



# Should the government regulate genetic testing?

## GETTING ORIENTED

The weekly passage introduces issues related to genetics. Here is some information that might be helpful to students less familiar with the topic.

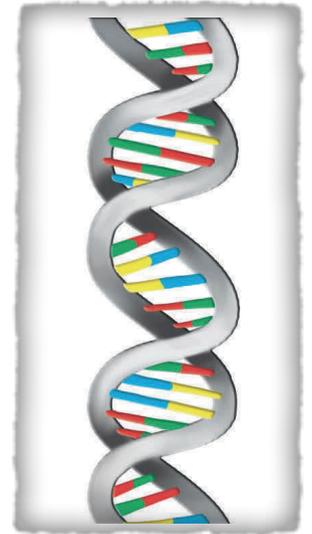
### Genetic Screening

Genetic screening, or testing, is a procedure by which scientists and doctors can look at a person's genes. Genes are the molecules in our bodies that transmit, or send, traits from parents to children. These are called hereditary traits. For example, if your father is tall, and you are tall, one might say you inherited that trait, or characteristic, from your father. Genetic screening can be done on adults, usually through a blood test or cheek swab, to figure out if they have any genetic disorders or if they might pass on genetic disorders to their children. Genetic screening can also be done on babies during pregnancy. When doctors do genetic screening, they can tell many things about how a baby will turn out in the world, but they can't tell everything. Scientists are still working on tests to understand more things about our genes. Special kinds of tests are used to search for specific traits or genetic problems. Genetic screening can also lead to genetic engineering that allows parents to choose certain traits in their children before they are conceived.



### DNA

DNA stands for deoxyribonucleic acid. Since this word is long and difficult to spell and pronounce, scientists shorten it to DNA. DNA are the materials (molecules) in their bodies that determine what traits children inherit from their parents. DNA segments, or parts, carry genetic information called genes. These molecules are found in all living things.



### Gregor Mendel (1822-1884)

Gregor Mendel is considered the founder of the science of genetics. He was an Austrian monk who spent years studying traits in pea plants. He was able to show that traits in pea plants followed a very specific pattern. He could also explain why some pea plants showed different characteristics from their "parent" plants. He chose pea plants to do his research because they can be grown easily in large numbers. The principles, or facts, that he discovered apply to all living forms. He first published his theory in 1866, but his work was not recognized until after his death.

Before Gregor Mendel began experimenting with pea plants, he wondered how it was possible that two shorter parents could have a son who is very tall.





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## EVIDENCE AND PERSPECTIVES

	<i>Some may have this view:</i>	<i>But others may think:</i>
<b>General Public</b>	People who support government regulation—or laws that say how genetic testing should be done—feel strongly about not trying to interfere with the natural process of things. Some feel genetic testing is against nature; some feel it is against their religion. Some believe that genetic testing isn't fair to poor people who will not have the same options as people with more money. They prefer that the government step in and make it unlawful to choose the genetic make-up of a child. These people may, however, recognize the benefits of testing for diseases and would want the government to allow those kinds of tests.	People who are against government regulation of genetic testing want to be able to make their own decisions. They don't want to be told what they can't do by the government. They think that, if science has advanced enough to enable us to create a person with specific traits, then why shouldn't people have access to that technology? While most people will probably want to use this kind of genetic testing for health reasons, there may be some people who want to choose specific traits for their children.
<b>Scientists</b>	Some scientists think that we should have regulation of genetic testing because they are concerned that many people might not use the genetic testing with good intentions. Some scientists might be afraid that people would try to create humans with traits that would be of interest to them personally, without considering the broader implications.	Other scientists might think that government regulation could put too many limits on the possibilities that could be achieved. If genetic testing is regulated by the government, there may not be as many opportunities for scientists to study genetics. These scientists would prefer decisions to be made by teams of doctors and scientists, who are the most knowledgeable about the various tests.
<b>Business Investors</b>	Genetic testing has already become a big business, but some business investors might support government regulation because it can help legitimize the industry and make consumers feel safer. Some investors may think that government regulation will not cut into their profits anyway.	With commercial organizations that do genetic testing, many business owners and investors are trying to make a profit and would prefer not to have the government telling them what tests they can or cannot sell.

### Additional Information

- ✓ The word “genetics” comes from the ancient Greek *genetikos*, meaning origin.
- ✓ There is a DNA predisposition test that you can buy online for \$285. This test will tell you your predisposition for over 25 diseases and conditions including cancer, heart disease, diabetes, and Alzheimer's disease.
- ✓ Most genetic tests require either a blood sample or a smear from the inside of the cheek with no risk to the patient. There is some risk for pregnant mothers when testing a fetus because the sample comes from the amniotic fluid around the fetus.

