# Breakthrough Device Heals Organs with a Single Touch

*Device instantly delivers new DNA or RNA into living skin cells to change their function*

***Note: Embargoed until Monday August 7, 2017 at 11 a.m. eastern**

*The Ohio State University Wexner Medical Center*

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| Produced by: MediaSource<br>www.mediasourcetv.com<br><br>Package Length: 1:51 | To download broadcast-quality video and other multimedia elements: http://bit.ly/2tyoPdM<br><br>Content provided by:<br>**The Ohio State University Wexner Medical Center** |

**NEWS PACKAGE**

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| **SUGGESTED TEASE** | STILL TO COME, A SCIENTIFIC BREAKTHROUGH THAT COULD REVOLUTIONIZE MEDICINE.<br>THE FIRST LOOK AT A DEVICE ABLE TO RESCUE INJURED OR FAILING ORGANS - *WITH A SINGLE TOUCH*. DETAILS NEXT IN HEALTH NEWS. |
| **ANCHOR LEAD** | IT MAY SOUND LIKE THE PLOT OF A SCI-FI NOVEL, BUT IT'S ACTUALLY HAPPENING.<br>RESEARCHERS AT THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER HAVE DEVELOPED AND TESTED A DEVICE, THAT RESCUES INJURED OR FAILING ORGANS…. WITH A *SINGLE* TOUCH.<br>WITH MORE ON THIS REMARKABLE TECHNOLOGY, HERE'S CLARK POWELL. |
| **(PACKAGE START) ----------**<br><br>**CG: Courtesy: The Ohio State University Wexner Medical Center :00 - :03**<br><br>Shot of device<br><br>Wide shot of laboratory<br><br>Shots of demonstration | (Nats - Workers in the lab) :02<br><br>ONLY ABOUT THE SIZE OF A CUFFLINK, THE DEVICE ITSELF IS SMALL. BUT WHAT IT COULD REPRESENT IS ENORMOUS.<br>IN THIS LABORATORY AT THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER, RESEARCHERS DEMONSTRATE THE CONCEPT.<br>SIMPLY PLACE THIS CHIP ON AN INJURED PART OF THE BODY AND APPLY A SMALL ELECTRICAL CURRENT. :15 |
| **CG: Chandan Sen, PhD**<br>**Ohio State Wexner Medical Center** | *"This process only takes less than a second and is non-invasive and then you're off, the chip does not stay with you, and the reprogramming of the cell starts."* :11 |
| Close up of demonstration<br><br>Animation - injured leg | THAT REPROGRAMMING TURNS SKIN CELLS INTO NEARLY ANY TYPE OF CELL DOCTORS MIGHT NEED TO TREAT A PATIENT - A BREAKTHROUGH TECHNOLOGY IN REGENERATIVE MEDICINE.<br>FOR EXAMPLE, IN A LEG THAT IS BADLY INJURED |

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| Animation - close up chip on cell | AND LACKS BLOOD FLOW, DOCTORS SIMPLY TOUCH THE CHIP TO THE LEG AND REPROGRAM THE SKIN CELLS TO BECOME FUNCTIONING BLOOD VESSELS. :14 |
| **CG: James Lee, PhD**<br>**Ohio State College of Engineering** | *"And it will quickly shoot the DNA right into the cells."* :04 |
| **Dr. Sen (CG'd earlier)** | *"In many cases in seven days you start seeing changes and these changes to our pleasant surprise persists."* :07 |
| Animation - blood flow in leg<br>Shots of researcher looking in microscope<br>Shots of Dr. Sen with colleague | WITHIN A WEEK THERE ARE ACTIVE BLOOD VESSELS AND BY THE SECOND WEEK, THE LEG IS SAVED.<br>IT'S IMPORTANT TO NOTE THAT THIS HAS NOT YET BEEN TESTED IN HUMANS. BUT AFTER DEVELOPING THE CONCEPT, RESEARCHERS WERE DETERMINED TO TEST IT IN REAL LIFE. :11 |
| **Dr. Lee (CG'd earlier)** | *"So we tried them on the mouse and put it on the skin, and you know what? It actually works. It affects the entire tissue, not just the surface."* :08 |
| Image - mouse's leg / MRI<br>--(wipe)--<br>Images - MRI / healed leg | IN THIS IMAGE YOU CAN SEE THE MOUSE'S LEG IS INJURED AND VASCULAR SCANS SHOW THERE IS LITTLE BLOOD FLOW.<br>BUT AFTER ONE TOUCH WITH THIS CHIP, IN JUST 3 WEEKS THE BLOOD FLOW WAS BACK AND THE INJURED LEG WAS SAVED. :10 |
| **Dr. Sen (CG'd earlier)** | *"Our technology is not just limited to be used on the skin. It can be used in other tissues within the body or outside the body, so on and so forth. So, skin is only one example."* :10 |
| Shot of Sen and colleague in lab<br>Animation - chip on leg (soldier)<br>Animation - injection into brain<br>Shot of demonstration<br>Wide shot of lab - Sen and team | IN FACT, IN LAB TESTS IT EVEN WORKED IN THE BRAIN - HELPING MICE RECOVER FROM STROKES.<br>IN HUMANS, THIS COULD ALLOW DOCTORS TO GROW BRAIN CELLS ON A PERSON'S SKIN UNDER THE GUIDANCE OF THEIR OWN IMMUNE SYSTEM.<br>THEY COULD THEN HARVEST THOSE CELLS AND THEN INJECT THEM INTO THE BRAIN TO TREAT CONDITIONS LIKE ALZHEIMER'S OR PARKINSON'S DISEASE. AND NO IMMUNE SUPPRESSION DRUGS WOULD BE NECESSARY.<br>ALL BY USING A PATIENT'S OWN CELLS - IN A BRAND NEW WAY.<br>AT OHIO STATE WEXNER MEDICAL CENTER, THIS IS CLARK POWELL REPORTING. :21 |
| **(PACKAGE END) ----------** | |
| **ANCHOR TAG** | THE STUDY IS PUBLISHED IN THE JOURNAL *NATURE NANOTECHNOLOGY*. RESEARCHERS SAY |

