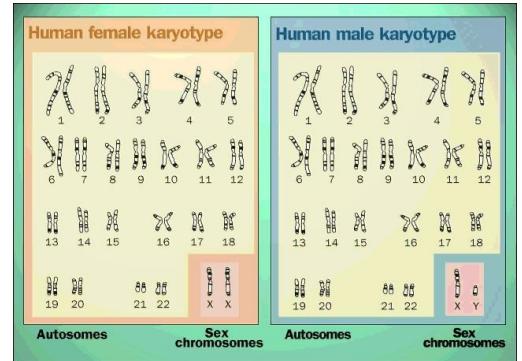


Karyotyping Activity

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.



Activity 1: MAKE A KARYOTYPE

Go to <http://learn.genetics.utah.edu/content/begin/traits/karyotype/>

If using iPad, go through Puffin Academy → Biology → Learn Genetics → Chromosomes & Inheritance

A. Select “**What is a Chromosome?**” and watch video.

1. Is the karyotype in the video from a male or female? How do you know?

B. Select “**How do scientists read chromosomes?**”

2. What are the three key features used to identify chromosomes?

3. What are centromeres?

4. What are the three centromere positions on chromosomes?

C. Select “**Make a karyotype**”. Match up chromosome pairs. When you are finished, show to the teacher your completed karyotype for a grade. Check this box when your karyotype is complete.

Teacher's initials _____

D. Select “**Using karyotypes to diagnose genetic disorders**” and read through info & diagrams.

5. What is trisomy? _____

6. What is monosomy? _____

7. What is a terminal deletion? _____

8. For each of these genetic disorders, describe the chromosome abnormality and the symptoms.
 - a. Klinefelter Syndrome
 - b. Turner Syndrome
 - c. Down Syndrome
 - d. Cri Du Chat
 - e. Williams Syndrome

Activity 2: Karyotyping Activity

Go to www.biology.arizona.edu - click on **Karyotyping** under human biology or Go to http://www.biology.arizona.edu/human_bio/activities/karyotyping/karyotyping.html

Introduction:

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 Patients A, B & C

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

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).

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 _____

To make a chromosome notation for your patient, you'll add the three figures from the blanks.

In Patient A's case, the notation is
47 XX +21.

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? _____