- ✓ The most serious limitation of genetic testing is that science may not have adequate knowledge to address the results of the tests.

Commercial and non-profit organizations that do genetic testing  
[http://genes-r-us.uthscsa.edu/resources/consumer/consumer\\_menu.htm](http://genes-r-us.uthscsa.edu/resources/consumer/consumer_menu.htm)

More information about “designer babies”  
<http://www.buzzle.com/articles/pros-and-cons-of-designer-babies.html>

Insight into the molecular construction of the body  
[www.dnafb.org](http://www.dnafb.org)



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## ANNOTATIONS FOR TEACHERS

### Features of Academic Text: *References to film and literature*

*When trying to explain why some people are opposed to genetic screening, the author of this article chose to use the film “Gattaca” as an example. Referring to film and literature is a common strategy when trying to explain something.*

*Ask students if they can think of other examples from science fiction films, books, or TV shows that can illustrate the same point.*

*Why is it helpful to use science fiction to explain why people might be opposed to genetic screening?*

*Drawing students’ attention to examples such as this could help them determine when and how to use film and literature when writing argumentative essays.*

For years, Michelle and Demarcus Kingston have dreamed of having one son and one daughter. Now that their first child, a son, is two years old, they want to ensure that their next child is a daughter. They do not want to leave the sex of their baby to chance. Current medical science allows them to choose the sex of their child before **conception**.

Scientists developed **genetic** screening to help families avoid having a child with fatal genetic disorders. Now, many families are using genetic screening to decide the number of boys and girls in their families. Scientists believe people will be able to screen for other traits within the next 10 to 20 years. In the future, parents may be able to determine a **range** of traits including their child’s height and eye color, whether or not the baby will have attention deficit disorder, and even the child’s personality type.

Groups opposed to genetic screening think people are “playing God” when they use science to choose a baby’s traits. Science fiction authors have created worlds in which ongoing genetic testing is common. **For example, in the movie Gattaca, people with less-than-perfect genes were denied good jobs and became a lower class of citizens called “Invalids.”**

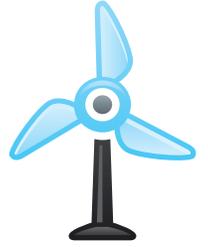
Many people fear having a baby will soon turn into a shopping trip, as parents create “designer babies” by choosing genes for eye and hair color, height, and IQ. Because genetic screening is very expensive, some people worry that it will widen the gap between rich and poor. The rich may have future access to genetic screening, but the poor may not.

Supporters of genetic testing say our world is changing and people should

change with it. However, few doctors currently consent to using genetic testing to select for traits such as eye color or height. They use the procedure only under certain **circumstances**. For example, doctors can use genetic screening to help families prepare for a child with special needs.

However, experts warn that screenings may indicate that an unborn child is at risk for a disorder even though it is actually fine. This rare “false positive” result can be alarming and add stress to a pregnancy. Similarly, a “false negative” result assures parents that the fetus is not likely to be affected by a condition, even though it is actually at high risk.

Countries around the world are dealing with the issue differently. In France, genetic testing is only allowed to be performed by doctors for medical purposes. In the United States, the government does not **regulate** genetic testing; only doctors and their patients make decisions about genetic screening. Do you think the government should regulate genetic testing?



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## GENERATING WORDS

### Root Words

A root word is the base part of the word that helps you figure out what the whole word means. The roots of many words in English come from either Latin or Greek.

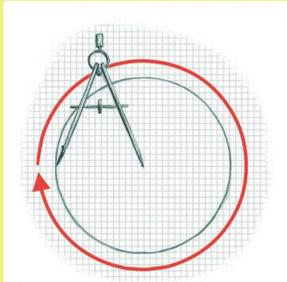
For example: **Circumstance** is a word that comes from the Latin root *circ* which means circle and *circum*, which means around. **Stance** is a word that means the way one stands on something or feels about something. The **circumstances** of a situation therefore mean the conditions that surround the situation or that surround one's feelings about that situation.

Although **circum** (meaning around) is a Latin root, it is used here as a prefix. Here are some other words using this Latin prefix.

**Circ** is also seen in a number of common words. If you know the root means circle, it is easier to find the meanings of the words.

#### **circumference**

The circumference of a circle is the distance around the circle.



