SCIENTIFIC AMERICAN™

Certain Brain Cells Become Toxic in Lou Gehrig's Disease

Brain cells known for assisting neurons may be killing them in patients with ALS

By Erica Westly | January 25, 2012

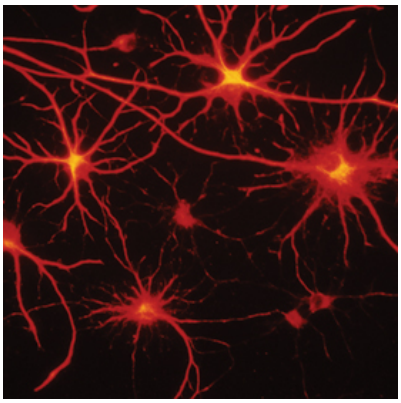

Image: Stephen Waxman and Hank Morgan/Photo Researchers, Inc

In this groundbreaking adventure into the worlds of psychopaths, the renowned psychologist Kevin Dutton argues that there is a fine line between a brilliant...

Amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig's disease, is a progressive neuromuscular disease that affects about 130,000 people worldwide a year. The vast majority of patients are isolated cases with no known family history of the disease. They usually start developing symptoms of the loss of motor neurons in middle age and die within five years of diagnosis. Researchers know very little about what causes ALS. Now a recent study in *Nature Biotechnology* suggests that the neuron death associated with the disease may be caused by astrocytes, a type of brain cell that normally helps neurons.

Previous research had suggested that astrocytes could become toxic in the rare form of ALS known to have genetic roots, and the study authors wanted to see if a similar phenomenon might happen in the more common isolated cases. The answer turned out to be yes: when they cultured astrocytes from those ALS patients, the healthy motor neurons in the culture began to die off after a few days. Other types of neurons were unaffected by the astrocytes, suggesting that they specifically harm the neurons involved in controlling the body's movements.

Lead author Brian Kaspar, a neuroscientist at Ohio State University, and his collaborators next will attempt to figure out what makes the astrocytes behave this way. If researchers can understand why motor neurons die in ALS, they may have a better chance of finding a cure.