



School of Medicine

UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

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Contact: Mark Couch, 303-724-5377, mark.couch@cuanschutz.edu

CU Researchers Publish Study on Nerve Cell Repair in *Nature Neuroscience*

AURORA, Colo. (May 18, 2020) – Researchers from the University of Colorado School of Medicine have identified a new way that cells in the central nervous system regenerate and repair following damage.

In an article published in the current issue of *Nature Neuroscience*, scientists from CU found that precisely-timed motor learning stimulates cellular processes to improve recovery after damage to oligodendrocytes, cells that are critical for healthy neurologic function throughout life.

The study uses advanced microscopy and mouse models of multiple sclerosis (MS) to evaluate oligodendrocytes and their precursor cells to better understand how they can be harnessed to restore neuronal function following injury.

“Tissue regeneration following injury or disease is a long sought-after goal, particularly in the adult nervous system,” said Ethan G. Hughes, PhD, assistant professor of Cell and Developmental Biology at the CU School of Medicine and a Boettcher Investigator.

Of particular interest in this study, Hughes and his colleagues found that mature oligodendrocytes are able to contribute to repair of the nervous system by generating new myelin sheaths. Myelin sheaths surround nerve fibers and speed transmission of nerve impulses to and from the brain. Identifying the contribution of mature oligodendrocytes to this process is a breakthrough finding that challenges existing scientific orthodoxy.

Hughes and his colleagues found that behavioral training in mice promoted the regeneration of myelin sheaths from newly formed and mature oligodendrocytes to aid in the repair of damage of the nervous system.

Their findings offer a potential new target for therapeutic interventions for patients with neurologic disability, such as those caused by MS, which is a progressive, degenerative disease that affects the ability of the brain to communicate with the rest of the body.

Hughes was [awarded](#) a Boettcher Foundation Webb-Waring Biomedical Research Award in 2016 and research grants from the Conrad N. Hilton Foundation, National Multiple Sclerosis

Society, National Institutes of Neurological Disorders and Stroke, and Whitehall Foundation to support his laboratory's work. This work was done in collaboration with the laboratory of Cristin Welle, PhD, associate professor of Neurosurgery and Physiology and Biophysics at the CU School of Medicine and a fellow Boettcher Investigator. The current study by Hughes and his colleagues shows that motor learning improves recovery from demyelinating injury through enhanced remyelination.

Hughes is the senior author of the paper. Co-authors are Clara M. Bacmeister, MS; Helena J. Barr, MS; Crystal R. McClain, PhD; Michael A. Thornton, MS; Dailey Nettles; and Cristin G. Welle, PhD. [The article](#) was published on May 18, 2020, in *Nature Neuroscience*.

About the University of Colorado School of Medicine

Faculty at the University of Colorado School of Medicine work to advance science and improve care. These faculty members include physicians, educators and scientists at UCHealth University of Colorado Hospital, Children's Hospital Colorado, Denver Health, National Jewish Health, and the Veterans Affairs Eastern Colorado Health Care System. The school is located on the [Anschutz Medical Campus](#), one of four campuses in the University of Colorado system.