



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 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. We call these hereditary traits. For example, if your father is tall and you are tall, we say you inherited that trait or characteristic from your father. 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.



DNA

DNA stands for deoxyribonucleic acid. Since this word is long and difficult to spell and pronounce, scientists shorten it to DNA. When we speak of DNA, we are talking about the materials (molecules) in our bodies that determine what we inherit from our parents. DNA segments or parts carry the genetic information that we call 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 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>
General Public	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 opposed to or against government regulation of genetic testing want to be able to make their own decisions. They don't want to be told what to do. 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? Most people will probably want to use this kind of genetic testing for health reasons. The ones who are interested in it for creative reasons, like choosing specific traits for children, will find a way to get around the rules that are created. Even though these genetic screening processes are expensive, many people will choose to spend their money this way.
Scientists	Some scientists think that we should have regulation of genetic testing because they would understand how people might get carried away with designing their children. They are concerned that many people might not use the genetic testing with good intentions. Some scientists might be afraid that some crazy people might try to create humans with traits that would be of interest to them personally, but might not be easy for or kind to the new human.	Other scientists might think that government regulation might put too many restrictions or limits on the possibilities that could be achieved. Maybe these scientists would like to see these decisions made by teams of doctors and scientists so that only people who are very knowledgeable are in control of the various tests.
Business Owners and Investors	Genetic testing has already become a big business. These companies might still approve of government regulation of some tests, but not many. Unlike commercial organizations, non-profit organizations might be more interested in the ethics involved with government regulations.	With commercial organizations that do genetic testing, most business owners and investors are in it for the money and would probably prefer not to have the government telling them what tests they can or can not do.

- ✓ 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 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 treatment to address the results of the tests.

Additional Information for Teachers

Read about the costs and risks in genetic testing.
<http://ghr.nlm.nih.gov/handbook/testing/costresults>

Learn about commercial and non-profit organizations that do genetic testing.
http://genes-r-us.uthscsa.edu/resources/consumer/consumer_menu.htm

Give more thought to “designer babies.”
<http://www.buzzle.com/articles/pros-and-cons-of-designer-babies.html>

Help students understand the molecular construction of the body.
www.dnafb.org



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ANNOTATIONS FOR TEACHERS

Features of Academic Text: *References to film and literature as evidence*

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 are opposed to genetic screening?

Students will have to draw on their resources when writing argumentative essays. Drawing students' attention to examples such as this could help them determine when and how to use film and literature as in their writing.

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 balance 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 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."

In the world today, many people fear having a baby will soon turn into a shopping trip as parents choose their baby's genes for eye and hair color or height and IQ, creating "designer babies." Because genetic screening is very expensive, some people worry that genetic screening will widen the gap between rich and poor. The rich may have future access to genetic screening, but the poor will not.

Supporters of genetic testing say our world is changing and people should change with it. However, few doctors 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.

Countries around the world are dealing with the issue differently. England allows genetic testing for colon and breast cancer. Italy does not allow any type of genetic testing. The United States 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

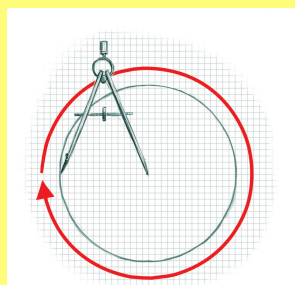
A root word is the base part of the word that helps you figure out what the whole word means. The roots of many words either come from Latin or Greek.

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** is a Latin root, it is used here as a prefix. Here are some other words using this Latin prefix.

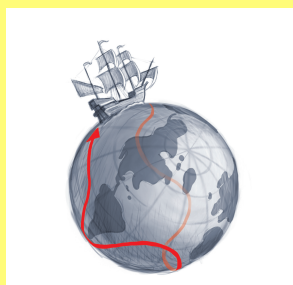
circumference

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



circumnavigate

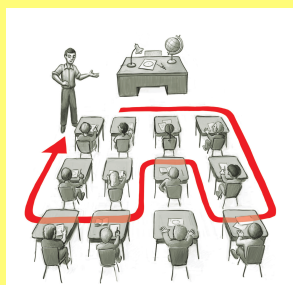
If a sailor circumnavigates the world, he sails all the way around the world.



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

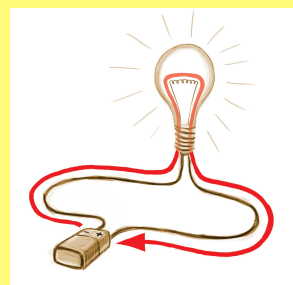
circulate

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.



Practice:

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 **cir**, what do you think **circa** means? Can you use the word in another sentence?





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DEVELOPING DISCUSSIONS

Opinion Continuum

Procedure:

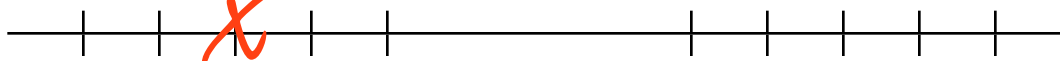
1. Ask 3-4 of your classmates to place their names on the opinion continuum. Ask them to place an "X" on the continuum to represent where they stand on the issue. They should then write their name below the "X." Do not allow anyone to choose the middle.
2. Ask your classmates to explain why they placed 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

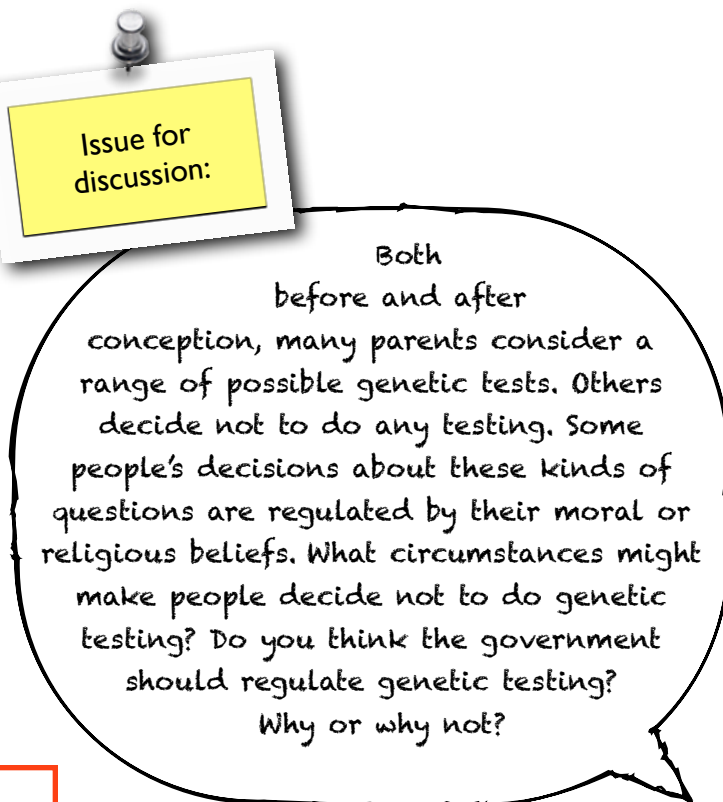


Thinks that people might not want to have babies with any kind of flaws. It will make a boring world.

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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 her, _____.

Notes: