Think algorithmically!

We can do great things together, *if*…

Computer Scientists

1. …can't abstract away the biology.
   - DNA is not simply a series of executable instructions

2. …must commit to delivering the data in an intuitive, useful way.
   - The last 10% of development will take longer than the heavy implementation.
   (Human-computer interaction or Biologist-computer interaction)

Biologists

1. …must not treat the software as a black box.
   - Algorithms cannot deliver results without interpretation

2. …develop and intuition for the data.
   - Requires the ability to interact with large quantities of information.

Collaboration is about communication:
our medium of communication is the data

Course goals

- Demonstrate proficiency in navigating a command line environment
- Construct a pipeline utilizing basic commands in Unix/Linux
- Write functions in Python which demonstrate basic algorithmic logic
- Understand and interpret common file formats
- Perform quality assessment, filtering, and initial analysis of high throughput sequencing data
- Utilize various programs or tools to analyze data
- Explain how more complex algorithms function (using sequence alignment as an example)
- Successfully submit jobs to a computer cluster and work efficiently and within parameters of a shared user environment
- Demonstrate proficiency at reading, discussing, and critiquing primary research literature

RNA-seq experimental overview