

SHOULD SCIENTISTS BE ABLE TO MODIFY HUMAN GENES?

THIS ACTIVITY SHOULD TAKE ABOUT 90 MINUTES. IF STUDENTS ARE ABLE TO REVIEW MEDIA FOR HOMEWORK, IN-CLASS TIME SHOULD BE 45 TO 60 MINUTES.

INVESTIGATE

Read, watch, and listen to the three media resources on the Thinkalong module. Students can use the Investigate graphic organizer to summarize each piece of media and record new information. Below are summaries of the three pieces of media curated in the Thinkalong module.

CRISPR AND THE FUTURE OF HUMAN EVOLUTION

PBS Digital Studios | May 17, 2017 | Video 6:43 Minutes

A video from PBS Digital Studios about a new gene editing technology called CRISPR and its power to reshape evolution.

- Evolutionary changes are more or less random but humans have been changing our environment, food supply, and medicine for decades allowing us to steer evolution.
- A new gene editing technique called CRISPR is so precise that it has the power to make very specific changes in our genetic codes.
- CRISPR (Clustered Regularly-Interspaced Short Palindromic Repeats) came from bacteria that are attacked by viruses and successfully fight them off. The single-celled organism saves some of the viral DNA in its part of its genome so that it can fight off the virus again later. Scientists realized that CRISPR could do this in any type of cell, and could cut any sequence down.
- However, CRISPR has to be done in embryos, which means the changes will be passed on to future generations. This also means that CRISPR can be used to modify humans in unnecessary ways, like making them faster, stronger, or taller.

SCIENCE SUMMIT DENOUNCES GENE-EDITED BABIES CLAIM, BUT REJECTS MORATORIUM NPR| November 29, 2018| Audio

3:02 minutes

An All Things Considered clip reporting on a Chinese scientist criticized for claiming to have edited the genes of human embryos.

- At the International Summit on Human Genome Edition in Hong Kong, Chinese scientist He Jiankui claimed that he edited the genes of twin girls who were born in October of 2018. Jiankui says that he edited the girls' genes so that they would be immune to the AIDS virus.
- Jiankui claims to have used the CRISPR gene-editing technique but his claims remain unproven.
- Scientists are saying that Jainkui's experiment was premature, deeply flawed, and unethical, as safety protocols for editing human embryos remain unclear. DNA editing also has the potential for causing genetic mutations that could cause new health problems that could be passed down for generations.

Using public media — video, audio and digital reports — about newsworthy topics, these classroom-based exercises help students to think critically about media messages, develop informed opinions, and practice how to take a stand.



- Gene editing has not been completely rejected as a possibility in the future. Nobel-prize winning U.S. biologist David Baltimore says that making changes in the DNA of embryos could allow parents who carry disease-causing mutations to have healthy, genetically related children.
- Many have criticized the summit organizers as complicit toward Jiankui's research, stating that the summit served as a "green light" for Jiankui.

SCIENTISTS SAY GENE-EDITED BABIES CLAIM IS 'WAKE-UP CALL' FOR WORLD

NPR| December 13, 2018| Article 1,061 words

An article listing the views of different scientists about whether or not there should be a ban on genome editing in human embryos.

- In a recent editorial, three of the most influential scientific organizations in the world have called for scientists to stop gene-editing experiments. This is in reaction to a Chinese scientist, He Jiankui, who claims to have successfully edited the genes of human embryos. The editorial did not rule out genome editing in the future, just until it is authorized with proper approval and supervision.
- Bioethicist J. Benjamin Hurlbut says the editorial is highly flawed because it only addresses how the line of ethics should be crossed in the future rather than questioning whether it should be crossed at all.
- Harvard Medical School Dean George Daley agrees with the editorial, emphasizing the importance of further deliberation on the scientific hurdles that researched need to pass before clinical experimentation begins.
- David Liu of the Broad Institute in Cambridge, Mass., disagrees with Jiankui's actions and believes a formal moratorium on initiating human pregnancies from genome-editing embryos is necessary to prevent causing harm from something that if done properly, could be enormously helpful to humanity.

KEY WORDS

Look out for these important keywords in the news stories. Discuss the definitions with your classroom and see how they affect the understanding of the story.

- Embryo
- Evolution
- CRISPR
- Protein
- Gene
- Ethics
- Trait
- Heritable

CONTEMPLATE

Students will use media literacy questions to critically engage with news by thinking about its purpose, searching for bias and discussing missing perspectives. They will answer the 5 Key Questions of Media Literacy created by the Center for Media Literacy, which are:

Using public media — video, audio and digital reports — about newsworthy topics, these classroom-based exercises help students to think critically about media messages, develop informed opinions, and practice how to take a stand.



- 1. Who created this message?
- 2. What creative techniques are used to attract my attention?
- 3. How might different people understand this message differently than me?
- 4. What values, lifestyles and points of view are represented in, or omitted from, this message?
- 5. Why is this message being sent?

A graphic organizer is included in this guide and the Thinkalong website to help students answer these five questions about each piece of media.

DEBATE

Students will engage their peers in an evidence-based debate using the media they just analyzed. Use the debate tool on the module webpage to help form an evidence-based response to the debate question.

In addition to rich in-class discussions, teachers can also connect with other classrooms through the Thinkalong website.

LET'S INVESTIGATE

NAME:

DATE:

Use this worksheet to help you investigate the media sources in the Thinkalong module.

SUMMARIZE THE TOPIC

KEY VOCABULARY

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MEDIA RESOURCE 1

TITLE

DATE PUBLISHED

MAIN IDEAS



LET'S INVESTIGATE

MEDIA RESOURCE 2

TITLE

DATE PUBLISHED

MAIN IDEAS

MEDIA RESOURCE 3

TITLE

DATE PUBLISHED

MAIN IDEAS



CONTEMPLATE YOUR SOURCES



NAME:

DATE:

After watching the media in the module, answer the questions below.

1. AUTHORSHIP: Who created this message?

MEDIA 1

MEDIA 2

MEDIA 3

2. FORMAT: What creative techniques are being used to grab my attention?

MEDIA 1

MEDIA 2

MEDIA 3



MEDIA 1

MEDIA 2

MEDIA 3

4. CONTENT: What values and points of view are represented? What's left out of this message?

MEDIA 1

MEDIA 2

MEDIA 3

5. PURPOSE: Why is this message being sent?

MEDIA 1

MEDIA 2

MEDIA 3



CREATE YOUR ARGUMENT

NAME:

DATE:

Create strong arguments for both sides from the resources in the Thinkalong module.

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