



## Chapter 16 Project

### It's Just an Expression

#### Project Goal + Timeline

In this project, you will be reviewing your knowledge of gene expression by making a poster about eukaryotic gene expression. This project should be completed by yourself or with a group within two to five hours.

#### Directions

##### Part 1: Make Your Poster

Make a poster describing eukaryotic gene expression by comparing two types of human cells. Use specific examples. For example, you could compare gene expression in a nerve cell to gene expression in a liver cell.

Here are guidelines for your poster:

- 1. Compare and contrast the DNA sequences and gene expression of the two cell types.** On your poster, present these cells as being from the same person, meaning their DNA sequences should be nearly identical. Emphasize that despite having identical DNA, these cells appear and function differently. Include images. These images can be hand drawn illustrations or computer images.
- 2. Provide a specific example of how gene expression differs between these cells.** Use the internet or other resources to identify an example of a gene expression difference between the two cell types.
- 3. Highlight three mechanisms of regulation in eukaryotic gene expression.** On your poster, show how these three mechanisms work. Use details and provide names of the important chemical participants. Show how these three mechanisms might allow your two cells with identical DNA to use their DNA differently. Choose three mechanisms from the following list. Use images as necessary to display these mechanisms.
  - chromatin remodeling
  - histone modification
  - DNA methylation
  - transcription factors
  - enhancers & repressors
  - RNA splicing
  - RNA stability
  - post-translational control of gene expression

##### Part 2: Complete Gene Expression Questions

Complete the following questions about gene expression.

- 1.** How can changes in gene expression disrupt the cell cycle? How might changes in gene expression lead to cancer?
- 2.** What are some ways that prokaryotic gene expression differs from eukaryotic gene expression?

### Project Materials

- 1 poster board
- Drawing/art supplies
- Glue and/or tape
- Project questions
- Pen or pencil
- Computer with internet access
- *Optional: Printer for images*

### Student Checklist

- ☐ Complete gene expression poster
- ☐ Complete gene expression questions