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STEM CLASSROOM ACTIVITY

HUMAN GENOME SEQUENCING

Teacher Handout

FOREWORD

HUMAN GENOME SEQUENCING: YAY OR NAY?

Students will take a side as to whether they believe it is ethical to release individual people's DNA for public viewing. The student prompt reads:

With the advancement of DNA technology, the human genome was successfully mapped. However, a number of ethical concerns surround the release of gene data from specific cultures and individuals.

Do you believe it is ethical or unethical to make individual people's gene sequences available to the public? Introduce the significance of the Human Genome Project and support your stance with at least 3 pieces of evidence from videos or text. Also acknowledge the other side with at least 1 piece of supporting evidence and why you disagree with the other side.

Literacy can be easily incorporated by making the product an open response question on an assessment or a paragraph response; alternatively, students can simply engage in a concluding class discussion after filling out the student graphic organizer.

ABOUT THE AUTHOR

Carlie Frydman is a high school Biology teacher based out of Denver, CO. She began her teaching career at a small charter school in Boston and is now in her 3rd year at a traditional high school. She received a B.S. in Nutrition from The University of Nevada, Reno and went on to receive a M.S. in Nutritional Sciences from The University of Tennessee at Knoxville. Carlie has previously taught other biological science courses, including AP Biology, Environmental Science, and Human Nutrition.

CONTACT US

General Information
For group leaders or schools:
800-888-ACIS / info@acis.com

TIMELINE

Concepts students should learn in advance:

DNA structure & function, mutations, mitosis/meiosis, Mendelian genetics, & pedigrees.

DAY 1

Pass out student handout*. Give students a few minutes to read Overview of the Human Genome Project and then show video. During both reading and video, students will fill out 'Notes about the Human Genome Project' portion of their handout during the video. Depending on the amount of time in a class period, video can be shown in segments. Suggested whole-class debrief at the end of class to ensure understanding.

- Article: An Overview of the Human Genome Project
- Video: DNA Genesis – The Children of Adam – National Geographic Documentary Films

DAY 2

1. Reading about Iceland & the Vikings. Fill out 'pro' evidence
   - Article: Icelanders boost medical research by donating their DNA to science
2. Reading about ethical issues related to genome sequencing. Fill out 'con' evidence. Some higher achieving students may also be able to contrast the evidence from this article to provide 'pro' evidence as well.
   - Article: Ethical Issues in Human Genetics and Genomics
3. Have students partner up to share the evidence they wrote down and discuss thoughts. This is a good opportunity to fill out evidence as well. Whole-class debrief.

**Student handout can be edited based on how advanced you would like the assignment to be. To make the assignment more rigorous, take away some structures like the prompts about the Human Genome Project. To scaffold the assignment more, add structures and sentence starters to the student handout.*

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