**Asking and Refining Approachable Scientific Questions**

Discuss the questions below with your partner. Record your answers in the space provided.

* In your opinion, what “counts” as doing science? What activities don’t count as science? Why?
* What are some important features of a question that can be answered with a scientific approach?
* What are some examples of questions that that **can not** be answered through a scientific approach?

A major part of the scientific process is breaking down big questions into approachable and answerable pieces. Your instructor will help illustrate this point by guiding you through the “Alberts Lab” website (<https://sites.duke.edu/albertslab>). Dr. Susan Alberts is the head of this research group. Use the information on her website to answer the questions below.

* From the landing page, list at least one big question you think Dr. Alberts is interested in investigating:
* Check out the “Publications” area of the website. Look through the titles of the articles this group has recently published. Pick one study with a clear and interesting title. You will probably have to scroll through many possibilities before finding an article with a title that is clear and straightforward enough to answer the questions below.
  + Title of the article: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Based on the title, what **specific** question did this study address?
  + What big question do you think this study helped answer?

*….more on the next page!*

Breaking down big questions into answerable pieces takes creativity and practice. Practice developing and refining an approachable scientific question below.

* Here is a “big” question: *Why are humans so much better at cooperating than most other animals are?* There is no one simple, answer to this question. To approach this question, we must break it down into smaller pieces. This process requires creativity and careful thinking and you’ll probably have to keep revisiting and revising your question as your thinking develops.
* In the space below, list one specific question that might help us answer the bigger question above. *Hint:**One simple way to make sure your small piece is answerable is have a clear independent and dependent variable in mind as you write your question.*
* What independent and dependent variable would you measure to help answer your small, specific question? If you can’t clearly state this, you should probably go back and revise your question.
  + Independent variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Dependent variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* In a few short sentences, explain how your specific question might help us answer the bigger question about human cooperation.