Navigating the NCBI Student Worksheet Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Aim:** To become familiar with the resources available at the National Center for Bioinformatics (NCBI) and the search engine **Entrez**.

**Instructions:** Use Student Handout—*Navigating the NCBI Instructions* to complete this worksheet.

2a. What is the name of one interesting resource or database shown in the blue box on the left? What do you think is its function or purpose?

2b. What is one interesting resource listed in the Popular Resources menu on the right? What do you think is its function or purpose?

4a. Why are we searching for *BRCA1*?

4b. The **Nucleotide** database has DNA sequences that have been loaded onto the NCBI database. How many times is ‘BRCA1’ cited in the **Nucleotide** database? \_\_\_\_\_\_\_\_\_\_\_\_

4c. The **PubMed** database has the articles that have been published about a specific gene or disease. How many times is ‘BRCA1’ cited in the **PubMed** database? \_\_\_\_\_\_\_\_\_\_\_\_

4d. Compare the numbers you got for Questions B and C. Do these relative numbers surprise you? What does this tell you about the *BRCA1* gene? Explain.

9a. How many different types of chromosomes do you see? \_\_\_\_\_\_\_\_\_\_\_\_

9b. How big is the MT genome? [**Note:** you can click the “MT” link to find out.]

9c. With the exception of MT, the chromosomes of the human genome are in pairs. X and Y are a pair. Using this information and the information from your answer to Question 9A, how many **pairs** of chromosomes are in the human genome? \_\_\_\_\_\_\_\_\_\_\_\_

10. What do you see when you click on chromosome 17? Explore some of the links on the picture, and write down two things you found interesting, such as the description of other genes that are also found on chromosome 17.

1:

2:

11. Draw a picture of Chromosome 17 in the

box to the right and show the *approximate*

location of *BRCA1* on this chromosome.

12. List three (3) functions that the protein

produced by the *BRCA1* gene performs.

1: Function 1:

2: Function 2:

3: Function 3:

13a. Based on what you’ve learned in class, what is a **phenotype**?

13b. What **phenotypes** are associated with mutations in the *BRCA1* gene?

16a. What four letters make up this long sequence? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16b. Based on what you’ve learned in class, what do these letters represent?

19. List three organisms other than humans that have *BRCA1* genes.

1: Common Name:

Scientific name:

2: Common Name:

Scientific name:

3: Common Name:

Scientific name:

20. Does it surprise you that so many organisms share the *BRCA1* gene? Explain. (Hint: Look back at the functions of the BRCA1 protein (Question 12).)

21. Summarize what you have learned today by listing three types of information found at the NCBI.

1:

2:

3: