



Genes in Space classroom activity – brainstorm!

This challenge allows for large amounts of creativity and student imagination. By allowing students to design their own protocol rooted in scientific concepts, students bridge the gap between reading about science and transforming this to real-world applications. **This activity integrates Common Core Learning Standards (CCLS) and Next Generation Science Standards (NGSS).**

Students may use the questions below as a guide for building their proposal. Students can work in groups up to four and/or use peer review to enhance their proposals.

Start thinking about Genes in Space:

Defining the problem

1. What is the question you are trying to answer? Be specific.
2. Why is this question relevant? Name what answering this question would allow humans to do.

Developing a hypothesis

3. What is your hypothesis?
4. Diagram your hypothesis with step-by-step justifications found during your research.

Testing your hypothesis

5. How would you design an experiment to test your hypothesis? Highlight how the PCR technique is needed for this type of research. Are other techniques necessary?
6. How does testing your hypothesis require the unique environment of the International Space Station?
7. What are the possible experimental outcomes and how would they support/refute the hypothesis?

Designing the experimental plan

8. What data would you collect?
9. What samples will be required for your experiment as inputs to the miniPCR machine?
10. Which physical variables should be considered to complete this experiment aboard the International Space Station?
11. What research or scientific principles in science can you use to explain or justify your experimental design?

Summary:

12. How would you explain your project to a fellow student, in less than 50 words? Be specific.

After peer review, go to www.genesinspace.org to submit your proposal!