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Word Generation - Unit 3.08

Focus Words

range | regulate | circumstance | conception | genetic



WEEKLY PASSAGE

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.

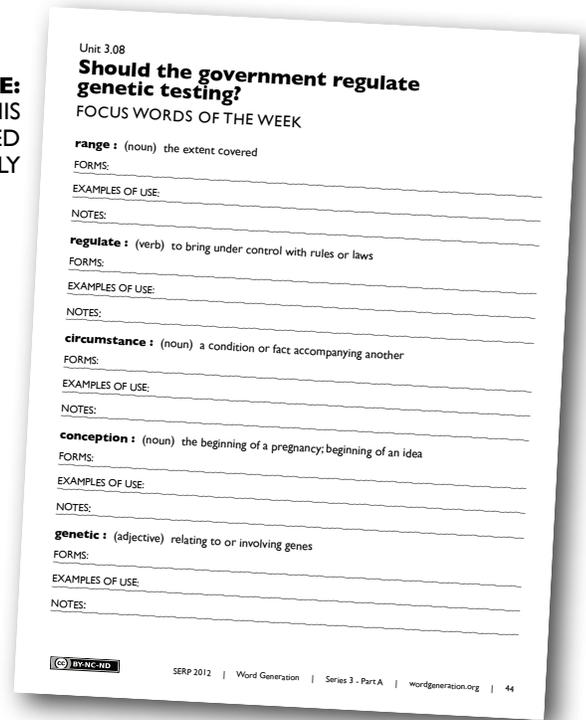
Supporters of genetic testing say our world is changing and people should change with it. However, few doctors consent to using genetic testing to select for traits such as eye color or height. They use the procedure only under certain **circumstances**. For example, doctors can use genetic screening 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?

TEACHER: Discussion Questions

- ▶ What does the phrase "playing God" suggest?
- ▶ How can genetic screening help a family?
- ▶ In your opinion, what is the most controversial use of genetic screening?
- ▶ From your viewpoint, what is the least controversial use of genetic screening?
- ▶ Do you think the U.S. should adopt regulations similar to those of England or of Italy?

PLEASE NOTE:
THE STUDENT VERSION OF THIS
PAGE IS FORMATTED
DIFFERENTLY



Unit 3.08
WORD CHART FOR TEACHERS

This chart is not in the student book. It is a resource for teachers to support students in the use of the focus words each. Students are provided one page in each unit immediately following the weekly passage with a basic definition printed and space for taking notes.

Word	Meaning	Forms			Related Words
		Inflectional	Basic Word Classes	Prefixes/ Suffixes	
range	(n.) - the extent covered	ranges (pl.) range (v.)		derange ranger	
regulate	(v.) - to bring under control with rules or laws	regulates regulated regulating		regulator (n.) regulation regular	rule
circumstance	(n.) - a condition or fact accompanying another	circumstances (pl.)		circumstantial	happenstance
conception	(n.) - the beginning of a pregnancy; beginning of an idea	conceptions	conceive	preconception misconception concept	reception inception
genetic	(adj.) - relating to or involving genes		gene	genetus	genesis generation generate genealogy



Should adoption information be kept private or made public?

PROBLEM OF THE WEEK

Option 1: After **conception**, a fetus can undergo genetic testing. Doctors can test for a **range** of conditions, from breast cancer to Down Syndrome. Parents in different **circumstances** make different choices about whether to test. In some countries, the government **regulates** genetic testing.

One condition that can be discovered through genetic screening is Down Syndrome. Most people have 23 pairs of chromosomes. People with Down Syndrome have one extra.

The “false positive” rate for Down Syndrome screening is 2%-5%. This means that between two and five percent of the time, testing indicates that the fetus has Down Syndrome, but, in fact, the fetus does not have Down Syndrome.

Which of the following is equivalent to 2% - 5%?

- A) $1/50 - 1/20$
- B) $1/5 - 1/2$
- C) 10% - 20%
- D) $1/10 - 1/5$

Option 2: A **range** of **genetic** tests can be done before **conception**, too. For example, some people who are thinking about having children get tested for a mutation in a gene known as the CFTR gene. This mutation can lead to cystic fibrosis, or CF. The CFTR gene helps **regulate** sweat, mucus, and digestive fluids. If one parent does NOT have the mutation, then the other parent does not need to get tested – under these **circumstances**, their children will not have CF. If both parents have the mutation, each child they produce has a 25% chance of having cystic fibrosis.

Mr. and Mrs. Stein both have the CFTR mutation. If they have two children, what are the chances that both the children will develop CF?

Answer: $1/16$, or .062

Discussion Question: Either before or after **conception**, many parents consider a **range** of possible **genetic** tests. Others decide not to do any testing. Some people’s decisions about these kinds of questions are **regulated** by their moral or religious beliefs. What **circumstances** might make people decide not to do genetic testing?

Should the government regulate genetic testing?



THINKING SCIENTIFICALLY

Ms. Kahn is teaching her science class about **genetic** testing. Her students have a **range** of opinions about whether or not genetic screening should be **regulated** by the government.

