

## **Pre-Lecture Assignments**

### **Part 1: Short Reading**

Reading: Alon, U. (2009). How To Choose a Good Scientific Problem. *Molecular Cell*, 35(6), 726–728. <https://doi.org/10.1016/j.molcel.2009.09.013>

#### **Things to think about while reading:**

1. What are the main components of a good research question?
2. What is the role of the advisor in identifying a good research question and how might this change over a graduate career?
3. What are your thoughts on the “3-month rule”? Do you feel time constraints to come up with a good idea? How does the idea of “taking your time” to find a research question make you feel?
4. Do you agree with the two axes (feasibility, interest) for figure 1? Is there an alternative axes that would be better suited for your research?

### **Optional: Research Free Association Exercise**

Take approximately 20 minutes to do some free association for generating research ideas.

Think about a particular subset of your research interests (e.g., runoff generation, the threshold for sediment transport in rivers, volcanism on asteroids) and then take a piece of paper and a pen and go somewhere quiet. Spend 20 minutes writing down whatever comes to mind when you first think of that topic (this may include drawings!) Follow your thoughts as they wander and write down everything, especially questions about any aspect of it you don't understand and any connections you see between different aspects of the topic.

If you're having trouble getting started and your mind is blank, consider these:

- i. What context did you first hear about this topic in? What was it connected to?
- ii. What specifically about this topic interests you?
- iii. What are the common methods usually used to conduct research regarding this topic?
- iv. What does the scientific community not yet understand about this subtopic?

