SomeStudy: Retraining Cells May Reverse Brain Damage After Stroke

Cell therapy technology offers hope for unprecedented recovery, even days after stroke

The Ohio State University Wexner Medical Center

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NEWS PACKAGE

SUGGESTED TEASE	MOST PEOPLE WHO SUFFER A STROKE AREN'T TREATED IN TIME TO PREVENT LASTING, DEBILITATING BRAIN DAMAGE. BUT NEW RESEARCH OFFERS HOPE FOR RECOVERY, EVEN WHEN TREATMENT BEGINS DAYS AFTER A STROKE. DETAILS, COMING UP.
ANCHOR LEAD	EVERY FORTY SECONDS, SOMEONE IN THE UNITED STATES HAS A STROKE. AND THOUGH MEDICAL ADVANCEMENTS HAVE ALLOWED DOCTORS TO CLEAR CLOTS IN THE BRAIN FASTER AND IMPROVE OUTCOMES, THIS IS ONLY EFFECTIVE IF DONE WITHIN A FEW HOURS OF THE STROKE, BEFORE BRAIN TISSUE DIES. BARB CONSIGLIO HAS THE DETAILS ON NEW RESEARCH PUBLISHED IN THE JOURNAL SCIENCE ADVANCES THAT COULD LEAD TO A BREAKTHROUGH IN STROKE TREATMENT. IT CAN HELP PATIENTS RECOVER EVEN DAYS LATER, AFTER THE BRAIN HAS BEEN DAMAGED.
(PACKAGE START) ---------- **CG: Courtesy: The Ohio State University Wexner Medical Center** **:00 - :03**	(Nats - Sound) :02
Shots of Owens preparing sermon	AFTER SUFFERING A STROKE, JOSEPH OWENS IS SLOWLY REGAINING HIS SPEECH, SOMETHING THAT'S EXTREMELY IMPORTANT TO HIM AS A MINISTER. :07
CG: Joseph Owens **Stroke patient**	*"There were some things that I couldn't speak or I wouldn't remember some things."* :07
Shots of Owens preparing sermon	OWENS IS ACTUALLY ONE OF THE LUCKY ONES. ABOUT EIGHTY PERCENT OF ISCHEMIC STROKE PATIENTS DON'T RECEIVE CLOT-BUSTING THERAPY IN TIME TO PREVENT PERMANENT EFFECTS TO THEIR SPEECH, COGNITION AND MOTOR FUNCTION. :12
Shots of lab work	(NATS - Researchers in lab) :01
	BUT NEW TECHNOLOGY DEVELOPED AT THE OHIO STATE UNIVERSITY WEXNER MEDICAL

	CENTER AND OHIO STATE UNIVERSITY COLLEGE OF ENGINEERING PROVIDES HOPE FOR UNPRECEDENTED STROKE RECOVERY. :07
CG: Dr. Shahid Nimjee **Ohio State Wexner Medical Center**	*"This technology has an opportunity to allow regeneration of tissue after stroke, such that, in a delayed fashion, we have a treatment option for these patients." :10*
Shots of engineering lab	THIS INNOVATIVE CELL THERAPY USES ORDINARY SKIN CELLS LOADED WITH SPECIFIC D-N-A THAT, WHEN DELIVERED TO THE BRAIN, TRAINS THESE SKIN CELLS TO BECOME BLOOD VESSEL CELLS, GROWING NEW, HEALTHY TISSUE AND RESTORING NORMAL BLOOD FLOW TO THE BRAIN. :13
CG: Daniel Gallego-Perez, PhD **Ohio State College of Medicine**	*"We sort of rewrite the genetic code of the cell to some extent. So the cell sort of remembers that it has some sort of plasticity, it can become something else. And then with the right signals, we can tell that cell to become what we want that cell to become."* :14
Shots of medical lab Shots of brain scans	RESEARCHERS STUDIED THE APPROACH IN MICE, ADMINISTERING THE CELLS SEVEN DAYS AFTER STROKE. WITHIN TWO WEEKS, THE MICE REGAINED NINETY PERCENT OF THEIR MOTOR FUNCTION AND M-R-I SCANS SHOWED THAT DAMAGE TO BRAIN TISSUE WAS REVERSED. :11
Dr. Nimjee (CG'd earlier)	*"We literally saw an improvement in the two most important aspects of stroke recovery in preclinical models." :05*
Shots of Owens preparing sermon	THE HOPE IS THAT THIS WILL ONE DAY HELP PATIENTS LIKE OWENS RECOVER AND GET BACK TO THEIR LIVES. AT OHIO STATE WEXNER MEDICAL CENTER, THIS IS BARB CONSIGLIO REPORTING. :06
(PACKAGE END) ---------- **ANCHOR TAG**	RESEARCHERS CONTINUE TO STUDY THIS TYPE OF CELL THERAPY AND ARE EXPLORING OTHER USES FOR THIS TECHNOLOGY TO TREAT BRAIN DISORDERS SUCH AS ALZHEIMER'S AND AUTOIMMUNE DISEASES.

