Name _____ Date _____ Period _____

Karyotype Identification

Background: A karyotype is an organized profile of a person's chromosomes. In a karyotype, chromosomes are arranged and numbered by size, from largest to smallest. This arrangement helps scientists quickly identify chromosomal alterations that may result in a genetic disorder. To make a karyotype, scientists use light microscopes to "take a picture" of someone's chromosomes and match them up using size, banding pattern and centromere position as guides.

Use the chart below to determine if the karyotypes of the individuals seen below illustrate a chromosomal abnormality.

Chromosomal Makeup	Clinical Condition	Description
46 XX	Female	Normal
46 XY	Male	Normal
Trisomy 13	Trisomy 13 (Three number 13 chromosomes)	Multiple congenital abnormalities. Fatal by age 1 in most cases.
Trisomy 18	Trisomy 18 (Three number 18 chromosomes)	Multiple congenital abnormalities. Fatal by age 3 months in most cases.
Trisomy 21	Down Syndrome (Three number 21 chromosomes)	Mental handicap and distinct facial characteristics (e.g. skin fold at inner corners of eyes)
XXY	Klinefelter syndrome (Two X chromosomes AND one Y chromosome)	Male appearance, testes underdeveloped, breasts enlarged. Usually sterile. Often mentally handicapped.
X	Turner Syndrome (only one single X chromosome)	Female, anatomically and physiologically. Underdeveloped ovaries. No menstruation or ovulation (single Y chromosome only does not seem to be viable – none have been found).
Partial Deletion Long Arm Y	No name	Results in infertility in most cases

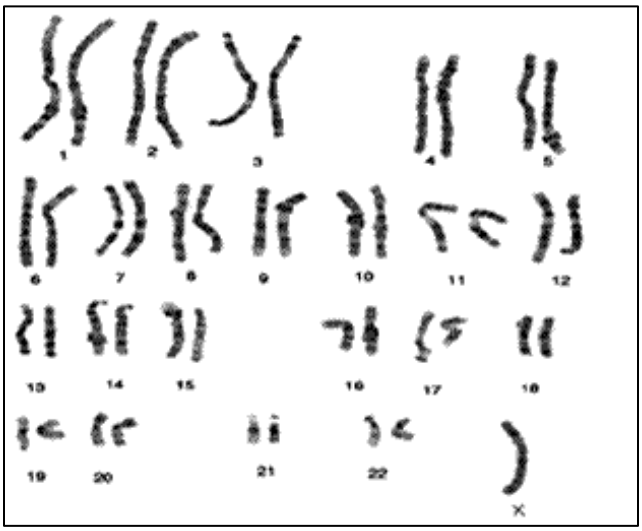
Case Study #1

1) What is the gender of the individual seen to the right?

2) Identify their chromosomal condition.

3) What would be their expected symptoms?

Case Study #2



1) What is the gender of the individual seen to the left?

2) Identify their chromosomal condition.

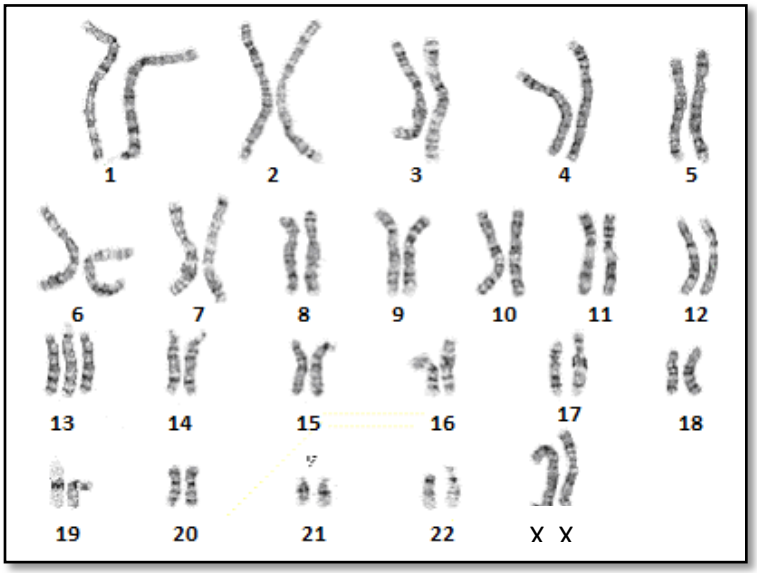
3) What would be their expected symptoms?

Case Study #3

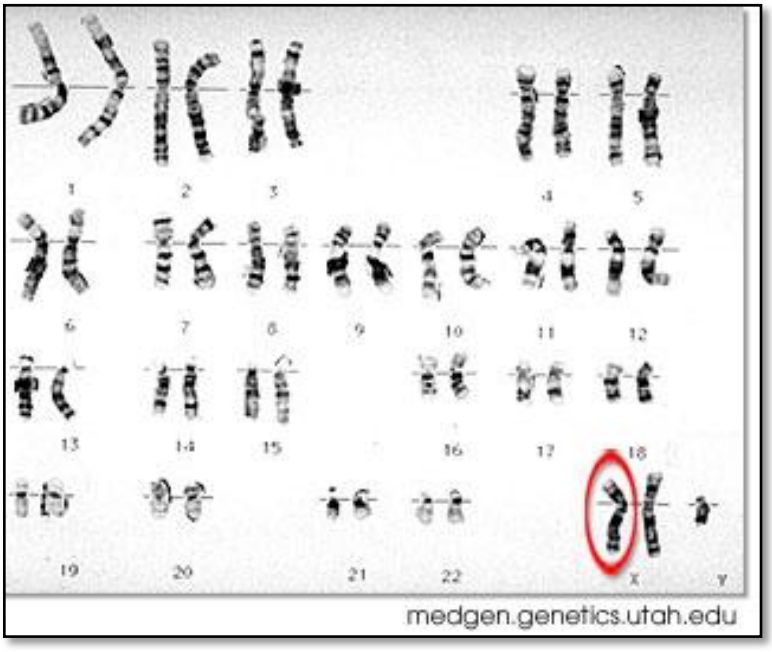
1) What is the gender of the individual seen to the right?

2) Identify their chromosomal condition.

3) What would be their expected symptoms?



Case Study #4



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