Name _____

Date _____

Print-and-Go™ Genetic Science Learning Center
http://gslc.genetics.utah.edu

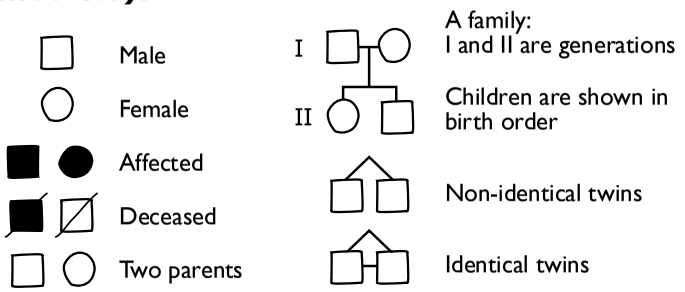
P.I. Pedigree Investigator
On the Case of Nicotine Addiction

Imagine you are an investigator looking for genes that influence nicotine addiction. Log on to: http://gslc.genetics.utah.edu/units/addiction and click on *EXPLORE!: PI: Pedigree Investigator, On the Case of Nicotine Addiction*. Complete the activity to gather information for your study.

View the video interviews, written surveys, and official records for the Marshall family. Fill in the chart below with the appropriate symbol for each family member. Be sure to record any risk factors that are discussed as well.

Risk factors for the Marshall family may include:
- Depression
- Attention Deficit Hyperactivity Disorder (ADHD)
- Engaging in risky behavior
- None

Symbol Key:



Pedigree Chart:

I

Wally — Trudy
Name

None — None
Risk

II

Name _____ _____ _____ _____

Risk _____ _____ _____ _____

III

Name _____

Risk _____

Permission granted for classroom use.

Name:_____

Period:_____

Date:_____

Pedigree Analysis Information:

Use the information located in the "Pedigree Analysis Information" section of the website to answer the following questions.

What is a pedigree?

How is it used?

Why are larger families best?

What are risk factors? What are some examples?

Why do doctors and genetic councilors use pedigrees?

Case Study 1:

1. Read over case 1 and draw a pedigree that shows all the family members (on the back). Use circles to represent the females, and square to represent he males. Shade in circles or squares representing the individuals who have the cystic fibrosis.

Case Study 1 Information:

- Joshua and Bella have a son name Ian. Ian has been diagnosed with cystic fibrosis.
- Joshua and Bella are both healthy
- Bella's parents are both healthy
- Joshua's parents are both healthy
- Joshua's sister, Sara has cystic fibrosis.

2. Know that cystic fibrosis is controlled by recessive allele and that Ian has cystic fibrosis, write his genotype under his symbol on the pedigree.
3. Joshua's sister, Sara, has cystic fibrosis, what is here genotype? Write this under her symbol on the pedigree.
4. What genotypes might Joshua and Bella have? Figure this out by completing different Punnet squares. Write the genotypes of Joshua and Sara under their symbols.
5. What are the genotypes of the other family members? Write these under their symbols.

Analyze and Conclude:

1. Joshua also has a brother. What is he probability that he has cystic fibrosis? Explain.

2. Why do genetic counselors need information about many generations of family in order to draw conclusions about a hereditary condition?