BIOTECHNOLOGY AND GENETIC ENGINEERING

WHAT IS BIOTECHNOLOGY?

It is how we use our knowledge of biology and its processes to manipulate or create something to benefit us as humans.

Some examples deal directly with health, medicine or agriculture.

WHAT IS GENETIC ENGINEERING?

It is the process that we use to purposely change the genetics/genes of an organism to either make new organisms or improve existing organisms.

Basically we can add DNA to an organism to give it the characteristics that we want it to have.

HOW DO WE DO THIS?

Well, most of it involves using the processes that we have learned about.

- DNA replication
- Transcription
- Translation

- But there are all sorts of other ways that it is done.

EXAMPLES OF BIOTECHNOLOGY AND GENETIC ENGINEERING

Biotechnology

- Organism Cloning
- Medical Diagnosis using DNA (Genetic Testing)
- Gene Therapy
- Forensics – DNA profiling

Genetic Engineering

- Transgenic bacteria
- Transgenic plants – genetically modified foods
- Transgenic animals- genetically modified animals

These are all examples of technology that we currently use.

Some of these technologies are controversial – in fact all of these technologies have an element of controversy.

WHAT COULD BE SO CONTROVERSIAL ABOUT GENETIC ENGINEERING AND BIOTECHNOLOGY?

Is creating new organisms okay?

What happens if they get released into the environment?

Can you patent a new organism?

Is it safe? Is it safe to eat?

Is it ethical for the animal to change their genes?

Does it violate privacy?

There are so many type of problems and questions, even more than just these

The big questions is this:

- Just because we have the ability to do it, should we do it?

YOUR ASSIGNMENT

This assignment will have 2 parts over 2 days.

You will need to have a team- 3 people

Part 1 -Tuesday: You and your partners will create a project that describes how a specific genetic technology works and is used.

Part 2 -Wednesday: You and your team will prepare to debate another team about the pros and cons of your specific biotechnology, focusing on what is controversial.

PART 1: DESCRIBE THE TECHNOLOGY

Step 1: You and your team need to choose a topic. Look at the next slide and choose the topic you would like to research. When you have decided, go tell the sub and she will write it down . Choose a topic quickly – 1st come 1st serve!

Step 2: Create one Google Slides presentation and share it with your group. You will all be able to work on it simultaneously.

Step 3: Make your presentation. Here are the things that you need in your presentation.

- 1. Describe clearly what the technology is and how it can be useful.
- 2. Describe how the technology works. Give a few good details and try to understand and explain how it works.
- 3. Provide a specific example of how this technology has been used. Give pictures, details, dates etc. to show you understand how it has already been used.
- 4. Provide a list of sources on your final slide. Use at least 3 websites to collect your information.

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PART 2: PREPARE TO DEBATE

Step 1: Get 1 Debate Position Sheet from the teacher.

Step 2: Fill out the sheet together as a group.

On Monday, April 10th we will have a few minutes to put the final touches on everything and then we will begin with presentations and debates.

Please have your stuff ready!