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SHOULD THE GOVERNMENT FUND STEM CELL RESEARCH?

Word Generation - Unit 2.07

Focus Words

embryo | paralyzed | theory | investigate | obtain



Weekly Passage

In summer 2003, toddler Kai Harriott of Boston was sitting on her porch, singing with her sister. A gang member shot into the air to scare Kai's neighbors. Kai was hit by a bullet. After being shot, Kai was paralyzed. She could not move from the waist down. Because of her injury, Kai must use a wheelchair. But scientists have an idea that might help. They have a theory that stem cells can someday help people like Kai.

Stem cells are found in different parts of the human body, including in our blood. Stem cells are also found in fertilized human eggs, called embryos. Stem cells from embryos can develop into cells that do many different jobs in the human body. With more research, we may be able to grow replacement parts for humans from stem cells.

If doctors can grow spinal cord cells, people like Kai might walk again. New brain

cells could help people who have had strokes or Alzheimer's disease. Scientists might also learn to grow the cells that make insulin. This could help people with diabetes. But to obtain some stem cells, scientists must destroy a human embryo.

Many people think that human life begins when an egg is fertilized. They think destroying a human embryo is like murder. They say scientists should only work with stem cells from adults. But most scientists find that stem cells taken from adults won't grow into the many different kinds of human cells the way that stem cells from embryos do. Stem cells from embryos may be our only hope of curing some diseases.

Investigating stem cells will take years and cost millions. Should the government pay for stem cell research?

Unit 2.07**Should the government fund stem cell research?**
Focus Word Chart

Word	Meaning	Forms	Examples of Use	Notes
embryo	(n.) - new organism in a mother's womb			
paralyzed	(adj.) - unable to move			
theory	(n.) - an explanation for a set of related facts			
investigate	(v.) - trying to learn about			
obtain	(v.) - to get			

Should the government fund stem cell research?

Problem of the Week



President George W. Bush restricted government funding on stem cell research. On August 9, 2001, he said that scientists could not **obtain** federal money for research on embryonic stem cell lines created after that date. This **paralyzed** certain areas of research. Scientists put some scientific **investigations** on hold.

President Bush believed he had a moral duty to stop new **embryos** from being destroyed. Each embryo, he pointed out, is a potential human being. His **theory** was that using embryos for research cheapens human life.

President Obama has a different moral theory. He says human beings have a moral duty to help people who are suffering. Therefore, they should use science to fight disease. In 2009, President Obama lifted President Bush's restrictions.

Option 1: Each embryo needed to start a stem cell line is made up of about 100 cells. Its mass is about one ten-millionth of a gram. Which of the following shows one ten-millionth?

- A) .0001
- B) .00001
- C) .000001
- D) .0000001

Option 2: Each embryo needed to start a stem cell line is made up of about 100 cells. Each person is made up of about 100 trillion cells. Write both numbers in scientific notation. How many orders of magnitude separate the two numbers?

Discussion Question: In 2009, the FDA approved the first clinical trial using **embryonic** stem cells. A company called Geron Corp planned to inject embryonic stem cells into 8-10 people whose legs were **paralyzed** by a spinal cord injury. The Geron scientists had a **theory** that these cells could help repair damaged nerves. **Obtaining** subjects for the trial would take time, because the scientists wanted to inject the cells within a few days of the injury. They said the trial was primarily an **investigation** into whether injecting stem cells would be safe. But they also hoped to see whether the stem cells would help patients recover some movement in their legs.

Pretend that you are against stem cell research. What would you say to these researchers to convince them to give up this project?

Should the government fund stem cell research?

Debating the Issue



I. Get ready...

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

A Scientists should focus on finding cures using adult stems cells instead of stems cells from embryos. There are valid ethical concerns about using embryonic stem cells.

B Destroying an embryo to get the stem cells is like murder. This should be a crime.

C The government should pay for embryonic stem cell research. This could be our only hope for treatment of many injuries and diseases that cause suffering and death.

D Scientists should be allowed to do research on embryonic stem cells, but the government should not pay for it because many taxpayers oppose it.

E _____

GO!

Be a strong participant by using phrases like these.

In my experience . . .

that's similar to what I think too...

What makes you think that?

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

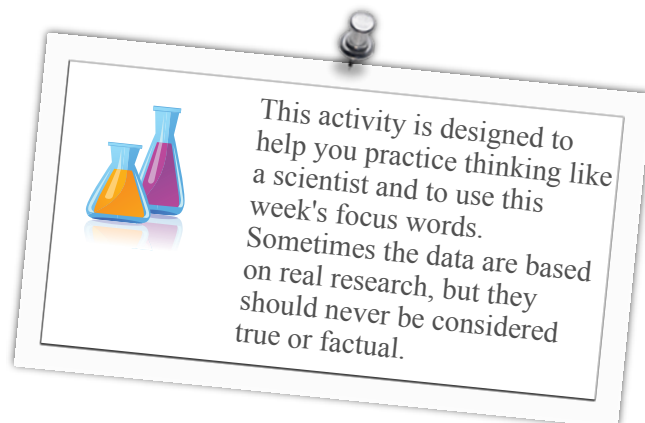
2. Get set...

Be ready to provide evidence to back up your position during your class discussion or debate. Jot down a few quick notes:

Unit 2.07

Should the government fund stem cell research?

Science Activity



Professor Seemy's class is talking about stem cell research.

"I saw a woman on TV who was **paralyzed** in a car accident," says Gabriel. "She said stem cell research could help her walk again."

"I saw a guy on TV who opposes stem cell research," says Toni. "He said that scientists kill babies to **obtain** stem cells."

"That's wrong," says Gabriel. "Scientists get stem cells from **embryos** that grow in a lab. Embryos aren't babies. They're tiny clumps of cells."

"People have strong opinions about stem cell research," says Professor Seemy. "But they may not understand stem cell science. I have a **theory**. I bet most people don't even know what stem cells are. Let's **investigate**!"

Question:

How many people can define "stem cell"?

Hypothesis:

Most people will not know these basic facts about stem cells:

- A stem cell is a cell that can become a more specialized cell.
- Stem cells become skin, blood, nerve, and muscle cells.
- All cells in a person's body come from (or stem from) stem cells.

Materials:

- ▶ 100 adults

Procedure:

1. Show each adult the 3 statements about stem cells.
2. Ask whether the statements are true or false.
3. Calculate the percentage of right and wrong answers for each question.

Data:

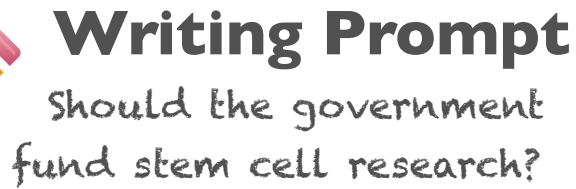
Statement	Right	Wrong
A	60%	40%
B	25%	75%
C	18%	82%

Conclusion:

Is the hypothesis supported or not by the data?

What evidence supports your conclusion?

How would you make this a better experiment?



Focus Words

[illegible]

Check off what you accomplished:

- ☐ Stated my own position
- ☐ Included 1 focus word

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1-2 focus words

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1 counterargument
- ☐ Used 2-5 focus words

[illegible]