

# Scientists discover biological markers in saliva of kids who may experience prolonged symptoms after a concussion

Predicting which children will need more time and care to recover can help doctors develop effective treatment plans

Nationwide Children's Hospital

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## NEWS PACKAGE

<b>SUGGESTED TEASE</b>	<p>HEAD INJURIES IN CHILDREN ARE NOT ONLY SCARY, BUT CAN BE DIFFICULT TO ASSESS AND TREAT.</p> <p>COMING UP, SCIENTISTS HAVE UNCOVERED BIOLOGICAL CHANGES THAT CAN HELP PREDICT WHICH KIDS MAY NEED EXTRA TIME AND TREATMENT FOLLOWING A CONCUSSION.</p>
<b>ANCHOR LEAD</b>	<p>CONCUSSIONS CAN BE EXTREMELY DANGEROUS, AND GETTING THE RIGHT TREATMENT AS SOON AS POSSIBLE IS CRITICAL TO RECOVERY, ESPECIALLY FOR CHILDREN'S DEVELOPING BRAINS.</p> <p>BUT CONCUSSIONS CAN BE ESPECIALLY DIFFICULT TO ASSESS IN KIDS, WHO OFTEN HAVE TROUBLE ARTICULATING THEIR SYMPTOMS.</p> <p>BARB CONSIGLIO HAS THE DETAILS ON A NEW STUDY<sup>1</sup> THAT DISCOVERS BIOLOGICAL CHANGES IN KIDS WHO ARE MORE LIKELY TO NEED MORE TIME FOR CONCUSSION RECOVERY, AND HOW THIS CAN BE USED IN THE FUTURE TO MAKE SURE KIDS ARE GETTING THE TREATMENT THEY NEED.</p>
<p><b>(PACKAGE START) -----</b>  <b>CG: Courtesy: Nationwide Children's Hospital</b>            Shots of Thomas running drills with teammates</p> <p><b>CG: Thomas Helsel Concussion patient</b></p> <p>Shot of doctor conducting concussion testing</p> <p><b>Thomas Helsel (CG'd earlier)</b></p> <p>Shot of sample testing in lab</p>	<p>THE FIRST THING THOMAS HELSEL (HELL-sull) REMEMBERS AFTER A HARD HIT ON THE FOOTBALL FIELD IS BEING SURROUNDED BY HIS CONCERNED COACHES. :05</p> <p><i>"My head was throbbing and we decided that it was good to go in to get checked out." :05</i></p> <p>DOCTORS IN THE EMERGENCY DEPARTMENT DID SOME STANDARD TESTING FOR A CONCUSSION, AND ONE TEST THAT WASN'T SO STANDARD. :04</p> <p><i>"I remember because I thought it was so...I thought it was odd. They were asking me for a spit sample from a concussion. I was like, 'How does this relate?'" :08</i></p> <p>THE SALIVA SAMPLE WAS PART OF A STUDY</p>