SOCIAL MEDIA

Share it! Suggested tweet:	Most stroke victims don't receive treatment fast enough to prevent permanent brain damage. Now, new technology developed at @OSUWexMed offers hope for unprecedented recovery, even when treatment begins days after a stroke occurs. https://bit.ly/3qyvwp6
Suggested post:	Most stroke victims don't receive treatment fast enough to prevent brain damage. But researchers at The Ohio State University Wexner Medical Center have developed technology to "retrain" cells to repair damaged brain tissue. It's an advancement that may help patients regain speech, cognition and motor function, even when administered days after a stroke. https://bit.ly/3qyvwp6

EXTRA BITES

CG: Daniel Gallego-Perez, PhD **Ohio State College of Medicine**	Gallego-Perez explains what happens when cells are reprogrammed: *"The key is that we can take the skin cells, which are just the skin cells, and we can train them to become a blood vessel cell. So when they get deployed into the brain, they can again reperfuse the brain and then allow actual brain cells to potentially survive the incident better or regenerate and repair damaged brain tissue much more effectively." :18* Gallego-Perez explains how cells are reprogrammed: *"What we found is basically a way in which we use nanotechnology to genetically precondition cells, sort of giving them signals or information so they can then basically learn how to behave like a different cell types." :15* Gallego-Perez says the new vascular cells restored blood flow and also repaired brain tissue: *"Blood supply was really important because you need the nutrients to actually help sustain these cells. But at the same time the inducing or triggering the formation of new blood vessels, we think was key to actually enable the repair of brain tissue." :14*
CG: Dr. Shahid Nimjee **Ohio State Wexner Medical Center**	Nimjee says this study demonstrates great potential for the future treatment of ischemic stroke: *"This is a proof of concept in a biological system, in a relevant model of preclinical stroke, that demonstrates the potential that, you can have a stroke and then in a delayed fashion, you can receive this treatment and you can have an improvement in your outcome." :15*

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CG: Dr. Shahid Nimjee **Ohio State Wexner Medical Center**	Nimjee says this technology could treat other brain diseases in the future: *"This has implications, possibly, in Alzheimer's disease, I could see this working in degenerative and inflammatory diseases of the brain, like autoimmune diseases. The potential of this technology is limitless." :12* Nimjee says this research challenges the thought that dead brain tissue cannot be regenerated: *"The thought was that once brain tissue dies, that was it. And we're finding out more and more, through better imaging technology, and even through looking at brain function, histology, and even imaging, that there's opportunities where we can regenerate cells to have functioning brain again." :18*
CG: Joseph Owens **Stroke patient**	Owens says research is making new treatments possible: *"They're finding ways that seemed to be impossible, but they're possible, through the research and all the things that they're doing." :12* Owens explains how he learned he had a stroke: *"After the procedure, they found a clot. And they said that they had to get that, remove that, and that I had a stroke." :10* Owens describes his symptoms after suffering a stroke: *"When I went to rehab, my left side was weak, very. It was weak. Weak to the point where I didn't walk too good." :13*

References

[1]*Nanotransfection-based vasculogenic cell reprogramming drives functional recovery in a mouse model of ischemic stroke*, **Science Advances, March 19, 2021**. Online: https://advances.sciencemag.org/content/7/12/eabd4735

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