

Doctors Get a Jump on Disease With Genetic Testing

By Minneapolis Star Tribune, adapted by Newsela staff



Dr. Louis J. Elsas, head of the University of Miami's Dr. John T. Macdonald Foundation Center for Medical Genetics, in Florida, studies a gene sequence he believes may predict illness before symptoms occur, on Aug. 29, 2003. Photo: Chuck Fadely/Miami Herald

- 1- MINNEAPOLIS — Denis Keegan was suffering from kidney disease, but his doctors were struggling to pinpoint the cause, and he was out of answers. That's when he turned to genetic testing to try and find out what was going wrong.
- 2- Doctors at the Mayo Clinic in Rochester, Minn., extracted his DNA from a blood sample and examined it. DNA contains the instructions for how the human body works and is passed on from parents to children.
- 3- Deep inside Keegan's genetic code the doctors discovered the source of his kidney problems — a mutant gene. This told them that he was suffering from an extremely rare kidney problem. Armed with that knowledge, his doctors were able to tailor the treatment for his condition.
- 4- The human genome was mapped in 2003, showing for the first time exactly how our bodies develop. Since then, genetic testing has become a booming industry. It can let patients learn more about the mysteries of their bodies.

MAIN IDEA 1:

A Complicated Issue

- 5- The testing is also improving quickly. The X-ray machine made it possible to look inside the human body. Now, genetic testing is changing the way doctors spot diseases and then treat them.
- 6- Testing is available through a doctor or by kits that can be bought online or at a drugstore. Americans are expected to spend as much as \$25 billion a year on genetic tests by the end of the decade. Tests can check for many illnesses, from kidney diseases to breast cancer to pregnancy risks.
- 7- Genetic testing is also a complicated issue. It could cause needless anxiety among healthy people. Or it could start family problems if one member's test reveals troubling findings about the whole family's genetic makeup.
- 8- The testing involves looking at a person's genes to help prevent, spot or treat a disease. It can also see whether a person is a carrier of a disease and if there is a risk of passing it to his or her children. The DNA can be collected from a blood sample or from a person's saliva.
- 9- Genetic testing jumped into the spotlight last year when Angelina Jolie chose to have both her breasts removed. A genetic test had revealed that she had a high risk of developing breast cancer. Melissa Truelson, a genetic counselor at the University of Minnesota, explained that many diseases are inherited through our genes.

MAIN IDEA 2:

A Gall Bladder Cancer Case

- 10- The cost of genetic testing varies widely, from \$99 for home kits to thousands of dollars for tests at hospitals. Pricing also varies depending on what the doctor is testing for.
- 11- Insurance companies will usually cover tests that are ordered by doctors, but home test kits are not covered. Critics say these tests are limited in their ability to find health risks accurately. So they could lead users to undergo unnecessary medical treatment.
- 12- Doctors say the testing can be very effective in determining the best medicines for particular diseases.
- 13- A 44-year-old woman with gallbladder cancer is among the success stories, says Dr. Alexander Parker of the Mayo Clinic. Her disease was not responding to the standard medicine used to treat the

cancer. Through genetic testing, doctors discovered that drugs used on leukemia patients would work for her. And the drugs did.

14- But for healthy people, there is little to no value in having their genome mapped. It may even cause harm by raising anxiety about the odds of developing a disease.

15- Parker said that gene tests just inform you of risks. We all want answers, he says, but we can never know "exactly what will happen to anyone."

16- He said patients should talk to their doctor before taking any tests. Truelson said people should think about how the test results will affect them medically and emotionally.

MAIN IDEA 3:

Deciding Whether To Get Tested

17- Nada Maalouli of Eagan, Minn., has wrestled with these questions for years. Her Mother died of ovarian cancer, and her grandmother and an aunt died of breast cancer. A genetic test would tell Maalouli if she carries the gene associated with higher risks of those cancers.

18- She has agonized over the decision to get tested, partly because she worries it could bring bad news. Now 51, Maalouli and her three sisters have made an agreement. Though they are all healthy now, if any of them finds something wrong they will all get tested.

19- One person's choice to get tested may also reveal information about your relatives. And they may prefer not to know. Keegan's decision to have his genome mapped affected several members of his family. Doctors asked his older brother and father also to submit a DNA sample to find out if Keegan had inherited his father's disease. His Father previously had a kidney transplant.

20- Keegan, 30, and his wife were also thinking about starting a family, so they wanted to know what their chances of passing on the gene to their children. It turns out there is a 50 percent chance their offspring will inherit it.

21- The couple talked about checking the fertilized egg to see if it had the gene before continuing with the pregnancy. But Keegan said they then stepped back and thought this would be "playing God." In the end, they've decided that they'll roll the dice and have children the old-fashioned way.

22- Keegan figures that even if his child does get the disease, medical treatments will improve in the future.

MAIN IDEA 4:

Now that you have tracked each main idea, determine the central idea of the text. Remember, a central idea statement clearly identifies the WHO (TOPIC) + WHAT (WHAT ABOUT THE TOPIC WAS DISCUSSED) + WHY (WHY READERS SHOULD CARE/THEME).

CENTRAL IDEA:

QUIZ

1. Which of the following sentences describes one of the negative aspects of genome mapping?
 - (a) The human genome was mapped in 2003, showing for the first time exactly how our bodies develop.
 - (b) The testing involves looking at a person's genes to help prevent, spot or treat a disease.
 - (c) Or it could start family problems if one member's test reveals troubling findings about the whole family's genetic makeup.
 - (d) It can also see whether a person is a carrier of a disease and if there is a risk of passing it to his or her children.
2. Besides diagnosing diseases, in what other ways can genome mapping help?
 - (a) by curing mysterious diseases
 - (b) by preventing genetic disorders
 - (c) by determining the best medicines for particular diseases
 - (d) by reducing anxiety about the odds of developing a disease
3. Read the sentence from the article.

It turns out there is a 50 percent chance their offspring will inherit it.

What is the meaning of the word "inherit" as used in the sentence above?

 - (a) achieve
 - (b) capture
 - (c) acquire
 - (d) succeed
4. Highlight the paragraph from the first part of the article that contains a word that is an antonym for "normal".