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Ricardo B. Brazziell AMERICAN-STATESMAN

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The nanochip technology that UT professor John McDevitt co-invented might be able to diagnose heart attacks and detect cancers through chemicals that can appear in human saliva.



Ricardo B. Brazziell AMERICAN-STATESMAN

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**John McDevitt**

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HEALTH CARE

# What's in your spit? Signs of a heart attack, researchers say

## What's next? Scientists expect saliva to help detect and prevent cancers, too

By [Mary Ann Roser](#)  
AMERICAN-STATESMAN STAFF

Friday, April 18, 2008

The next time you spit, consider this: Your saliva might one day be used to diagnose or prevent a heart attack.

If research by scientists and dentists in Texas and Kentucky bears out, heart attack patients in several years could be diagnosed in an ambulance by analyzing a few drops of saliva, saving precious time at the hospital, researchers said.

"It could save time — and lives," said Dr. Chris Ziebell, chief of emergency medicine at University Medical Center at Brackenridge.

Right now, heart attacks can be diagnosed in the ambulance with an electrocardiogram with the results transmitted by cell phone, Ziebell said. But less severe heart attacks can be missed by EKGs, requiring blood tests that now take more than two hours at the hospital, Ziebell said. The spit test would take 15 minutes in the ambulance, said John McDevitt, a University of Texas chemistry professor who is spearheading the new research.

He envisions ambulances being equipped with a toaster-size LabNow computer that he designed to analyze the saliva, which would be placed on a small computer chip embedded in a credit-card-sized device. The LabNow computer — initially designed to diagnose AIDS patients in Africa — would spit out the results, showing whether certain chemicals or cardiac enzymes are high, indicating a heart attack, he said.

As far as the researchers know, no one else has discovered the heart disease markers in saliva. The team, which unveiled the research at a dental research meeting in Dallas on April 4, has found similar uses for saliva in diagnosing several cancers affecting women: uterine, cervical and breast, McDevitt said.

"Saliva's been a poor cousin to whole blood and serum" as a tool for diagnosing diseases, said McDevitt, a shareholder in the LabNow company developing the computer. But many of the same disease markers that "you can see in blood, you can see in saliva," he said. "You just have to look for it harder."

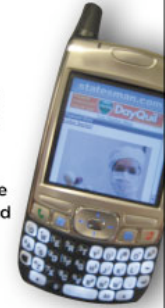
The team found 32 chemicals, or proteins, in saliva that are known to be related to heart activity, McDevitt said. Of those, the team studied eight that were significantly elevated during a heart attack and narrowed that to four that were "the most diagnostic of a heart attack," said Dr. Craig

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Miller, a professor of oral dentistry at the University of Kentucky College of Dentistry in Lexington.

Because most of the 56 heart attack patients in the researchers' study, which is being prepared for publication in peer-reviewed journals, had their saliva analyzed within 24 to 48 hours after the heart attack, the team needs to find out if those same markers can be detected within minutes to hours of a heart attack. That's crucial information, said Dr. Blase Carabello, a cardiologist and chief of medicine at the Michael E. DeBakey VA Medical Center in Houston.

If McDevitt's team is right about saving time, "that's great," Carabello said. But he said ambulances could just as easily be equipped with laptop-size analyzers that can also detect high levels of proteins in blood indicating a heart attack. He added that the researchers still need to prove their findings through clinical studies.

The saliva technology will be road-tested in San Antonio ambulances this summer, said a collaborator, Dr. Spencer Redding, professor and chairman of the Department of Dental Diagnostic Science at the UT Health Science Center at San Antonio.

They think that the high cardiac enzymes they found in saliva in patients having a heart attack might also be present in people at risk of a heart attack. They have asked some of the 56 heart attack victims in the study to freeze their saliva over the next six months so it can be tested, Miller said.

"About 15 percent of the people who had a heart attack will have another heart attack in six months," Miller said.

The good news, Redding said, is that there's lots of saliva. The average person, he said, makes about a quart of saliva a day while talking, eating and drooling on the pillow at night.

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