

Grade 9 - Unit A Project

Option (In class) - Create a Model (Working Alone)

Project Goal: Working alone, to design and construct a 3D model of one of the following:

Size: No taller than 40 cm

Labels: Each component part of the model should be labelled detailed enough for an explanation of what is the structure. Don't forget to use other resources and reference them properly!

DNA molecule and Gene Segment

Oswald Avery discovered DNA. Watson and Crick developed the Double Helix model of DNA. Using their initial model, you should develop a 3D model that reflects what they learned about DNA. The model should also strive to explain what a gene is.

Mitosis and Meiosis

Mitosis and Meiosis are used for various processes within living things. Your job is to model each process and give examples of where it is used either in plants or animals.

Model of inheritance

Inheritance can be quite difficult to predict. Create a 3D model that explains dominant, recessive, and incomplete dominant traits.

Online Options - Presentation/debate

Project Goal: Discuss via a presentation one of the following questions!

Presentation options: video explanation (with script), narrated slideshow (You record yourself speaking over your slideshow)

Question 1: Are GMO's harmful or not harmful for the environment

Genetically modified organisms have been around since the 90's, however most people are still unaware of what it is, and whether or not it is beneficial. Your job is to explain what is a Genetically Modified Organism (G.M.O), and if they pose any harm to people/society. You will be arguing for, or against GMO's.

- i) What is a G.M.O
- ii) Which concepts of biology (genetics) are involved?
- iii) What are the impacts of G.M.Os? (environmentally, socially, economically)
- v) How do G.M.O's compare to non genetically modified organisms
- vi) Is there anything that could go wrong with G.M.O's (environmentally)

News stories, news stories, news stories!

Question 2: Should scientists forge ahead in the area of gene therapy to create “designer babies” ?

The term "designer baby" refers to a baby whose genetic makeup has been artificially selected by genetic engineering combined with in vitro fertilization to ensure the presence or absence of particular genes or characteristics.

Gene therapy is an experimental technique that uses genes to treat or prevent disease. In the future, this technique may allow doctors to treat a disorder by inserting a gene into a patient's cells instead of using drugs or surgery

- i) What is the process of Gene Therapy?
- ii) Which concepts of biology (genetics) are involved?
- iii) What are the impacts of Gene Therapy? (environmentally, socially, economically)
- v) How do these impacts stack up against conventional organisms?
- vi) Are there any moral or ethical obligations for creating designer babies?

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