Student Sheet

Name_____
Period_____

Title: Find a Gene

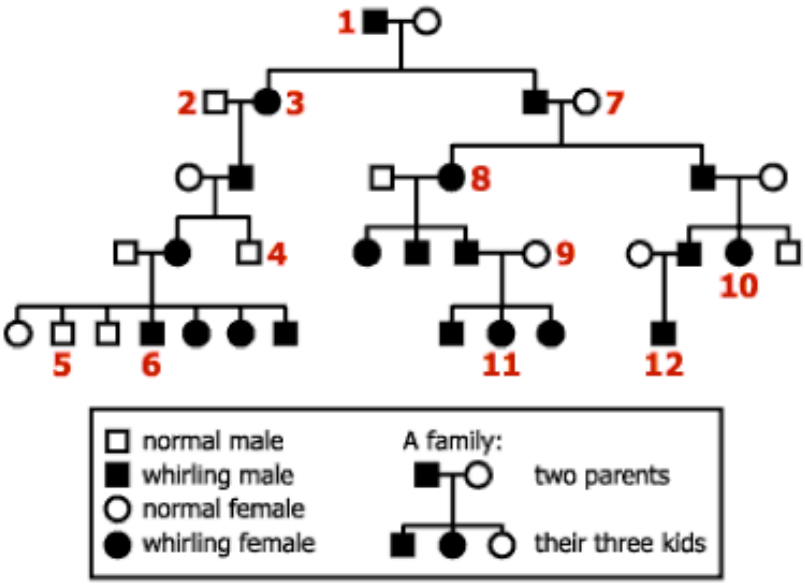
Introduction: Just like in the news story you just read, scientists are "finding" genes for many different human conditions on a regular basis. Often, the gene is for a disorder that affects people directly, like cystic fibrosis, or contributes to disease conditions like the article you just read. Scientists are rapidly unraveling the "code" of life found in DNA to find out what it says!

Materials: color print of the puzzle, copy of the news story

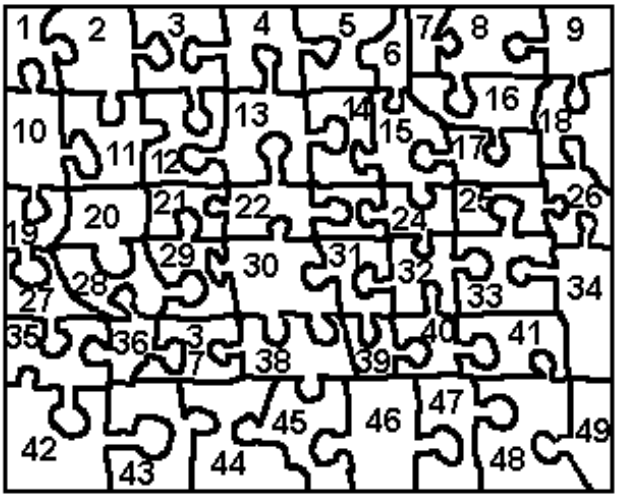
Procedures:

1. Read the newspaper article "Five mental disorders share genetic links, huge study says" Try and answer the question: How do scientists use DNA research to find out what genes cause specific traits?
2. Use the jigsaw puzzle and pedigree of an imaginary trait to find out which "gene" or puzzle piece is found in the genome of every affected person. Remember that every person on the pedigree that has the disorder, also has that gene. So, since the first person has all red and has the disorder, the "gene" for the disorder must be red. Look at the pedigrees to see which piece all the affected individuals have in common.
3. Try the next "puzzle" using models of chromosome and their named genes. Which gene explains this condition?
4. Answer the analysis questions as you finish.

Part 1-Use this pedigree to find the whirling "gene". The chart on the next page will help you name the gene.



Which puzzle piece is responsible for Whirling Disorder?



Analysis:

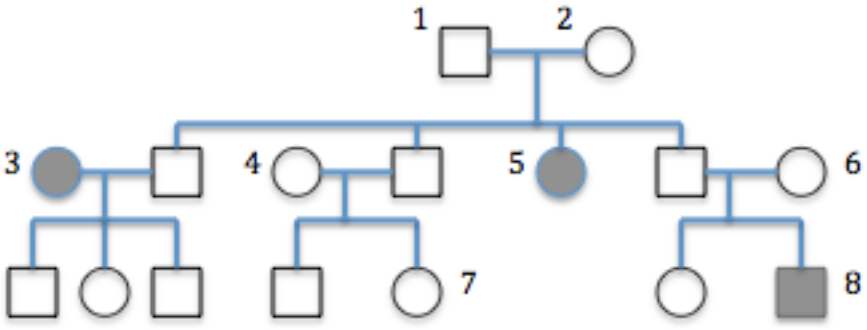
1. Which piece is found in every affected person?

