**Pedigree Worksheet Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 = Huntington’s

 Disease



**I**

 **1 2**

**II 1 2**

 **2 3 4 5 6 7 8**

**III**

 1 2 3 4 5

1. Which members of the family above are afflicted with Huntington’s Disease? **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

2. There are no carriers for Huntington’s Disease- you either have it or you don’t.

 With this in mind, is Huntington’s disease caused by a dominant or recessive trait? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. How many children did individuals I-1 and I-2 have? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. How many girls did II-1 and II-2 have? \_\_\_\_\_\_\_ How many of these daughters have Huntington’s Disease? \_\_\_\_\_\_

5. How are individuals III-2 and II-4 related? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ I-2 and III-5? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. The pedigree to the right shows a family’s pedigree

1

for Hitchhiker’s Thumb. Is this trait

dominant or recessive? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I

1

2

7. How do you know? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

II

8. How are individuals III-2

2

3

1

4

64

5

and III-3 related? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

III

9. How would you name the 2 individuals that

2

1

3

7

6

5

4

have hitchhiker’s thumb? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

IV

10. Name the 2 individuals that were

1

4

3

2

carriers of hitchhiker’s thumb. \_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Is it possible for individual IV-3 to be a carrier? \_\_\_\_\_\_\_\_\_\_\_ Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. The pedigree to the right shows a family’s pedigree

\*\*half-shaded = carrier of disease

I

for colorblindness. Which sex can be carriers of

colorblindness and not have it? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. With this in mind, what kind of trait is

II

colorblindness (use your notes)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. Why does individual IV-7 have colorblindness?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

III

15. Why do all the daughters in generation II carry the

colorblind gene? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

IV

16. Name 2 generation IV colorblind males. \_\_\_\_\_\_\_\_\_

8

7

6

5

4

1

2

3

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Genetics Pedigree Worksheet**

A pedigree is a chart of a person’s ancestors that is used to analyze genetic inheritance of certain traits – especially diseases. The symbols used for a pedigree are:

 female, unaffected

 female, affected

 male, unaffected

 male, affected

* Siblings are placed in birth order from left to right and are labeled with numbers.
* Each generation is labeled with a Roman numeral.
	+ Example: we would name an individual II-3 if he/she was in the second generation and the 3rd child born

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

I

 1 2 3 4 5 6

II

 1 2 3 4 5 6 7 8 9

III

 1 2 3 4 5 6 7 8

Try to identify the genotypes of the following individuals using the pedigree above.

(homozygous dominant, homozygous recessive, heterozygous)

* III-3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* II-1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* I-1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* II-4: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Is this trait dominant or recessive? Explain your answer.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. How can you know for sure that individuals II-3 and II-4 are heterozygous?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Do you think the cross above is sex-linked or autosomal? Explain your answer.

**Pedigree Worksheet Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 = Huntington’s

 Disease



**I**

 **1 2**

**II 1 2**

 **2 3 4 5 6 7 8**

**III**

 1 2 3 4 5

1. Which members of the family above are afflicted with Huntington’s Disease? **I1, II2, II3, II7, III3**

2. There are no carriers for Huntington’s Disease- you either have it or you don’t.

 With this in mind, is Huntington’s disease caused by a dominant or recessive trait? **Dominant**

3. How many children did individuals I-1 and I-2 have? **6**

4. How many girls did II-1 and II-2 have? **2**  How many of these daughters havehave Huntington’s Disease? **1**

5. How are individuals III-2 and II-4 related? **Uncle/Niece**  I-2 and III-5? **Grandma/Grandson**

6. The pedigree to the right shows a family’s pedigree

1

for Hitchhiker’s Thumb. Is this trait

dominant or recessive? **Recessive**

I

1

2

7. How do you know? **Because only 2 out of 19 people**

 **have it, making it rare.**

II

8. How are individuals III-2

2

3

1

4

64

5

and III-3 related? **Brother/Sister; siblings**

III

9. How would you name the 2 individuals that

2

1

3

7

6

5

4

have hitchhiker’s thumb? **IV-2, IV-4**

IV

10. Name the 2 individuals that were

1

4

3

2

carriers of hitchhiker’s thumb. **III-4 and III-5**

11. Is it possible for individual IV-3 to be a carrier? **Yes** Why? **parents are carriers, punnett square shows 50% chance**

12. The pedigree to the right shows a family’s pedigree

\*\*half-shaded = carrier of disease

I

for colorblindness. Which sex can be carriers of

colorblindness and not have it? **females**

13. With this in mind, what kind of trait is

II

colorblindness (use your notes)? **X-Linked**

14. Why does individual IV-7 have colorblindness?

**Because her mom is a carrier and dad has it**

III

15. Why do all the daughters in generation II carry the

colorblind gene? **b/c dad was affected and its on the X**

IV

16. Name 2 generation IV colorblind males. **IV-1, IV-5**

8

7

6

5

4

1

2

3

**Pedigree Worksheet KEY**
**Genetics Pedigree Worksheet**

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I

 1 2 3 4 5 6

II

 1 2 3 4 5 6 7 8 9

III

 1 2 3 4 5 6 7 8

Try to identify the genotypes of the following individuals using the pedigree above.

(homozygous dominant, homozygous recessive, heterozygous)

* III-3: **Homozygous recessive**
* II-1: **Heterozygous**
* I-1: **Homozygous recessive**
* II-4: **Heterozygous**

1. Is this trait dominant or recessive? Explain your answer.

**It is a recessive trait because generation II does not have the disease and Generations I and II do have it.**

2. How can you know for sure that individuals II-3 and II-4 are heterozygous?

**Because their offspring have the disease so they are both carriers of it.**

3. Do you think the cross above is sex-linked or autosomal? Explain your answer.

**It is autosomal because males and females seem to affected at the same rates. If it was sex-linked, it would mean**

**that more males are affected.**