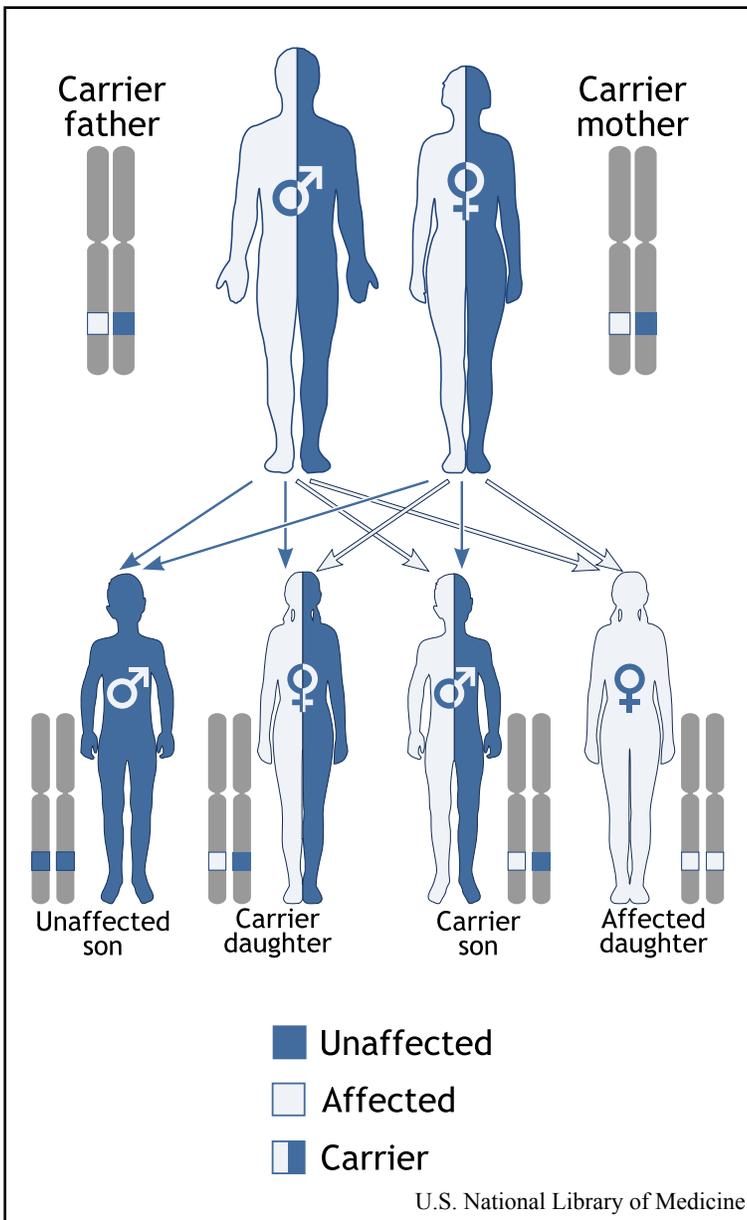
“I don't think that pregnant women should have genetic tests for their babies,” says Shana. “It's wrong to make choices about a baby's future based on his or her genes.”

“I agree with you about a baby who is already **conceived**, Shana,” Colleen replies, “but some people might want to be tested even before they decide to have a child. Some genetic tests can tell adults if they are *carriers* for a fatal genetic disease like Spinal Muscular Atrophy (SMA). In the **circumstance** that both parents carry the gene, their child might have the disease when it is born. The parents might choose to adopt instead.”

Shana asks, “What does it mean to be a 'carrier' of the gene?”

“Maybe one of you can do some research to find out?” asks Ms. Kahn.

→ Shana found this topic very interesting and decided to investigate this question. She found a graphic representation for the public posted by the U.S. National Library of Medicine. It helped her understand the way genes can move from generation to generation.



✍ Does the graphic help you understand more about genetics? What does it tell you?

Students may say that the graphic helps them because they can see how genes can be passed down. They may say that the arrows are confusing.

✍ What questions do you still have about genetics?

Students may wonder if parents have four children, will they turn out exactly like this chart indicates?

💬 Science can help us understand reasons for things, but decisions about whether something is right or wrong is much more complicated. Have a class discussion about why issues related to genetics are controversial.

Should the government regulate genetic testing?



DEBATING THE ISSUE

Get ready...

Pick one of these positions (or create your own).

A If the scientific technology is available, people should use it to improve their child's genes. Doing this will help our country to be stronger, healthier, and maybe even smarter.

B Genetic screening should not be allowed in the U.S. until it is available to everyone. Until genetic screening is affordable for all citizens, it should be outlawed.

C People should be able to choose the sex of their baby, but they should not be able to choose the baby's hair color or personality traits.

D Genetic screening should be illegal under all circumstances. People should let nature take its course and not interfere.

E _____

TEACHER

Whatever debate format you use in your class, ask students to use academically productive talk in arguing their positions. In particular, students should provide reasons and evidence to back up their assertions. It may be helpful to read these sample positions to illustrate some possibilities, but students should also be encouraged to take their own positions on the issue at hand.

Get set...

Be ready to provide evidence to back up your position during your class discussion or debate.

Jot down a few quick notes:

GO!

Be a strong participant by using phrases like these.

In my experience...

That's similar to what I think.

What makes you think that?

When I re-read the text, it reminded me...