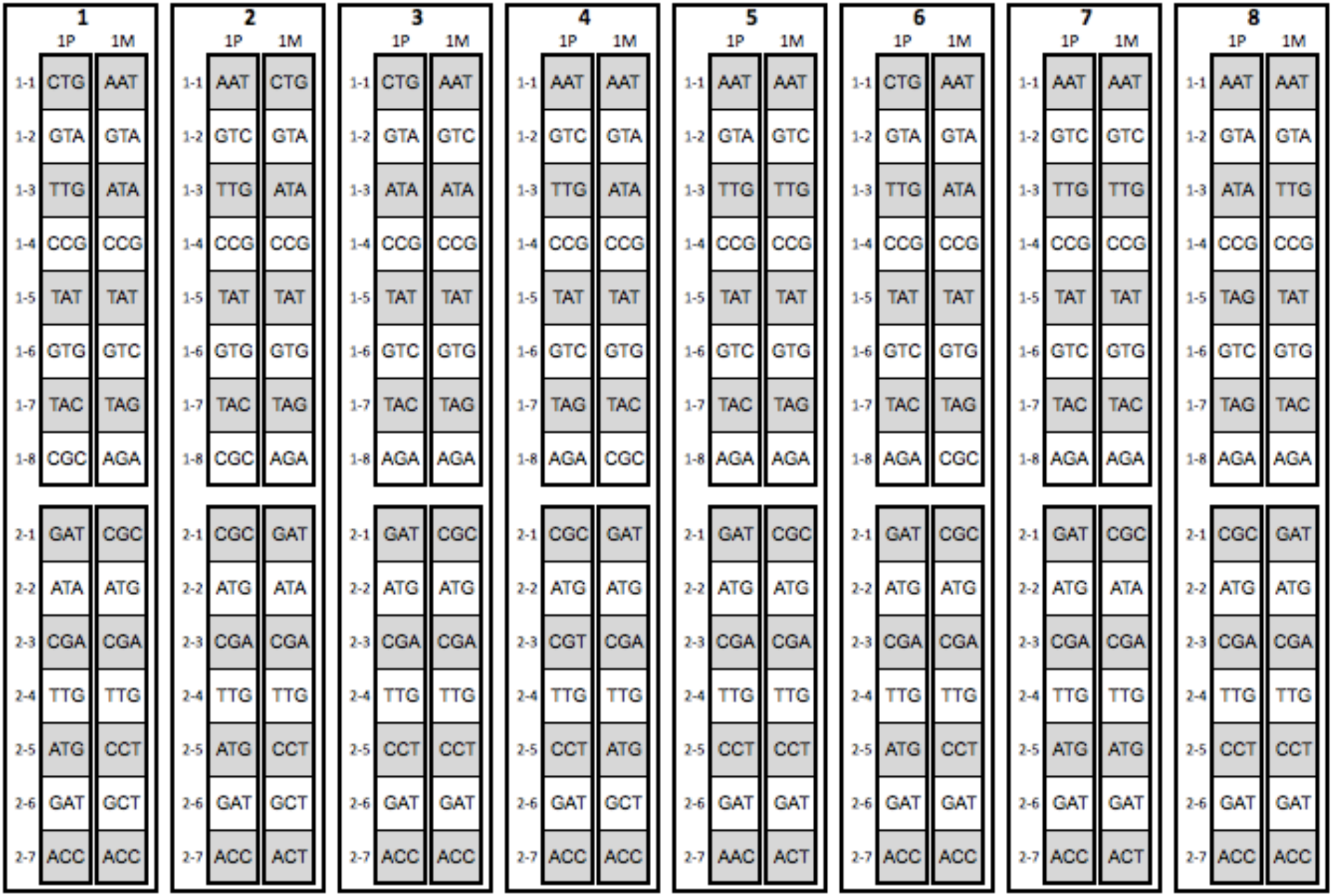
2. Is the trait recessive or dominant? How do you know?

3. How is this model different that a real situation?

Part 2

1. Use the pedigree below to find the gene located on the chromosome pairs on the next page. Remember that each affect individual has the gene. The gene pairs are labeled by the chromosome number and the position of the gene.




1
1P 1M
1-1 CTG AAT
1-2 GTA GTA
1-3 TTG ATA
1-4 CCG CCG
1-5 TAT TAT
1-6 GTG GTC
1-7 TAC TAG
1-8 CGC AGA
2-1 GAT CGC
2-2 ATA ATG
2-3 CGA CGA
2-4 TTG TTG
2-5 ATG CCT
2-6 GAT GCT
2-7 ACC ACC
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1P 1M
1-1 AAT CTG
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1-3 TTG ATA
1-4 CCG CCG
1-5 TAT TAT
1-6 GTG GTG
1-7 TAC TAG
1-8 CGC AGA
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2-2 ATG ATA
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1-7 TAG TAC
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2-7 ACC ACC

Analysis:

1. Which gene is responsible for this trait?

2. Is it recessive or dominant? How do you know?

3. What does this knowledge provide for a person who has the gene?

4. If the gene caused a serious illness later in life, would you want to know if you carried it?