Foundation for Angelman Syndrome Therapeutics

Fact Sheet

THE IMMEDIATE NEED

The Foundation for Angelman Syndrome Therapeutics (FAST) is singularly focused on funding research that will lead to treatments and a cure for Angelman syndrome. **The FAST community is working to raise $2 million by June 30, 2017,** to fund the next critical phase of research involving gene therapy. FAST's goal is to finalize the scientific foundational work necessary to test therapies in human clinical trials within two years or less.

Angelman Syndrome Overview

Angelman syndrome (AS) is a rare neuro-genetic disorder that affects roughly one in 15,000 people – about 490,000 people worldwide. Individuals with Angelman syndrome typically have balance issues, motor impairment and debilitating seizures. Some patients never walk. Most do not speak. Anxiety and disturbed sleep can be serious challenges among patients. Individuals affected require continuous care and are unable to live independently. They have a normal lifespan.

Typical characteristics of AS are not usually evident at birth. People with the disorder have feeding difficulties as infants and noticeable delayed development around 6-12 months of age. They need intensive therapies to help develop functional skills. In most cases, Angelman syndrome isn't inherited. AS affects every race and both genders. It is often misdiagnosed as autism or cerebral palsy.

Angelman syndrome has some distinct behavioral characteristics. People affected tend to have a happy demeanor, characterized by frequent laughing, smiling and excitability. Many individuals with Angelman syndrome are attracted to water and take great pleasure in activities like swimming and bathing.

Path to a CURE

FAST has brought together a multi-disciplined team of more than two dozen scientists from multiple universities and pharmaceutical companies to join forces on a focused path to a cure. Their work will change life for people with Angelman syndrome and, potentially, related disorders like autism and Alzheimer's disease. Known as the "FIRE" Consortium: FAST Integrative Research Environment, the team has launched a two-year, aggressive plan to bring about clinical testing of several potential gene therapy treatments for AS.

The team has cured the symptoms of the disorder in the mouse model[1] using multiple strategies.

Various approaches include:

Gene therapy, which delivers a normal gene into cells to replace the missing or defective gene.

Protein replacement therapy uses safe viruses to supplement or replace the protein that is deficient or absent.

Gene editing turns on the normally silent gene so there is an active copy.

Down-stream therapy uses drugs to treat the symptoms and improve the quality of life for those with AS.

The FIRE team knows exactly what causes Angelman syndrome

Angelman syndrome is a single-gene disorder caused by an abnormality in the *UBE3A* gene on the maternal 15th chromosome. People have two sets of chromosomes – one inherited from the mother and one from the father. In a typical person, the maternally inherited *UBE3A* is active, while the copy of the gene inherited from the father is silenced – a phenomenon known as imprinting. For Angelman patients, the maternal gene does not function properly because of a deletion, mutation or other defect.

As a result, the neurons of people with AS do not make any functional *UBE3A*, and that's what triggers the symptoms of AS. Patients, however, have structurally normal brains, and Angelman syndrome is not a degenerative disorder. FIRE team scientists believe that if they can either replace the missing or mutated gene, or turn on its normally silent, paternal mirror image copy in the brain, the symptoms of the disorder could be reversed.

More about FAST

FAST is a Section 501(c)(3) nonprofit research organization. FAST is the largest, non-governmental funder of Angelman-specific research. Paula Evans, the mother of a young girl with Angelman syndrome, founded FAST in 2008.

Cure Angelman **NOW!**

CureAngelman.org

[1] A mouse model is a strain of mice that carries a mutation in a mouse gene that is analogous to a mutation in a human gene that causes disease or a disorder.