



PHONES & EAR BUDS away Please!

Tues, Jan 17, 2017

Pick up: none

Today you will:

- Review Sex-linked Traits
- Understand how Pedigrees help us understand inheritance/Look at Karyotypes & what they tell us

Homework/Planner:

Complete Pedigree Practice & ISN pg 133

Study what we've covered so far, Quiz Mon, Jan 23!

10. It was suspected that two newborn babies had been exchanged in a hospital. Mr. and Ms. Jones received baby #1 and Mr. and Ms. Simms received baby #2. Blood typing on the parents and the babies are shown in the following table.

**Blood Typing Results for Jones and Simms**

Mr. Jones: Type A ( $I^A i$ ) Ms. Jones: Type B ( $I^B i$ )	Mr. Simms: Type AB ( $I^A I^B$ ) Ms. Simms: Type O (ii)
Baby #1: Type A	Baby #2: Type O

**Blood Type Reference Table**

Type A	$I^A I^A$ or $I^A i$
Type B	$I^B I^B$ or $I^B i$
Type AB	$I^A I^B$
Type O	ii

Based on these blood typing results, were baby #1 and baby#2 switched at birth?

- A. Yes; It is impossible for Mr. and Ms. Jones to have a baby with a Type A blood type.
- B. Yes; It is impossible for Mr. and Ms. Simms to have a baby with a Type O blood type.
- C. No; It is impossible for Mr. and Ms. Jones to have a baby with a Type O blood type.
- D. No; It is impossible for Mr. and Ms. Simms to have a baby with a Type A blood type.

# Your Job Today

**ISN page 131**

**WRITE in ANSWERS**

**1. Complete Qs 4-7**

2. *You will use the 'key' provided to work the Sex Linked Punnett Square on ISN p.148 after I explain...*

# Notes, ISBN p. 131

## Autosomes

vs

## Sex Chromosomes

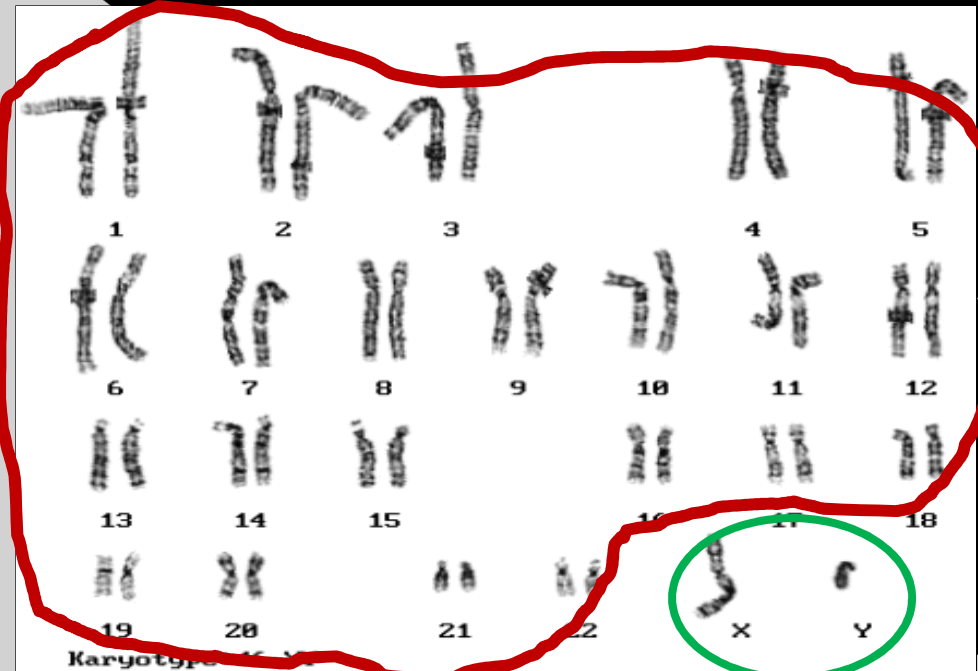
- Xsome pairs #1-22

- Xsome pair #23

• XX = F

• XY = M

### Amniocentesis



# MALES determine the sex of the offspring!

◎ 46 Chromosomes total in humans!