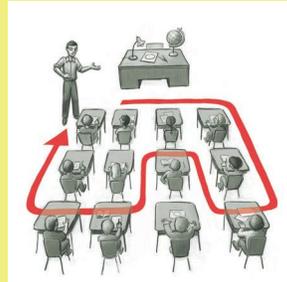
#### **circumnavigate**

If a sailor circumnavigates the world, he sails all the way around the world.



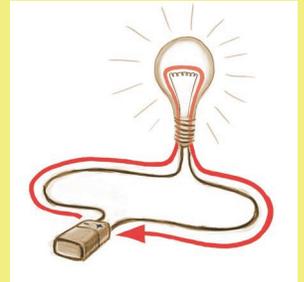
#### **circulate**

If the teacher circulates around the room, he/she moves around the room to see all the students.



#### **circuit**

A circuit is a wire that allows an electric current to flow around and into electrical appliances. It might not be an exact circle, but there must be no break from beginning to end to keep the electric current flowing.



Sometimes, when an author is writing about something that happened a long time ago, she may write:

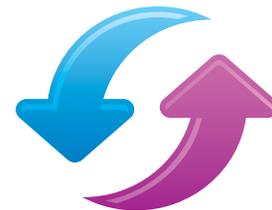
"Archeologists now believe that Sinaguas built Montezuma's Castle *circa* 1450."

Using your understanding of the root **circ/circum**, what do you think **circa** means? Can you use the word in another sentence?



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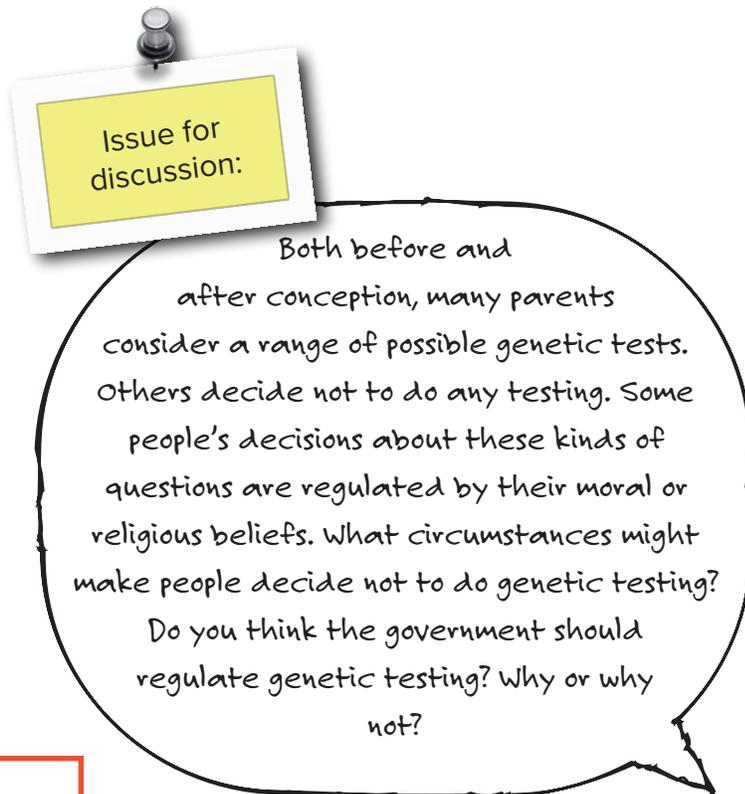
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## DEVELOPING DISCUSSIONS

### Opinion Continuum

Procedure:

1. Ask 3-4 of your classmates to place their names on the opinion continuum below. Ask them to place an "X" on the continuum to represent where they stand on the issue. They should then write their name below the "X." Do not allow anyone to choose the middle.
2. Ask your classmates to explain why they placed their name where they did. You can ask them to elaborate if you don't understand. You might want to take a few notes under their names to remember the important reasons and evidence they use.
3. Be prepared to give your opinion to several of your classmates, as well.



example



*Thinks that people might not want to have babies with any kind of flaws. It will make a boring world.*

Government should regulate genetic testing



Government should not regulate genetic testing



### Class or small group discussion:

With a large or small group, share what you learned from talking to a few classmates.

### Words and phrases you might use in today's discussion:

- why do you think this?
- Can you give me an example?
- Can you use other words to explain that?
- Let me see if I understand correctly - are you saying that \_\_\_\_\_?
- \_\_\_\_\_ believes that \_\_\_\_\_. According to him/her, \_\_\_\_\_.

Notes: