

## VL: Sex Linked Trait Assignment

This Virtual Lab has THREE PARTS:

1. Sex-Linked Traits Data Table document ...to be downloaded, saved and completed using the Virtual Lab Google Form
2. Virtual Lab Google Form ...class time provided on Thursday, April 30
3. Analysis Question ...text submission

**Part 1:** Before attempting the Google form: download, save, and open the **Sex-Linked Traits Data Table document**

(this is for your information and will not be submitted)

It is attached to this Assignment

**Part 2:** Before attempting the Analysis Question:

**Complete the VL: Punnett Square Google Form:**

[https://docs.google.com/forms/d/e/1FAIpQLSfIWJ71Tg-TTBs91tXOOorTOh4ybCaHBZVxBlnzJz2XXF03Ktw/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSfIWJ71Tg-TTBs91tXOOorTOh4ybCaHBZVxBlnzJz2XXF03Ktw/viewform?usp=sf_link)

**DO NOT attempt the Analysis Question without doing the Virtual Lab!**

**DO NOT copy from the Internet**

**USE Good Writing Strategies!**

**Part 3: Analysis Question (2 part question!)**

Hemophilia, a blood disorder in humans, results from a sex-linked recessive allele. Suppose that a woman that carries the recessive trait ( $X^H X^h$ ) marries a man with hemophilia. What is the probability (the percent chance) **each sex** of the couple's children will develop hemophilia? Explain how you determined the probability.

ANSWER:

Capitalization

Punctuation

Complete Sentences

Each sex would have a 50% chance of getting hemophilia. Each parent carries the recessive trait on the X chromosome. The girls have a 50/50 chance of getting their mom's recessive trait to pair with the dad's recessive trait. And, the boys have a 50/50 chance of getting mom's recessive trait paired with the dad's Y chromosome.

## Sex Linked Traits Data Tables & Punnett Squares for Each Cross

### First Cross

| <b>P Generation Cross: Red Eye Female x Red Eye Male</b>  |                             |                               |                           |                             |
|---|-----------------------------|-------------------------------|---------------------------|-----------------------------|
|   | Female Offspring<br>Red Eye | Female Offspring<br>White Eye | Male Offspring<br>Red Eye | Male Offspring<br>White Eye |
| F1 Generation   |                             |                               |                           |                             |
| <b>F1 Generation Cross: Red Eye Female X Red Eye Male</b> |                             |                               |                           |                             |
|   | Female Offspring<br>Red Eye | Female Offspring<br>White Eye | Male Offspring<br>Red Eye | Male Offspring<br>White Eye |
| F2 Generation   |                             |                               |                           |                             |

**REMEMBER:** the P Generation/Supply Drosophila are homozygous/purebred genotypes

COMPLETE the First Cross P Generation Punnett Square

|                         |   |                         |                         |
|-------------------------|---|-------------------------|-------------------------|
|                         | <b>Cross: <math>X^R X^R \times X^R Y</math></b> | <b><math>X^R</math></b> | <b><math>X^R</math></b> |
| <b><math>X^R</math></b> |   |                         |                         |
| <b>Y</b>                |   |                         |                         |

COMPLETE the First Cross F1 Generation Punnett Square

|                         |   |                         |                         |
|-------------------------|---|-------------------------|-------------------------|
|                         | <b>Cross: <math>X^R X^R \times X^R Y</math></b> | <b><math>X^R</math></b> | <b><math>X^R</math></b> |
| <b><math>X^R</math></b> |   |                         |                         |
| <b>Y</b>                |   |                         |                         |

### Second Cross

| <b>P Generation Cross: White Eye Female x White Eye Male</b>  |                             |                               |                           |                             |
|---|-----------------------------|-------------------------------|---------------------------|-----------------------------|
|   | Female Offspring<br>Red Eye | Female Offspring<br>White Eye | Male Offspring<br>Red Eye | Male Offspring<br>White Eye |
| F1 Generation   |                             |                               |                           |                             |
| <b>F1 Generation Cross: White Eye Female X White Eye Male</b> |                             |                               |                           |                             |
|   | Female Offspring<br>Red Eye | Female Offspring<br>White Eye | Male Offspring<br>Red Eye | Male Offspring<br>White Eye |
| F2 Generation   |                             |                               |                           |                             |

