

# CHOP RISES Skill Blitz Pre-Work: Understanding the Scientific Method

Name: \_\_\_\_\_

- 1) What are the advantages and disadvantages of each type of research (hypothesis-driven, discovery-driven, and descriptive)? Refer to the examples given and think about additional scenarios for each type.

	Hypothesis-Driven	Discovery-Driven	Descriptive
Advantages			
Disadvantages			
Examples			

- 2) Take a scientific question either from the supplied list or one you come up with. Using that question, come up with a strong hypothesis to test and identify what control group(s) would consist of such a study.

Scientific question:

Hypothesis:

Control group(s):

3) Given the following short study, identify the instances of sampling bias.

Study design: A study sought to establish a link between high school sports concussions and adult mental disorders. The researcher looked at nurse records from several local private all-boy schools to create a pool of subjects. The researcher then mailed a questionnaire to subjects that the schools had contacts for asking about a list of neurological disorders and the date of onset. The researcher then analyzed the data from the returned questionnaires.  
Instances of sampling bias:

## REFERENCES:

### Research Types

Hypothesis-Driven	Discovery-Driven	Descriptive
Tests a proposed effect or mechanism.	Explains an observation without a specific mechanism in mind.	Seeks only to document observations - no particular objective or theory.
An animal study testing if a new drug is more effective at reducing blood pressure than current medications.	Evaluating a large cohort of patient data and identifying risk factors for heart failure.	Submitting a case to a clinical journal where the patient had an unusual response to a pacemaker installation.

### Sample Scientific Questions

- Does music in the background improve memory?
- Do blinded people develop different visual cortexes of the brain?
- Why is COVID19 having less of an impact on the pediatric population than the adult population?
- In families with high incidence of cancer, is there a genetic factor?
- Is this new treatment, Drug X, capable of killing drug-resistant cancer cells?
- Is cell signaling factor, Marker K, relevant to cancer growth and spread?
- Do seat belts save lives?
- Are children delivered prematurely at greater risk of developing asthma?