Decades after it crashed into a field in rural Australia, the Murchison meteorite remains one of the most studied meteorites due to its richness in organic compounds and its potential for unlocking clues to how natural processes occur in our universe. Among those researching Murchison’s wealth of materials—scientists at Albany Medical College, who have found that one extraterrestrial amino acid may prevent or reduce the duration of seizures in epilepsy. Their findings were published in the journal Epilepsia.

Studies of the meteorite’s composition have revealed the presence of amino acids—considered the building blocks of life and used in every cell of the body to build the proteins needed to survive. The discovery of these molecules that are so essential to human life within an extraterrestrial object have led scientists to question whether the meteorite is a clue to life outside of our solar system, and whether theories of evolution’s “big bang theory” hold any truth. Among the amino acids found within the meteorite, of particular interest to Damian Shin, PhD, assistant professor in the Center for Neuropharmacology and Neuroscience, is the amino acid isovaline.

“Previous studies found that isovaline is structurally similar to another amino acid called glycine, which has been shown to calm the nerves in the brain—so we hypothesized that isovaline may also have an effect on seizure control by calming brain activity in a similar manner,” he explains.

In his research, Shin studied isovaline that, since the meteorite’s initial discovery, has also been found in fungus on earth and is theorized to result from dust from the meteorite. Using rodent models, Shin and his team examined the effect isovaline had on controlling seizures. When isovaline came in contact with the brain, Shin and his team observed its reaction on neuronal activity.

“Just as we suspected, we found that isovaline quiets excitatory neurons. However, it does so by a mechanism unlike glycine. Instead, isovaline increases the activity of interneurons, which act as ‘gating’ cells, which control how other neurons interact with each other," he says. “In this way, isovaline stopped seizures completely or reduced the frequency of seizures by 50 percent.”

“This is promising because we know that epilepsy causes a disruption in the normal functioning of some ion channels—prominent components of the nervous system that conduct nerve impulses within a cell. Sometimes the activity of ion channels become pathological, which makes some neurons ‘hyperexcited,’” says Shin. “The next step is to determine which ion channel is affected by this amino acid. This will help us better understand how isovaline can impart anticonvulsant properties for patients with epilepsy.”

He stresses that the work is preliminary and it could be years before the work is translated to a treatment for humans. However, he is encouraged by these early results to possibly help a portion of the population looking for new epilepsy solutions.

“Approximately 20 to 30 percent of patients with seizures do not respond to drugs and the ones who do may experience serious side effects,” says Shin. “We’re hoping isovaline can someday fill that gap. When you consider it, the notion that something that arrived here from outer space can impact a problem here on earth is particularly exciting.”

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**Amino Acid Found to Stop Seizures is OUT OF THIS WORLD**

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**Anesthesiologists Take Part in MEDICAL MISSION**

Dr. Adam DeMars, senior anesthesia resident, took part in a medical mission to Babahoyo, Ecuador along with other members of the department of anesthesiology. The team participated in several surgeries, including a cleft palate repair on the young patient shown. Team members collaborated with a group from New York City-based Blancas House. In addition to cleft lip and palate repair, the entire team of 96 volunteers performed surgeries, including gynecological, endoscopic, and general surgery. The department of anesthesiology with support of Chairman Dr. Kevin Roberts plans to conduct a yearly overseas mission trip whereby one senior anesthesia resident is given the opportunity to experience how anesthesia care is provided in underprivileged countries. Team members for the Ecuador trip included DeMars, Archana Mane, MD, Peter Socaris, CRNA, and Michael Ingoglia, MD.