Karyotyping Activity Online Version

Visit the following link:

http://www.biology.arizona.edu/human_bio/activities/karyotyping/karyotyping.html

This exercise is a simulation of human karyotyping using digital images of chromosomes from actual human genetic studies. You will be arranging chromosomes into a completed karyotype and interpreting your findings just as if you were working in a genetic analysis program at a hospital or clinic.

Karyotype analyses are performed over 400,000 times per year in the U.S. and Canada. Imagine that you were performing these analyses for real people, and that your conclusions would drastically affect their lives.

Your Task:

1. Read the background information on the website before you start your analysis.
2. You will evaluate 3 patients' case histories, complete their karyotypes, and diagnose any missing or extra chromosomes. You will be completing the questions asked in the simulation. You do not need to do the research page at the end of the simulation. I have included separate research questions to be completed. Do not use the "Dogpile" search engine.
3. For each patient you will place chromosomes in the partially completed karyotype below by clicking on its homologous chromosome (REFRESH WHAT THIS MEANS). If you match the chromosome correctly, you will proceed to the next chromosome. If you match incorrectly, a page will explain why the chromosome you chose is not the unknown's pair and you can choose again.
4. Interpreting the karyotype
    a. Lab technicians compile karyotypes and then use a specific notation to characterize the karyotype. This notation includes the total number of chromosomes, the sex chromosomes, and any extra or missing autosomal chromosomes. For example, 47, XY, +18 indicates that the patient has 47 chromosomes, is a male, and has an extra autosomal chromosome 18. 46, XX is a female with a normal number of chromosomes. 47, XXY is a patient with an extra sex chromosome.

Questions:

Patient A

A1: What notation would you use to characterize Patient A's karyotype?

A2: What diagnosis would you give patient A?

A3: Complete some research at the end and describe features of this diagnosis.

Patient B

B1: What notation would you use to characterize Patient B's karyotype?

B2: What diagnosis would you give patient B?

B3: Complete some research at the end and describe features of this diagnosis.

Patient C

C1: What notation would you use to characterize Patient C's karyotype?

C2: What diagnosis would you give patient C?

C3: Complete some research at the end and describe features of this diagnosis.