

Scientists identify undiscovered role of enzyme in regulating blood pressure

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In a study published today in *Nature Biotechnology*, scientists from The Feinstein Institute for Medical Research and Karolinska Institutet discovered that T-cells capable of producing the neurotransmitter acetylcholine can regulate blood pressure. These T-cells are white blood cells, part of the immune system, which contain an enzyme choline acetyltransferase (ChAT). It is this ChAT enzyme that is responsible for the production of acetylcholine. Having now identified ChAT cells' new role and previously knowing that they respond to vagus nerve stimulation, Feinstein Institute researchers will explore using bioelectronic medicine to treat blood pressure and hypertension - a condition that affects more than 70 million Americans. Bioelectronic medicine is a new field of research that uses technology to treat disease and injury.

"Previous studies conducted at the Feinstein Institute found that the immune function could be controlled by neural mechanisms through the spleen, and with this study we were looking to identify triggers that could reach deeper into the smaller arteries to aid with conditions such as [high blood pressure](#)," said Kevin J. Tracey, MD, president and [chief executive officer](#) of the Feinstein Institute and one of lead authors of the *Nature Biotechnology* paper. "We found what we were looking for, and will develop this finding into new research that we hope will pave the way to new therapies that will improve the lives of millions."

Scientists from the Feinstein Institute, Karolinska Institutet in Stockholm, Sweden, University Health Network in Toronto, and York

University in Toronto collaborated in making the discovery published in the *Nature Biotechnology* paper. Researchers at the Feinstein Institute, who are leaders in the field of bioelectronic medicine, have partnered with the Karolinska Institutet for the past 10 years. The Karolinska Institutet is one of the most-prestigious medical universities in the world and is the home of the Nobel Prize. Peder S. Olofsson, MD, PhD, worked at the Feinstein Institute between 2009 and 2015 and has since returned to the Karolinska Institute as founding director of its Center for Bioelectronic Medicine. The Feinstein Institute and Karolinska Institutet collaborate to help propel the field of bioelectronic medicine.

"Interdisciplinary collaborations in bioelectronic medicine offer an opportunity to improve understanding of little understood physiological mechanisms. This study, which focused on [blood pressure](#) regulation, represents one such advance," said Dr. Olofsson, corresponding author of the *Nature Biotechnology* paper.

More information: Blood pressure regulation by CD4+ lymphocytes expressing choline acetyltransferase, *Nature Biotechnology*, [DOI: 10.1038/nbt.3663](#)

Provided by Northwell Health

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