**REMEMBER:** the P Generation/Supply Drosophila are homozygous/purebred genotypes

COMPLETE the Second Cross P Generation Punnett Square

|                         |   |                         |                         |
|-------------------------|---|-------------------------|-------------------------|
|                         | <b>Cross: <math>X^r X^r \times X^r Y</math></b> | <b><math>X^r</math></b> | <b><math>X^r</math></b> |
| <b><math>X^r</math></b> |   |                         |                         |
| <b>Y</b>                |   |                         |                         |

COMPLETE the Second Cross F1 Generation Punnett Square

|                         |   |                         |                         |
|-------------------------|---|-------------------------|-------------------------|
|                         | <b>Cross: <math>X^r X^r \times X^r Y</math></b> | <b><math>X^r</math></b> | <b><math>X^r</math></b> |
| <b><math>X^r</math></b> |   |                         |                         |
| <b>Y</b>                |   |                         |                         |

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### Third Cross

| P Generation Cross: Red Eye Female x White Eye Male |                             |                               |                           |                             |
|---|-----------------------------|-------------------------------|---------------------------|-----------------------------|
|   | Female Offspring<br>Red Eye | Female Offspring<br>White Eye | Male Offspring<br>Red Eye | Male Offspring<br>White Eye |
| F1 Generation                                       |                             |                               |                           |                             |
| F1 Generation Cross: Red Eye Female X Red Eye Male  |                             |                               |                           |                             |
|   | Female Offspring<br>Red Eye | Female Offspring<br>White Eye | Male Offspring<br>Red Eye | Male Offspring<br>White Eye |
| F2 Generation                                       |                             |                               |                           |                             |

**REMEMBER:** the P Generation/Supply Drosophila are homozygous/purebred genotypes

COMPLETE the Third Cross P Generation Punnett Square

|                            |  |       |       |
|----------------------------|--|-------|-------|
| Cross: $X^R X^R$ x $X^r Y$ |  | $X^R$ | $X^r$ |
| $X^R$                      |  |       |       |
| $Y$                        |  |       |       |

COMPLETE the Third Cross F1 Generation Punnett Square

|                            |  |       |       |
|----------------------------|--|-------|-------|
| Cross: $X^R X^r$ x $X^R Y$ |  | $X^R$ | $X^r$ |
| $X^R$                      |  |       |       |
| $Y$                        |  |       |       |

### Fourth Cross

| P Generation Cross: White Eye Female x Red Eye Male  |                             |                               |                           |                             |
|--|-----------------------------|-------------------------------|---------------------------|-----------------------------|
|  | Female Offspring<br>Red Eye | Female Offspring<br>White Eye | Male Offspring<br>Red Eye | Male Offspring<br>White Eye |
| F1 Generation  |                             |                               |                           |                             |
| F1 Generation Cross: Red Eye Female X White Eye Male |                             |                               |                           |                             |
|  | Female Offspring<br>Red Eye | Female Offspring<br>White Eye | Male Offspring<br>Red Eye | Male Offspring<br>White Eye |
| F2 Generation  |                             |                               |                           |                             |

**REMEMBER:** the P Generation/Supply Drosophila are homozygous/purebred genotypes

COMPLETE the Fourth Cross P Generation Punnett Square

|                            |  |       |       |
|----------------------------|--|-------|-------|
| Cross: $X^r X^r$ x $X^R Y$ |  | $X^R$ | $X^r$ |
| $X^r$                      |  |       |       |
| $Y$                        |  |       |       |

COMPLETE the Fourth Cross F1 Generation Punnett Square

|                            |  |       |       |
|----------------------------|--|-------|-------|
| Cross: $X^R X^r$ x $X^r Y$ |  | $X^R$ | $X^r$ |
| $X^r$                      |  |       |       |
| $Y$                        |  |       |       |

**After the Google form is complete,  
go back to the assignment in the course and answer the Analysis Question!**