

RESOURCES FOR PRE-ACTIVITY: – Student Fact Sheet A

Student sheet A: What is genetic testing?

Genetic testing involves examining a person's DNA, by taking a sample of cells (from blood or, occasionally, from other body fluids or tissues). Genetic tests are usually done to check for changes in someone's DNA that cause disease or disability. Some of these DNA changes can be inherited from our parents.

What types of testing exist?

Genetic tests are usually used to check if a person has a genetically inherited condition or to see what a person's risk is of getting a genetic condition in the future. The different types of genetic tests are outlined below ...

Diagnostic ...

Tests used to confirm a diagnosis based on physical signs

Predictive ...

Tests used to find mutations that cause disease/disability later in life

Carrier Identification ...

Tests used by people with a family history of genetically inherited disease (Often used by couples when deciding to have children)

Prenatal ...

Tests used to check the DNA of a foetus when there is risk of having a child with mental or physical disabilities

Newborn Screening ...

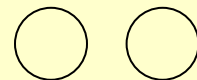
Tests done once a baby is born to check if it has any genetic conditions

Forensic Testing ...

Tests that are used to identify an individual for legal purposes

Research Testing ...

Tests used to find unknown genes or to identify the function of a gene



RESOURCES FOR PRE-ACTIVITY: – Student Fact Sheet B**Student sheet B: How do genetic tests work?**

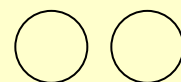
Once a person decides to do a genetic test, a medical geneticist, genetic counsellor or primary care doctor can order the test after getting the person's consent....

Genetic tests are performed on a sample of blood, hair, skin, amniotic fluid (the fluid that surrounds a foetus during pregnancy), or other tissues...

For example, a medical procedure called a *buccal smear* uses a small brush or cotton swab to collect a sample of cells from the inside of the cheek...

The sample is sent to a laboratory where technicians look for specific changes in chromosomes, DNA, or proteins, depending on the disorder they are looking for...

The laboratory then reports the test results to the person's doctor or genetic counsellor.



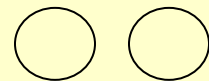
RESOURCES FOR PRE-ACTIVITY: – Student Fact Sheet C

Student sheet C: How are the results of a genetic test understood?

The results of genetic tests are not always straightforward, which often makes it hard to understand and explain them. When interpreting test results, doctors look at a person's medical history, family history, and the type of genetic test that was done...

A positive test result means that the laboratory found a change in a gene, chromosome, or protein of interest. Depending on the purpose of the test, this result may confirm a diagnosis, show that a person carries a genetic mutation, identify an increased risk of developing a disease in the future, or suggest a need for further testing. A positive test can not show how severe a disease is or when exactly it will appear...

A negative test result means that the laboratory did not find a dangerous copy of the gene, chromosome, or protein of interest. This result can show that a person is not affected by a particular disorder, is not a carrier of a specific genetic mutation, or does not have an increased risk of developing a certain disease. It is possible, however, that a test missed a disease-causing mutation because tests cannot find all of the genetic changes that can cause a particular disorder. More testing may be needed to confirm a negative result.



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RESOURCES FOR PRE-ACTIVITY: – Student Fact Sheet D

Student sheet D: What are the benefits of gene testing?

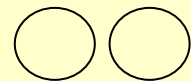
People with a family history of genetic conditions worry about their own future as well as that of their children...

If a test shows a negative result...When a test showing that a person's DNA doesn't have the genetic mutation that causes the disease/disorder it can be a big relief...

It also means they can have less frequent medical check ups.

If a test shows a positive result...A test that shows that a person has a genetic condition can relieve their uncertainties and help them make informed decisions for their future...

For conditions that can be treated, a test can speed up the process of diagnosis and help treat the diseases early on or reduce its severity. For tests that predict a person's risk of getting a disease in the future it can help encourage changes in lifestyle to reduce the risk.



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RESOURCES FOR PRE-ACTIVITY: – Student Fact Sheet E

Student sheet E: What are the disadvantages of gene testing?

Most disadvantages are to do with the way the results of the test can change a person's life.

Psychological impact: The emotions roused by learning that you are likely to develop a disease can be very stressful. Many people in families with a history of a disease have already seen close relatives struggle. A study found that, after 3 to 6 weeks, women that were tested for specific cancers, and received test results showing that they are at risk, experienced persistent worries, depression, confusion and sleep disturbance...

Family relations: Unlike other medical tests, gene tests reveal information not only about us but also about our relatives. The decision to have a gene test can affect the entire family. It can also reveal family secrets involving paternity or adoption. If a baby tests positive for sickle-cell anaemia it means that both of his or her parents carry the mutation that causes it. Someone identified as carrying the gene may feel anger, while one who hasn't inherited the condition may be overwhelmed by guilt because they avoided the disease...

Medical choices: Someone who finds out they have a gene that puts them at high risk of getting a specific cancer may start having different therapies, or regular check-ups, that are dangerous or not always effective...

Privacy: Our genes hold an encyclopedia of information about us and, indirectly, about our relatives. Who should be able to have this information? And how is the information kept private? Genetic test results are normally included in a person's medical records. And forensic test results are kept in a national gene bank. Safeguarding this information is never a guarantee.

