Opinion: Scientists seek rules to ensure proper use of "gene editing" tools

By Scientific American, adapted by Newsela staff on 12.08.15

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An important meeting happened last week in Washington, D.C. Leading scientists gathered together to discuss the promise and problems of gene editing.

To edit something is to change it. Gene editing involves adding, removing or fixing some of the genes in a person’s body.

**Learning How To Change Human Genes**

Genes determine who we are. One gene gives us red hair, while another makes us tall. Genes can also make us likely to get sick.

Until recently, human gene editing was mostly just an interesting idea. However, new advances are making it increasingly possible.

At the meeting scientists considered what problems gene editing could cause. They are trying to decide when and how it should be used.
“We are close to being able to alter human heredity,” scientist David Baltimore said. Heredity is the set of genes that are passed down from parent to child.

**Should Humans Be "Enhanced"?**

Should scientists use gene editing for "human enhancement purposes?” Baltimore asked. An enhancement is an improvement, but it may not always be necessary. Baltimore said it is time to figure out which enhancements are important enough to use gene editing for.

For example, are enhancements like giving someone larger muscles important enough? Or should gene editing only be used to cure or prevent disease?

Baltimore led the three-day meeting. He thinks the question to ask is whether a particular change would improve a patient's health. If the answer is yes, then gene editing is worth doing.

**Helping Fight Disease**

For example, making a change to the PCSK9 gene would lower the risk of cardiovascular disease. For some people it could be the difference between life and death. In that case the gene editing would be clearly worth doing, Baltimore says. The change would not just be an unnecessary enhancement, like larger muscles.

However, even enhancement that are not really necessary could still be worth making.

Take the DEC2 gene. Altering it could make a person able to get by with just a few hours of sleep. The change would not be necessary for most people. However, it could be useful for a soldier in the battlefield.

Such enhancements have not been attempted yet. However, they could happen very soon.

**Tools Are Quickly Getting Better**

According to scientist Fyodor Urnov, enhancements of many kinds will “definitely” happen in the future. The only question is when.

The tools scientists use for gene editing are quickly getting better. The most promising is something known as CRISPR. It allows scientists to edit many genes at once.

Possible problems with CRISPR have already been uncovered, however.

Chinese scientists who recently experimented with CRISPR saw bad results. Following their gene editing, other genes began changing on their own.

**Risks For Future Generations?**

Future gene editing could produce changes that would not only affect the person whose genes had been edited. Some changes would be passed on to a person's children, grandchildren and the following generations.
Many feel this kind of gene editing is risky. They say it could lead to unknown results. Scientists call this type of gene editing germ line editing.

Most scientists at the meeting support the use of gene editing to cure diseases in single patients. However, they are worried about making changes that would affect future generations.

**Coming Up With Rules**

Yet, one respected scientist disagreed. He argued that there is a real need for germ line editing. There are patients who it could help immensely, he said.

It will take time for such questions to be settled.

In the meantime, there are no laws on gene editing. For now, it is up to scientists to decide what should be done, or not done. The meeting is an attempt to come up with a set of guidelines, or rules to follow.

Many people will be carefully watching what comes next.
Quiz

1. According to the article, on which of the following points do scientists DISAGREE?
   (A) if gene editing will be used in the future
   (B) when scientists should start using gene editing
   (C) how gene editing should and should not be used
   (D) whether gene editing will be able to help sick people

2. Why does the author include the following paragraph in the article?

   To edit something is to change it. Gene editing involves adding, removing or fixing some of the genes in a person’s body.

   (A) to present the problem the author addresses in the article
   (B) to provide the author’s opinion on the topic that the article discusses
   (C) to give a definition for helping readers understand the rest of the article
   (D) to introduce the article’s central idea so readers know what the article is about

3. Read the section "Risks For Future Generations?" Which sentence from that section BEST supports scientists’ concern about gene editing?

   (A) They say it could lead to unknown results.
   (B) Future gene editing could produce changes that would not only affect the person whose genes had been edited.
   (C) Most scientists at the meeting support the use of gene editing to cure diseases in single patients.
   (D) However, they are worried about making changes that would affect future generations.
Such enhancements have not been attempted yet. However, they could happen very soon.

Which sentence from the article BEST supports the claim above?

(A) The only question is when.

(B) The most promising is something known as CRISPR.

(C) According to scientist Fyodor Urnov, enhancements of many kinds will “definitely” happen in the future.

(D) The tools scientists use for gene editing are quickly getting better.