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<p><b>CG: Ginger Yang, PhD, MPH</b> Nationwide Children's Hospital</p>	<p>CONDUCTED BY NATIONWIDE CHILDREN'S HOSPITAL TO DISCOVER DIFFERENCES IN KIDS WHO RECOVER NORMALLY FROM A CONCUSSION IN A FEW WEEKS AND THOSE WHO EXPERIENCE PERSISTENT SYMPTOMS THAT LAST A MONTH OR MORE. :12</p> <p><i>"If we can detect children who might be at risk to experience a persistent post-concussion symptom, the doctor can treat them differently." :12</i></p>
<p>Shot of CIRP researchers</p> <p>Shot of doctor talking to patient</p> <p>Shots of microRNA lab testing</p>	<p>THE STUDY IS A COLLABORATION BETWEEN NATIONWIDE CHILDREN'S CENTER FOR INJURY RESEARCH AND POLICY, DIVISION OF SPORTS MEDICINE AND INSTITUTE FOR GENOMIC MEDICINE, WHOSE SCIENTISTS EXAMINED MOLECULES CALLED MICRO R-N-A IN THE SALIVA OF PEDIATRIC CONCUSSION PATIENTS AT INITIAL TREATMENT, AS WELL AS TWO WEEKS AND FOUR WEEKS AFTER THEIR INJURY. :16</p>
<p><b>CG: Katherine Miller, PhD</b> Nationwide Children's Hospital</p> <p>Shots of microRNA lab testing</p>	<p><i>"We can identify, in a tube, 800 different microRNAs, which one is which, and then, essentially, the technology allows us to count what microRNA is there and how much of it is there." :10</i></p> <p>USING THIS METHOD, SCIENTISTS IDENTIFIED THIRTEEN MICRO R-N-A THAT ARE EXPRESSED DIFFERENTLY IN CHILDREN WHO EXPERIENCE PERSISTENT POST-CONCUSSIVE SYMPTOMS. :08</p>
<p><b>Katherine Miller (CG'd earlier)</b></p>	<p><i>"And that's important because if we can identify that at the time of injury, it can lead to earlier clinical intervention and really, a more personalized approach for caring for these children as they recover from concussion, especially if they're at risk for extended or prolonged recovery." :15</i></p>
<p>Shots of Thomas putting on helmet</p>	<p>AFTER SOME TIME OFF FOR A FULL RECOVERY, THOMAS IS BACK ON THE FIELD FOR HIS SENIOR YEAR. :05</p>
<p><b>Thomas Helsel (CG'd earlier)</b></p>	<p><i>"I'm healthy and I think I have big plans ahead of me." :04</i></p>
<p>Shot of Thomas running drills with teammates <b>(PACKAGE END)</b> -----</p>	<p>AT NATIONWIDE CHILDREN'S HOSPITAL, THIS IS BARB CONSIGLIO REPORTING. :02</p>
<p><b>ANCHOR TAG</b></p>	<p>THIS SALIVA TEST IS NOT ONLY A MORE OBJECTIVE ASSESSMENT TO ADD TO EXISTING CONCUSSION TESTING LIKE QUESTIONNAIRES, BUT IT CAN BE ESPECIALLY HELPFUL IN YOUNGER PATIENTS, WHO OFTEN HAVE TROUBLE EXPRESSING THE EXTENT OF THEIR SYMPTOMS.</p>



<p><b>CG: Katherine Miller, PhD</b>  <b>Nationwide Children’s Hospital</b></p>	<p>Miller says current measures to predict prolonged recovery can be difficult to assess:  <i>“The current system for identifying someone at risk of prolonged recovery involves a set of questions. And depending on the child’s age or their altered mental status from the concussion, they might not answer those questions very well. So having a more scientific and objective way to measure that is important.” :16</i></p> <p>Miller explains how the research will be expanded:  <i>“So we need to look at saliva from kids without concussion to start to establish a baseline level, if we can, for these microRNAs. So then we have an even better understanding of how these change during injury and then, furthermore, how it changes for kids who have prolonged recovery from the injury.” :15</i></p> <p>Miller says this research could lead to a sideline test to predict post-concussive risks:  <i>“We could, for example, have a sideline test where a child provides a saliva sample, we process it in the laboratory and those results can compliment all of the other care that they’re getting. And I think this is important because it can lead to earlier clinical intervention and really more personalized care for the child depending on their needs and their risk.” :19</i></p>
<p><b>CG: Thomas Helsel</b>  <b>Concussion patient</b></p>	<p>Thomas explains some of the testing done at the hospital after his concussion:  <i>“They checked my blood pressure and my height and weight. And then we went into the exam room and they basically just asked me a series of questions, memory questions, I feel like.” :12</i></p> <p>Thomas explains the restrictions he faced after his concussion:  <i>“I had a lot of restrictions. I couldn’t do a lot of things just because of the state of my injury. I couldn’t look at screens for very long. I remember I missed school for — it was about two weeks.” :14</i></p> <p>Thomas recommends seeking treatment after a concussion:  <i>“You don’t want to risk anything. So my advice would just be, if you think you’ve experienced a head injury, just be safe, go check, get checked out.” :07</i></p>

**References**

<sup>1</sup>*Salivary miRNA Expression in Children With Persistent Post-concussive Symptoms, Frontiers in Public Health, May 30, 2022.* Online:  
<https://www.frontiersin.org/articles/10.3389/fpubh.2022.890420/full>

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