Discovery of rare genetic mutations lead researchers toward new avenues to combat high cholesterol

Scientists are working to learn if new therapies can improve how good cholesterol functions rather than lowering bad cholesterol

The Ohio State University Wexner Medical Center

Produced by: MediaSource www.mediasourcetv.com Package Length: 1:46	To download broadcast-quality video and other multimedia elements: https://bit.ly/3QMfKEw Content provided by: **The Ohio State University Wexner Medical Center**

NEWS PACKAGE

SUGGESTED TEASE	HOW DID A HEALTHY, TWENTY-EIGHT-YEAR-OLD TRIATHLETE FIND HIMSELF IN THE E-R AFTER SUFFERING A HEART ATTACK? COMING UP, HOW THE DISCOVERY OF HIS RARE GENETIC MUTATIONS[1] OPENED THE DOOR TO NEW RESEARCH THAT MAY HELP MILLIONS WITH HIGH CHOLESTEROL.
ANCHOR LEAD	NEARLY NINETY-FOUR MILLION AMERICAN ADULTS ARE REPORTED TO HAVE HIGH CHOLESTEROL[3]. BUT A RECENT DISCOVERY OF RARE GENETIC MUTATIONS, ONES THAT AFFECT HOW GOOD CHOLESTEROL FUNCTIONS, COULD HELP THOSE PREDISPOSED TO HEART DISEASE. BARB CONSIGLIO SHARES HOW OHIO STATE UNIVERSITY EXPERTS SOLVED A PATIENT'S MEDICAL MYSTERY AND HOW THAT INSIGHT COULD LEAD TO NEW THERAPEUTICS FOR MILLIONS WITH HIGH CHOLESTEROL.
(PACKAGE START) ---------- **CG: Courtesy: The Ohio State University Wexner Medical Center** Shot of Marcus running	(Nats - Sound) :02 AS A TWENTY-SEVEN YEAR OLD TRIATHLETE, HEART DISEASE WAS NOT ON MARCUS WRIGHT'S RADAR UNTIL HE WAS RUSHED TO THE HOSPITAL WITH CHEST PAINS :08
CG: Marcus Wright **Heart patient**	*"He was like, 'You're having a heart attack.' I'm like, 'What do you mean I'm having a heart attack? I'm 27.' He was like, 'No, you're having a heart attack right now.'"* :07
Dr. Mazzaferri walking into clinic room, greeting Marcus	MARCUS WAS DIAGNOSED WITH SEVERE, EARLY-ONSET CORONARY ARTERY DISEASE AND REFERRED TO DOCTOR ERNEST MAZZAFERRI (mah-zuh-FAIR-ee), AN INTERVENTIONAL CARDIOLOGIST AT THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER.

	:10
CG: Dr. Ernest Mazzaferri, Jr. **Ohio State Wexner Medical Center**	*"His cholesterol numbers and his inflammation numbers looked pretty good, and it didn't make sense as to why somebody like that would have such advanced disease."* :08
Shots of Sara Koenig and lab techs conducting research	TO SOLVE THIS MYSTERY, DOCTOR MAZZAFERRI ENLISTED THE HELP OF GENETIC SCIENTISTS AT OHIO STATE², WHO SEQUENCED MARCUS' D-N-A AND DISCOVERED NEW GENE MUTATIONS THAT PREVENT H-D-L - OR GOOD CHOLESTEROL- FROM CLEARING OUT THE BAD :12
CG: Sara Keonig, PhD **Ohio State College of Medicine**	*"Because of the genetic variant that Marcus had, his HDL was actually very high, as was his brother's. And so typically you would look at that and you would think, 'Oh, you have a lower risk because your HDL is elevated.' But in this individual, his elevated HDL wasn't helping him out at all."* :15
Shots of Sara Koenig and lab techs conducting research	THIS DISCOVERY HELPED SCIENTISTS REALIZE THAT NEW MEDICATION COULD BOOST THE FUNCTION OF GOOD CHOLESTEROL, HELPING MILLIONS OF OTHERS WHO DON'T RESPOND WELL TO TRADITIONAL MEDICATION LIKE STATINS :09
CG: Sara Keonig, PhD (cg'd earlier)	*"Showing that these variants are causing coronary artery disease actually sheds light on a new pathway that we can approach and that we can target for cholesterol mediated therapy."* :14
Shots of Marcus at home with his family	MARCUS' CONDITION IS SEVERE BECAUSE HE INHERITED THE GENE MUTATIONS FROM BOTH PARENTS. SO AS SCIENTISTS WORK TO FIND SOLUTIONS, HE IS COMFORTED KNOWING HIS KIDS WON'T FACE THE SAME STRUGGLES. :09
CG: Marcus Wright (cg'd earlier)	*"I know my parents didn't want to give it to me and I definitely don't want my kids to have to deal with this, because they have enough stuff to live for. And this shouldn't be one of those things that they have to worry about.* :11
Shot of Marcus playing game with his family **(PACKAGE END) ----------** **ANCHOR TAG**	AT THE OHIO STATE WEXNER MEDICAL CENTER, BARB CONSIGLIO REPORTING. :03 --- WITH LAB TESTING UNDERWAY ON MARCUS WRIGHT'S GENETIC MUTATIONS, RESEARCHERS ARE WORKING TO DEVELOP A TREATMENT THAT MAY PROVIDE A NEW OPTION FOR THE NINETY-FOUR MILLION AMERICANS ALSO

	PREDISPOSED TO CORONARY ARTERY DISEASE BECAUSE OF THEIR HIGH CHOLESTEROL.

