins as Mild Cognitive Impairment, marked by a loss of memory. This memory loss is caused by a buildup of toxic proteins in the brain. Scientific evidence suggests that one of the first proteins to build up in the diseased brain is beta-amyloid. Individual beta-amyloid proteins (known as monomers) are produced normally in the brain, where they play a vital role. Beta-amyloid monomers are released into the fluid surrounding the synapses, specialized points of contact between nerve cells where fast electrical communication between brain cells takes place. Normally the monomer is then degraded or recycled within the brain. Over long periods of time, small amounts of the protein escape the recycling system and build up in the brain. When this happens, these individual proteins begin to stick to each other and form a toxic shape known as an oligomer (from the Greek word for "many"). Unlike monomers, beta-amyloid oligomers bind to the surface of the neuron at synapses and interfere with synaptic communication, which leads to memory failure, the first sign of impending disease. Cognition finds drugs by studying the effects of this toxic protein on actual mature brain cells, or neurons, in the petri dish. Cognition has discovered small molecule drugs that can stop the toxic shape of beta-amyloid that causes Alzheimer's disease by blocking the protein binding to the surface of the neuron at synapses. This is very promising, since studies have shown that even partial blocking of oligomer binding can completely prevent their effects on memory-related electrical communication. We have found that these molecules can survive in the blood stream, and so can be tested for their ability to preserve normal memory function in the face of oligomer challenge. These promising molecules will be engineered into drugs by an iterative process known as medicinal chemistry. These molecules represent some of the first ever reported to target these toxic proteins and stop their effects on neurons.



Left panel: In Alzheimer's disease, some brain cells (green) have toxic protein (small red dots) binding to their entire surface. Right panel: In the presence of Cognition's drug, toxic protein binding is blocked.