

Lab: Karyotyping Activity

BIOLOGY: Chapter 8

BACKGROUND: In this activity, you will use a computer model to look at chromosomes and prepare a karyotype. You will diagnose patients for abnormalities and learn the correct notation for characterizing karyotypes.



Site 1: www.biology.arizona.edu

Click on Karyotyping under human biology and read the Introduction page:

1. What causes a dark band on the chromosome?

2. What is a centromere?

Patient Histories: *Click on Patient Histories. You will be completing a karyotype for Patient A, B & C

Patient A (Click on the link to "Complete Patient A's Karyotype")

*Match the chromosome to its homolog. After all the matches are complete you'll analyze your patient. (Scroll down to view your completed karyotype).

3. What is patient A's history (summarize)

4. How many total chromosomes are in your karyotype - count them _____

The last set of chromosomes is the sex chromosomes, if you have two large chromosomes, your patient is XX (female), one large and one small indicates and XY (male) . What sex chromosomes does your patient have- _____

Which chromosome set has an extra + _____

5. What diagnosis would you give this patient (what disease)?

Patient B - click on the link to go to Patient B and repeat the above process.

6. What is Patient B's history (summarize)

7. How many total chromosomes are in your karyotype - count them- _____

What sex chromosomes does your patient have- _____

Which chromosome set has an extra + _____

8. Finish the notation for this patient's karyotype : 47 X _____

9. What is the diagnosis?

Patient C - click on the link to go to Patient C and repeat the above process.

10. What is patient C's history (summarize)?

11. How many total chromosomes are in your karyotype - count them- _____

What sex chromosomes does your patient have- _____

Which chromosome set has an extra + _____

12. Write out the correct notation for this karyotype. _____

13. What is the diagnosis?

Site 2: Genetic Science Learning Center (<http://learn.genetics.utah.edu/>)

Go to "Chromosomes and Inheritance"  "How Do Scientists Read Chromosomes"

(Find the answers to the following questions in this area. Browse all sections)

1. What are the three key features used to read chromosomes?

2. Sketch or describe: metacentric, submetacentric, acrocentric

3. Go to “**Make a Karyotype**” - Try it yourself – “Create your own karyotype” - turning on hints is okay.

Check this box when your karyotype is complete

What did you find difficult about matching the chromosomes?

4. Go to –“**Using Karyotypes to Diagnose Genetic Disorders**”

a. What is trisomy?

b. What is monosomy?

c. What is a terminal deletion?

5. For each of the Disorders, describe the chromosome abnormality and the symptoms. (Type each into the search box at learn.genetics)

Cri Du Chat-

Turner Syndrome-

Klinefelter Syndrome-

Williams Syndrome-

Extra Credit - <http://bluehawk.monmouth.edu/~bio/karyotypes.htm>

Pick from the list of abnormal karyotypes and arrange the chromosomes in a karyotype. Use the "print screen" button to copy your finished karyotype onto a word processing document. For "Diagnosis" write the chromosome set that has the abnormality, and what type of abnormality it is. Print this page out and turn it in.