SOCIAL MEDIA

Share it! Suggested tweet:	Researchers @OSUWexMed's discovered rare genetic mutations that could lead to the development of new therapeutics to help millions with high cholesterol. https://bit.ly/3QMfKEw
Suggested post:	Researchers at The Ohio State Wexner Medical Center have discovered rare genetic mutations that cause severe early-onset coronary artery disease. This discovery may lead to a new approach in finding treatments that promote more efficient high cholesterol functions rather than just lowering bad cholesterol levels. https://bit.ly/3QMfKEw

EXTRA BITES

CG: Dr. Ernest Mazzaferri, Jr. **Ohio State Wexner Medical Center**	Mazzaferri describes the ground-breaking nature of the genetic discovery: *"The interesting part of this story is we really discovered something that's never been discovered before, because Marcus has a rare mutation that he could only get from his parents that has never been described before. The best news of this whole story is that we're able to tell Marcus that his children will not inherit this, because it's only one side of the genetic mutation." :22* Mazzaferri explains the challenging correlation between genetics mutations and health: *"Marcus is a perfect example that you can't control your genetics. So what we focus on are all the other things that we control. Smoking cessation, avoidance of diabetes, not being sedentary, exercise." :12* Mazzaferri explains the unique relationship between types of cholesterol and coronary artery disease: *"This is about HDL. Most of the time we worry about LDL, but we think this will really advance our knowledge of HDL and how HDL contributes to coronary artery disease." :09* Mazzaferri describes the importance of collaboration between clinicians and researchers: *"We do the things we do with the hope that we're going to be able to impact people's lives, and to have a group like that come together and work together over a couple year period to really solve a problem like this was one of the most memorable things I'll ever have in my career."* :16

Producers & Reporters: To download scripts, video and photos go to:
http://www.multimedianewsroom.tv

CG: Sara Koenig, PhD **Ohio State College of Medicine**	Koenig describes the unique genetic mutations found in the patient: *"This gene encodes a receptor for HDL, which is classically referred to as your good cholesterol. And so in short, we hypothesize that these individuals are not able to process their good cholesterol, as well as the general population." :20* Koenig describes how Marcus and his brother inherited the genetic mutations: *"Everyone has two copies of the gene, one that comes from your mother, one that comes from their father. And so Marcus and his brother had actually inherited a mutation in SCARF1 both from their mother and their father, which is why we think that their disease was so much more severe than their mother's." :17* Koenig explains how identifying the unique genetic mutations is paving the way for new therapeutic research: *"We identified a handful of drugs that were actually able to promote the good HGL pathway or reverse cholesterol transport. And so now we are investigating those drugs further in animal models and in other humanized cell culture models in hopes that we can identify the mechanism by which these drugs are affecting this pathway and develop more targeted therapeutics." :23*
CG: Marcus Wright **Heart Patient**	Marcus describes how the coronary artery disease diagnosis has affected his lifestyle: *"The best thing Dr. Maz says is treat it like your grandfather. He says, 'I'm not saying that you're old as your grandfather, but if something hurts, you can't push through it. I need you to go to the hospital and just get checked.' Understanding that took me the longest part." :17* Marcus describes what it means to understand the cause of his coronary artery disease: *"That's what I used to tell people. I'm just a medical mystery. I have no idea what's going on or how it happened. But it was kind of a relief. Okay, somebody can tell me something about what's actually going on with me instead of nobody ever having answers." :14* Marcus describes why he felt it was important to take part in research: *"I wouldn't wish this on anyone because it almost consumes your life to a point. And so if this can help someone not have to go through this, especially any of my family members, that's definitely, or any strangers, if it helps them not have to go through this, I'll by all means to do anything I can to help them." :19*

References

[1]*Inherited Variants in SCARB1 Cause Severe Early-Onset Coronary Artery Disease,* **Circulation Research, Volume 129, Issue 2, May 12, 2021.** Online: https://www.ahajournals.org/doi/10.1161/CIRCRESAHA.120.318793

[2]*Clinicians, Scientists Collaborate to Tackle Mysteries of Cardiovascular Disease,* **The Ohio State University Wexner Medical Center.** Online: https://wexnermedical.osu.edu/departments/innovations/heart-vascular/jb-project-19

[3]*High Cholesterol Facts,* **Centers for Disease Control and Prevention, 2021.** Online: https://www.cdc.gov/cholesterol/facts.htm#:~:text=Nearly%2094%20million%20U.S.%20adults,higher%20than%20240%20mg%2FdL.&text=7%25%20of%20U.S.%20children%20and,19%20have%20high%20total%20cholesterol.

For viewer information on this story contact:
Client Hospital: Contact Phone Number
Log onto Client Newsroom Link

Produced by:
MEDIA SOURCE
1800 West 5th Ave.
Columbus, Ohio 43212
Phone: (614) 932-9950 Fax: (614) 932-9920
www.mediasourcetv.com

Video content provided by: The Ohio State University Wexner Medical Center