

## Neuromodulation Could Curb Some Autism Behaviors

Most research on the brain shows that the cerebellum, near the brain stem, is involved in coordinating movements. A research team at UTSW, conducted a study that suggested a particular region of the cerebellum is related to autistic behaviors and are targeting this area for brain stimulation, or other neuromodulation techniques could be a way to rewire the neural circuits in the brain that are disrupted in autism.

Dr. Peter Tsai, lead researcher of this team and an Assistant Professor of Neurology & Neurotherapeutics stated, "This is potentially quite a powerful finding. From a therapeutic standpoint, this part of the cerebellum is an enticing target. Although neuromodulation would not cure the underlying genetic cause of a person's autism, improving social deficits in children with autism could make a huge impact on their quality of life. This area of the brain has not received the attention it deserves in regards to understanding autism."

The researchers used a mouse model for comparison to the human brain. Both mice and humans have neural connections between the cerebellum and the cerebral cortex. The Right CrusI domain of the cerebellum and the cortex's inferior parietal lobule are the key areas the study examined. When the circuits that connect these two regions are impaired in any way, behaviors common in

autism crop up. From previous research, Dr. Tsai's team knew that an impairment in this area was commonly seen in children with autism. When brain stimulation was used on these connections, social impairment in mice, which is similar to that in humans who are on the autism spectrum, was reversed. The research showed that neuromodulation techniques on the mice who had been altered to have autism-like behaviors did work to reverse those behaviors, even in adult mice.

Source: [UTSW Medical Center](#)



## FDA Warns About Too Much Vitamin B

Biotin may be good for shiny nails and luscious hair, but too much of it can mess with your medical tests. According to the Food and Drug Administration (FDA) who issued a statement regarding excessive biotin consumption, "...patients who are ingesting high levels of biotin in dietary supplements can cause clinically significant incorrect lab test results."

While faulty lab tests may not seem significant, the ramifications of misleading results can contribute to a



host of complications afterwards. In one instance, the FDA noted that faulty test results likely contributed to a patient dying of a heart attack. The patient, who was taking high levels of biotin, showed low levels of troponin on his labs. Troponin is a critical biomarker that predicts heart attacks. Because the biotin was falsely lowering the troponin biomarker in the patients, his heart attack was not caught in time.

In addition to this tragic case, the FDA also cited an increase in the misdiagnosis and mismanagement of patient care, due to biotin-related obfuscated lab results. "The FDA has seen an increase in the number of reported adverse events, including one death, related to biotin interference with lab tests," the report stated. According to the Institute of Medicine, just 30 micrograms a day is sufficient. The FDA cited some supplements that contain over 650 times the daily recommended amount.

Source: [Live Science](#)

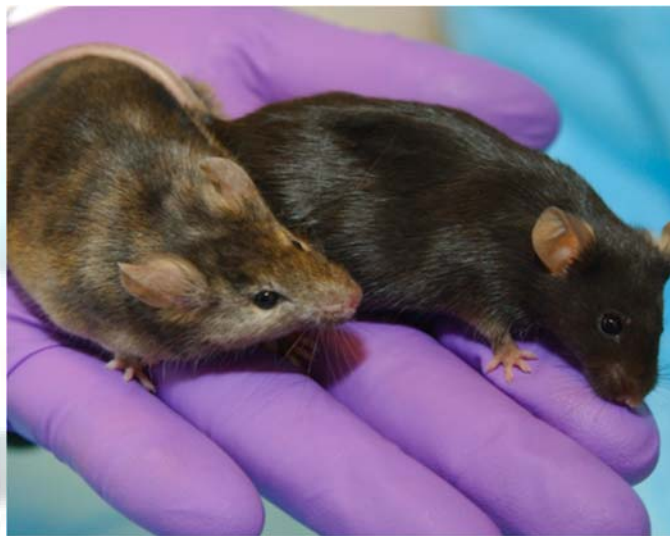
## New Breast Cancer Vaccine Shows Promise in Mice

Researchers at the University of Copenhagen and the University of Bologna have now developed a vaccine for what is commonly called HER2-positive breast cancer, which causes around 25 percent of cases. Testing performed in a mouse model shows promise and has been reported in *OncImmunology*.

To get the immune system to identify cancer cells as foreign, the scientists added a molecule called an antigen, normally found on the surface of cancer cells, to a virus-like particle. Typically, the immune system has a hard time telling the difference between healthy and cancerous cells. The added antigen acts to provoke a robust immune response to cancer.

“Our virus-like particle with the added cancer antigen makes the body believe it is under attack. This makes the immune system produce large amounts of antibodies targeted at the cancer antigen, which then fights the cancer cells in the mice,” explained study author Adam F. Sander, an Associate Professor from the Department of Immunology and Microbiology. The vaccine was shown to not only have a preventive effect, but it can also have an impact on cancer that already developed.

HER2-positive breast cancer is currently treated using antibodies that battle it, which takes a long time. This is an expensive treatment which has serious side effects. The immune system can also build up a tolerance to the antibodies over time, making them ineffective. The researchers think that their new vaccine will be much more affordable if they can reiterate its effects in human.



Source: [OncImmunology](#)

## What is "Diabetes of the Brain?"

There are two forms of diabetes that most people are familiar with, type 1 and type 2. There could soon be a third type, however. Research into Alzheimer's disease (AD) shows a connection between how the brain processes glucose and the severity of protein plaques in the brain that are the hallmark of AD and other forms of dementia.

A study commissioned by the National Institute on Aging and the National Institutes of Health showed that when the brain doesn't break down sugar correctly, the result can be a form of "diabetes of the brain." Disruption in this

brain function is directly related to symptoms of AD outwardly and within the brain structure.

The researchers took measurements of glucose levels from cross-sections of brain tissue from different areas. Some of the regions included those known to be involved in AD pathology including the frontal and temporal cortex. Measurements were also taken from the cerebellum which is resistant to the plaques of tau protein found in dementia patients.

Investigators organized the study participants into three groups: Patients who had symptoms of AD during life and beta-amyloid plaques found in post-mortem examinations, those with no signs while they were alive, but evidence of AD in the brain after death, and healthy individuals with no dementia symptoms or pathology. Glycolysis, the process that the brain uses to break down sugar was analyzed as well. The result showed that individuals that had poor glycolysis and higher levels of glucose in the brain also had more severe symptoms of AD during their life as well as more significant amounts of beta-amyloid plaques and nerve tangles in the brain.



Source: [CDC, University of Pennsylvania School of Medicine](#)