



SCIENTIFIC LITERACY curiousSCIENCEwriters PROBE 3

According to the Howard Hughes Medical Institute, there are close to 4,000 different disorders / diseases that can afflict humans. Scientists are currently striving to answer three key questions as they move forward on their quest to make medical science discoveries:

- *What causes the disorder / disease?*
- *What protein / gene does this disorder / disease impact?*
- *Can the defective protein or gene be fixed or replaced?*

Currently, scientists are trying to understand disorders / diseases by utilizing two leading strategies:

- 1) *Detect the protein that is faulty and then locate the related gene.*
- 2) *Detect the gene that is faulty and then identify the protein that it coded for (scientists focus on the DNA that is inherited with the disorder / disease, or by locating a similar gene in another animal).*

Disorders / diseases are of great concern to medicine. Many disorders have been discovered to be recessive and are caused by point mutation, chromosomal deletions, insertions, or non-disjunctions.

Objectives: Students will be able to...

identify how medical disorders / diseases occur.

locate resources available in your community.

evaluate the validity of information found on the internet.

understand the hardships of living with a medical disorder / disease.

apply biological concepts to the understanding of current medical science research.

Directions: *Go to the curiousSCIENCEwriter's website (<http://curioussciencewriters.org>) and read through the archived research stories that were written by high school students. Select a disorder / disease being researched in one of the research stories. Then you and a partner are going to fill out a Medical Disorder / Disease Pre-Research Sheet. After your receive approval from the teacher create a brochure for a doctor's office waiting room about the particular disorder / disease. The brochure will need to be creative as well as informative. Follow the guidelines provided to create your brochure.*

Check out the following Internet Resources for information:

- *CuriousSCIENCEwriters*
 - *curioussciencewriters.org*
- *National Human Genome Research Institute*
 - *<http://www.genome.gov/>*
- *Center for Disease Control Genetic Information*
 - *<http://www.cdc.gov/genomics/>*
- *International Birth Defects Information Systems*
 - *<http://www.ibis-birthdefects.org/>*
- *National Institute of Health Office of Rare Diseases*
 - *<http://rarediseases.info.nih.gov/>*

Name _____

Medical Disorder / Disease Pre-Research Sheet

Who is your partner? _____

Medical disorder / disease chosen: _____

What was the title of the curiousSCIENCEwriters story that inspired you to research this disorder / disease?

Provide a basic over view of the medical disorder / disease:

Which resources did you review and what were you able to find?

Name _____

Medical Disorder / Disease Brochure Project

Overview: Create a tri-fold brochure for a doctor's office waiting room. The brochure should provide patients with information about your selected medical disorder / disease. Assume that most of the patients of your audience are adults with a typical high school science background.

The brochure should be creative as well as informative. You want people to pick it up and read through it. Be sure to include accurate, up-to-date information and graphics that illustrate important ideas. You should reference at least three sources of information.

Procedures: You will research the genetic disorder of your choice and use the following questions as a guide to the type of information you will need for your brochure.

- What other names are there for this disorder / disease? (Any common names?)
- What causes the disorder / disease?
- What gene or chromosome is affected by this disorder / disease? (X, Y, #21)
- Are there prenatal tests for this disorder / disease?
- What are the symptoms?
- How is the disorder / disease diagnosed?
- What exactly is the disorder / disease?
- What population is affected? Can anyone be a candidate for the disorder / disease?
- What kinds of medical assistance will the affected patient need? Will further assistance be needed, as the patient grows older? What is the long-term outlook for the patient?
- Are there any treatments or cures?
- Could this disorder / disease be prevented?
- Can this individual have children in the future? Will those children be affected?
- What resources ***in your community*** or Internet support are available to the family and child?
- What is the current status of research on this disorder / disease? Is there a cure coming soon?

Brochure: After researching the disorder, make an informational pamphlet that could be given to patients. The pamphlet must be no larger than 8.5 x 11 unfolded. This brochure should be of professional quality. It must fully inform the reader of all issues pertaining to the medical disorder / disease. Again, use the questions provided to guide your research. Your brochure will be graded based on accuracy, completeness, and creativity. Visual representations (pictures, graphs, etc.) should be incorporated into the brochure. *Give credit for graphics you did not make.*

References: You will need to include, on the brochure your works cited so that you identify all of the sources you used to make the brochure in APA format. At least three sources are required for this project. More than three is acceptable, and encouraged! (Be sure to use proper format; do not just list websites)

Grading Guidelines and Rubric for Brochure

CATEGORY	4	3	2	1
Content - Accuracy	All facts in the brochure are accurate.	99-90% of the facts in the brochure are accurate.	89-80% of the facts in the brochure are accurate.	Fewer than 80% of the facts in the brochure are accurate.
Sources	Sources are documented in the expected format for all of the facts and graphics in the brochure.	Sources are documented in the expected format for some of the facts and graphics in the brochure.	Sources are documented for all of the facts and graphics in the brochure however; they are not in the expected format.	Sources are not documented accurately or are not kept on many facts and graphics.
Graphics/Pictures	Graphics go well with the text and there is a good mix of text and graphics.	Graphics go well with the text, but there are so many that they distract from the text.	Graphics go well with the text, but there are too few and the brochure seems "text-heavy".	Graphics do not go with the accompanying text or appear to be randomly chosen.
Attractiveness & Organization	The brochure has exceptionally attractive formatting and well-organized information.	The brochure has formatting and is well-organized information.	The brochure has organized information.	The brochure's formatting and organization of material are confusing to the reader.
Writing - Vocabulary	The authors correctly use several new words and define diseases and illness with extreme required detail.	The authors correctly use a few new words and define diseases and illness.	The authors try to use some new vocabulary, but may be inaccurate with details related to the diseases and illness.	The authors do not incorporate new vocabulary and fail to provide enough detail related to the diseases and illness.
Writing - Mechanics	Capitalization, spelling, grammar, & punctuation are correct throughout the brochure.	There are 1-2 capitalization, spelling, grammar, and/or punctuation errors in the brochure.	There are more than 2 capitalization, spelling, and/or punctuation errors in the brochure.	There are several capitalization, spelling, and/or punctuation errors in the brochure.
Quality of information	Information clearly relates to the disorder and went above and beyond the required supporting details .	Information relates to the disorder and met the required support details.	Information relates to the disorder and included some required details.	Information does not clearly relate to the or does not provide ample support for the disorder.
Internet and text use	A student successfully used suggested internet links and texts to find information and navigates within the resources easily without assistance.	A student used suggested internet links and texts to find information and navigates within the resources.	Students successfully used suggested internet links and texts to find information but required some assistance from the teacher.	Students successfully used suggested internet links and texts to find information but require consistent assistance from the teacher.
Working with others	Student was an engaged classmate, listened to suggestions of others and made excellent use of class time to work cooperatively.	Student was an engaged classmate, and made use of class time to work cooperatively.	Student failed to either be an engaged classmate, or failed to use class time effectively.	Student failed to be an engaged classmate and failed to use class time effectively.