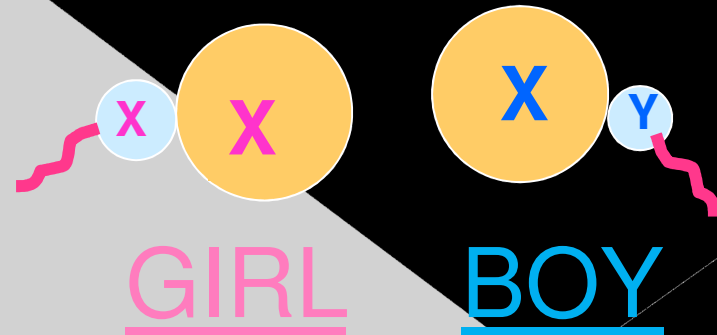
◎ 2 are sex chromosomes:

> **XX** or **XY**

> Eggs = **X** or **X**

> sperm - **X** or **Y**

Sperm determines sex of the offspring



# Sex Linked Traits

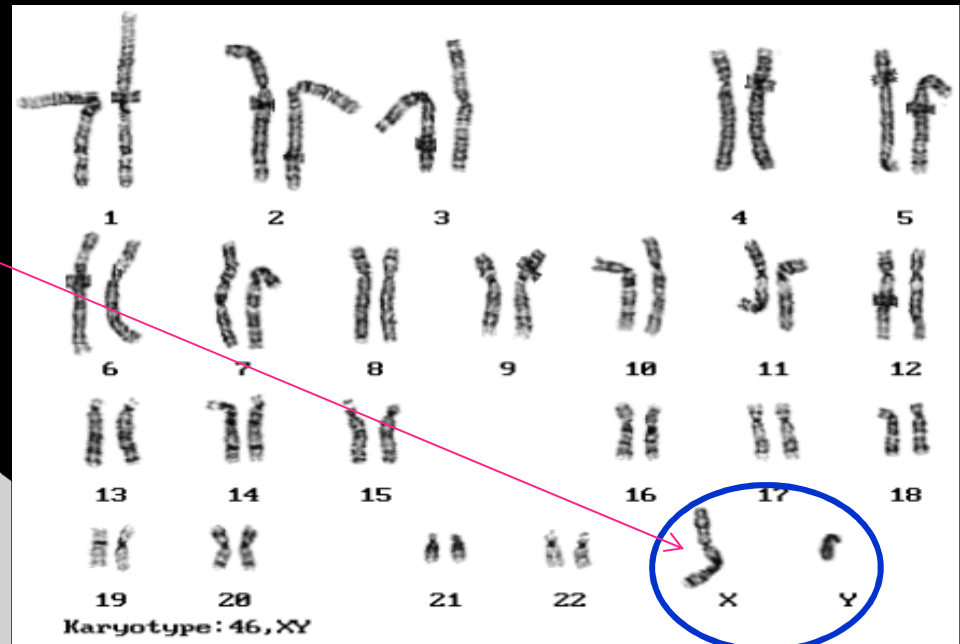
1. Traits found ONLY on the Sex Xsomes → specifically the X

2. **EXAMPLES:**

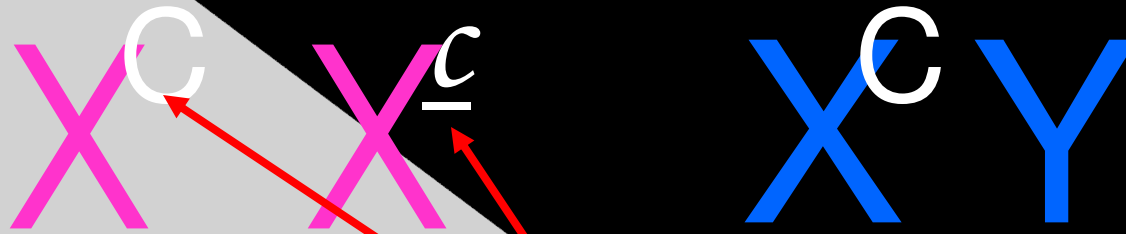
1. Colorblindness...
2. Hemophilia...
3. Muscular Dystrophy...

○ **Traits found on Autosomes** – the first 22 pair - are written as letters like **Dd** or **FF** (dimples & freckles)

○ **But when a trait is on the Sex Xsome**, you change the way you write the gene... →



- ***How do you represent Sex-Linked genes?***

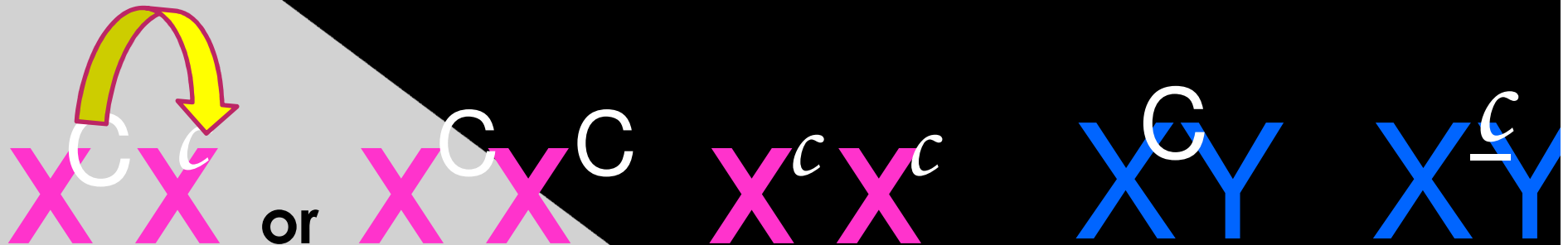


- **As a superscript:**

- *The genes are attached or LINKED to the **X** sex chromosomes! That's why they are written as superscripts. No disorders are linked to the 'Y' chromosomes because it is so small*

## Notes ISN page 131

What is a "Carrier"? Why are they "normal"?



Carrier = only F = do NOT exhibit trait, just carry it & MIGHT pass it on

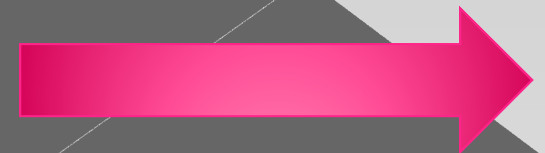
So why can't men be carriers AND why do more men have Sex-Linked Genetic Disorders????





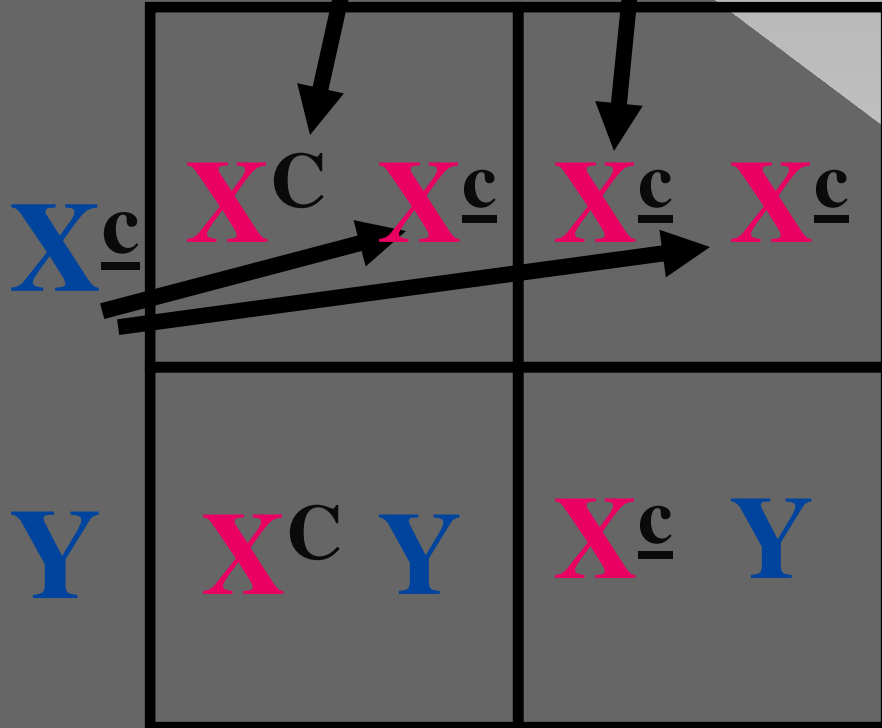
## Sex Linked Punnett Square

- Cross a Heterozygous Normal Color Vision Female with a colorblind male.



$X^C X^c \times X^c Y$

$X^C$        $X^c$



**Genotype | Phenotype**

$X^C X^c = 1$  | F, Carrier = 25%

$X^c X^c = 1$  | F, CB = 25%

$X^C Y = 1$  | M, Normal = 25%

$X^c Y = 1$  | M, CB = 25%

?

# Your 2<sup>nd</sup> Job Today

**ISN page 130**

**WORK the 2 Sex Linked  
Punnett Squares**

**1<sup>st</sup> = Color Vision**

**2<sup>nd</sup> = Hemophilia**

**Use the Keys on ISN pg 131**

$X^cY$  x  $X^CX^C$

$X^c$        $Y$

$X^C$	$X^CX^c$	$X^CY$
$X^C$	$X^CX^c$	$X^CY$

**Genotype | Phenotype**

$X^CX^c = 2$

Carrier are  
**NORMAL! = 50%**

$X^CY = 2$

M, normal  
vision = 50%

*% children w/ normal  
vision??? **100%***

$X^h X^h \times X^H Y$

	$X^H$	$Y$
$X^h$	$X^H X^h$	$X^h Y$
$X^h$	$X^H X^h$	$X^h Y$

Genotype	Phenotype
$X^H X^h = 2$	Carrier = 50%
$X^h Y = 2$	M, hemophilia = 50%

*50/50 chance children will be normal*