



pets in the
classroom

Debate: Using DNA Technology

Student Worksheet

Part 1: Diving into the GloFish World

DIRECTIONS: Use [Get Educated | GloFish®](#) to help answer the following questions.

1. GloFish are GMO's. What does GMO stand for?
2. GloFish are also transgenic fish. What does transgenic mean?
3. What 2 organisms do the fluorescent color genes present in the genetically modified GloFish originally come from?

Are fluorescent genes naturally present in these 2 organisms?

4. Do fluorescent genes naturally occur in the genomes of tropical Zebra, Tetra, Barb, and Shark fish? How did these fluorescent genes get into these fish?

5. When GloFish reproduce, do they pass their fluorescent traits onto their offspring?

6. Why do you think the GloFish website frequently uses the phrases, "born brilliant", "born beautiful", "brighter disposition", and others like it on their website?

7. GloFish are the result of genetic engineering. The use of genetic technology must be accompanied by ethical considerations. Do you feel genetically altering organisms such as these fish is ethical? Why or why not?

Part 2: DEBATE INSTRUCTIONS

Instructions:

DNA (genetic) technology has the potential to improve our lives dramatically. However, it also raises a large number of moral, ethical, social, and political issues. To put it another way, there are legitimate pros and cons to the use of genetic technology.

In this project, you and a partner will research one example of DNA technology and explore either the pros or cons of its use. You and your partner will then engage in a debate against two other classmates over the recommended use of that technology.

Format:

You and your partner are to research one side of a particular genetics debate. Each pair will research their given position and prepare a 4 - 6 minute debate in front of the class, in which you and your partner will present your side of the argument. After both sides of the issue present, the audience will ask several questions of each pair, and pairs will be given the opportunity for rebuttal.

Visual Aid:

Each group must create a slide presentation to use as a visual aid. This slide presentation must contain images and text to summarize your arguments

Tips:

Your goal is to persuade your audience. Provide sufficient background information regarding your topic, but be sure to emphasize your side of the argument (pro or con).

Debates and rebuttals reflect FACT not your own personal opinions based on conspiracies.

Here are the details for how the debate will be run:

Opening Statements: Each debater delivers a concise opening statement outlining their main arguments and stance on the issue. Use strong evidence and a confident tone. (2 mins)

Presentations: Each debater presents their arguments in detail with their slide presentation. Use evidence, reasoning, and persuasive language to support your claims. (5-7 mins)

Rebuttals and Cross-Examination: After each presentation, you will be able to rebut the opposing presentation. (5-7 mins)

Closing Statements: Each debater delivers a closing statement summarizing their key points and reiterating their stance. (2 mins)

Discussion and Reflection: After each side has presented, there will be a class discussion where other students can ask questions, share their opinions, and reflect on the arguments presented.. (5-7 mins)

Debate Prep Worksheet

Topic:

Your Stance: (For or Against)

Instructions: Fill out this worksheet to prepare for your upcoming debate. Use it to gather your thoughts, organize your arguments, and anticipate potential counterpoints.

I. Research and Evidence:

Identify 2-3 credible sources for your information (e.g., scientific studies, expert opinions, relevant news articles).

List 3-5 key facts or statistics that support your stance.

Briefly explain the context and significance of each fact.

II. Defining the Issue:

Clearly state the specific issue at hand. What are you debating?

Briefly explain the opposing viewpoint and its key arguments.

Identify any common misconceptions or misunderstandings surrounding the topic.

III. Building Your Case:

List 3-5 strong arguments supporting your stance. For each argument:

Briefly explain your reasoning.

Provide specific evidence from your research to back it up.

Anticipate potential objections or counterarguments.

Formulate your rebuttal strategy for each point.

IV. Persuasive Strategies:

Craft a clear and memorable opening statement to grab attention.

Prepare 1-2 powerful rebuttals to common opposing arguments.

V. Conclusion and Wrap-up:

Summarize your main points in a compelling way.

Clearly restate your stance and why it matters.

End with a call to action or a thought-provoking question.

Create a slide presentation of your key points

Practice your presentations to make sure you are within the time limits.

**Reflect on this experience - What was challenging? How did you do working in a team?
Is this something you would like to do again- why or why not?**

