TEACHING THE GENOME GENERATION

JUMP INTO BIOINFORMATICS!

The Jackson Laboratory

Leading the search for tomorrow's cures

In this exercise, you will compare information presented about a human genetic disease on a commonly used website and a bioinformatic database. Through this comparison, you will evaluate best uses of each platform in the pursuit of understanding a disease. Finally, you will dive deeper into the bioinformatic database to identify genetic patterns in human disease prevalence.

Upon completion, you can call yourself a bioinformatician!

Define **genetics** in your own words:

Define **genomics** in your own words:

Define **bioinformatics** in your own words:

Pick a human disease to study from the list below.

Alzheimer's Disease	Osteoporosis	Myocardial Infarction	Hypertension
Breast Cancer	Cystic Fibrosis	Multiple Sclerosis	Pelizaeus-Merchbacher
Charcot-Marie-Tooth	Diabetes	Huntington's Disease	Spinal Muscular Atrophy

Study the human disease of your choice by filling out the table below:

	WIKIPEDIA	Online Mendelian Inheritance in Man (OMIM)
Navigate to:	www.wikipedia.com and search for "Wikipedia"	www.omim.org and click on the About link
Describe this website:		
Search for your disease:	in the Wikipedia search bar	in the OMIM search bar and click the result that best matches your query
Can you guess the reading level of this page?		
What kinds of information are presented about the disease?		

What are some of the similarities between these websites?

What are some of the major differences in information provided by these websites?

Complete the table below for all of the human diseases investigated by the class.

1. At the top of each OMIM entry for human diseases there is a table of the genes associated with that disease. Count the number of genes (rows) in the table for the disease you are studying and enter it into the table below.

2. Fill in the circle that best matches the prevalence of the disease: COMMON (e.g. I am familiar with the disease and lots of people have it) or RARE (e.g. I have never heard of this disease and I don't know anyone who has had it).

HUMAN DISEASE	# OF GENES (one or many)	COMMON OR RARE
		○ ○
		○ ○
		○ ○
		○ ○
		○ ○
		○ ○
		○ ○
		○ ○
		○ ○
		○ ○
		○ ○
		○ ○

Can you detect a pattern between the number of genes and how common a disease is?

How is genomics advancing our knowledge about common human diseases?

If someone you know was diagnosed with a disease, where would you seek information?