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| | THE DEVICE WORKED WITH HIGH EFFICIENCY AND IT COULD BE USED *ANYWHERE*, NOT JUST IN A HOSPITAL.<br>BECAUSE DOCTORS ARE TREATING INJURED OR FAILING ORGANS WHILE USING A PATIENT'S OWN CELLS AND ARE NOT USING ANY DRUGS, THEY HOPE IT WILL BE APPROVED TO TEST IN HUMANS WITHIN THE NEXT YEAR. |

**SOCIAL MEDIA**

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| **Share it! Suggested tweet:** | Breakthrough device heals serious injuries in lab with a single touch. Details: http://bit.ly/2tyoPdM |
| **Suggested post:** | In a remarkable scientific breakthrough, researchers have developed a device that can restore body function after serious injuries in lab mice with a single touch. Researchers at The Ohio State University Wexner Medical Center used a DNA-carrying chip about the size of a cufflink and applied a small electrical current to the injured leg of a mouse. Within a week, the leg resumed blood flow and within three weeks - with no other treatment - the leg was healed. See how it works and how it may help humans here: http://bit.ly/2tyoPdM |

**EXTRA BITES**

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| **CG: Chandan Sen, PhD**<br>**Ohio State Wexner Medical Center** | Sen explains the concept of this new technology :<br>*"In this case, you could think of the skin as agricultural land in which you could grow almost anything that you want."*<br><br>Sen says the device could be used virtually anywhere:<br>*"And, by the way the reprogramming can be done in a field situation it doesn't have to be in a hospital setting because there is nothing invasive about it."*<br><br>Sen says the device could be moved to human trials quickly:<br>*"It's a huge deal because it's a novel platform technology that shows very high promise to be taken into the market expeditiously."*<br><br>Sen says the device works with high efficiency:<br>*"The efficiency exceeds 95-98% efficiency. So, you're actually causing a very substantial change over a very short period of time with a very simple procedure."*<br><br>Sen says collaboration made this technology possible:<br>*"Clearly, this a landmark project that shows what medicine and engineering can do together."* |

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| **CG: James Lee, PhD**<br>**Ohio State College of Engineering** | Lee describes the process in layman's terms:<br>*"We try to essentially give cells a shot, but without using needle."*<br><br>Lee says the process is almost instantaneous:<br>*"Only a few milliseconds, micro to milliseconds - that's all you need. And with that short amount of time, the transfection occurs."*<br><br>Lee describes the treatment process:<br>*"Stick a little electrode under the skin then you have a power supply. Less than one second, it's done. So, it's really pretty simple."*<br><br>Lee describes what's to come for the technology:<br>*"As a matter of fact, we even surprised how it worked so well. In my lab, we have ongoing research going on trying to understand the mechanism and try to do even better. So, this is the beginning, more to come."* |

**References**

[1]*Topical tissue nano-transfection mediates non-viral stroma reprogramming and rescue*, **Nature Nanotechnology, Vol. 12 Issue 7, July 2017**. Online: http://www.nature.com/nnano/index.html

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