# Assessment 5 Instructions: Homework: Genetics Lab

For this assignment, you will be participating in a lab activity on genetics by analyzing the pedigree chart and karyotype for two patients.

## Reproduction and Genetics

The reproductive systems in males and females are different but have the common goal of continuation of human species. We will look closely at the reproductive systems in males and females and inheritance of genes. Further, we will explore genetic diseases in families and the concept of gene therapy for providing hope for genetically inherited disorders. Genetics can play a role in the traits that we inherit, but the environment around us can also impact our traits. We are born with a genetic code that is a culmination of genes from our parents and generations before us. Genetic diseases in families often are "hidden" if they are a recessive trait, such as cystic fibrosis or sickle-cell anemia. However, with the advances in science, gene therapy provides new hope for genetically inherited disorders like sickle-cell anemia.

Have you ever wanted to know more about where exactly you came from? It has never been easier to find out thanks to the explosion of at-home DNA testing kits. Millions of people have tried them, resulting in a great surge in popularity. Many new companies offer genetic testing, also known as DNA testing, that allows an individual to receive a genetic diagnosis of their vulnerabilities to inherited diseases. In general, this helps determine an individual's ancestry or biological relationships between people. Read the articles to learn more information.

## Overview

In this lab, you will analyze the pedigree chart and karyotype for two patients Kayla and Emily. A karyotype is a picture of stained chromosomes arranged to show chromosome pairs. Abnormalities in chromosome number or size can be easily identified in a karyotype. Pedigree charts give a symbolic representation of phenotypic (observable) traits through a family. Using a pedigree, researchers can trace the pathway of a disease through families:

- Genetics Lab.

**Consider**

If gene therapy was available to fix a gene before birth, do you think this might cross the lines of “unethical” research?

## Instructions

Remember the following as you go through the lab:

- Complete the assessment at the end of the lab. To do this, fill out the items requested within the lab, download that document or documents to your computer, and save it. You must attach the documents to the assignment and then submit the assignment.

- Make sure that you read the Homework: Genetics System Lab Scoring Guide prior to submitting your document to ensure you have met all of the expectations for this assignment.
- It is recommended to review the scoring guide prior to downloading your document, or documents, to your computer, since all work must be completed within the lab.

### Competencies Measured

- Competency 1: Describe the organization of the human body.
    - Explain the inheritance of an autosomal recessive trait by reading a pedigree.
    - Explain the gender of the second patient in a lab scenario.
    - Explain the results of the karyotype and how the chromosomal abnormalities affect the body systems.
    - Explain the positive and negative ramifications of genetic testing.

**SCORING GUIDE**

Use the scoring guide to understand how your assessment will be evaluated.

VIEW SCORING GUIDE