Introduction to Methods in Computational Biology and Genomics

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Overview

Today's Goals

- Get familiarized with course format
- Meet each other and myself
- Understand course expectations
- Know my teaching methods and reasons for offering this course

Course Objectives

Objective 1

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Objective 3

Combine 1 and 2 to test biological hypotheses with RNAseq data and present those results in an "IMRD" format (pronounced EM-rod)

Course Syllabus

Course Grade

Course Policies

- Group Work vs. Own Work

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- No Direct Attendence Policy
- Interact and Contribute in Class

Potential Course Policies - TBD

- Latest email time (5pm? 9pm?)

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- Requests?

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Day-to-day Course

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3. Thursdays = Lab

Project

Research Tools

- R
- kallisto
- github

Programming Languages

- R
- bin/bash

Teaching Philosophy

- Clear Goals
- Active Learning
- Student Driven

Clear Goals

- Presented before each class
- Concepts or skills to focus on
- Call me on it if I forget them

Active Learning

- Student Participation
- A different style than lecture-based courses (flipped courses fall into this category)
- Natural fit for smaller class size, advanced material, and learning skills

Student Driven

- Student Participation Required
- Work through examples in class and apply to your own question
- Many skills need to be practiced, not taught

In-Class Activity

1. Pair up *randomly*
2. Fill out this Google form
3. Make a slide in the Google Slideshow for your partner with their answers, including (at minimum):
   - Name
   - Picture
   - 'Three words' response
   - Two answers from ''Whimsy'
   - Feel free to expand (see my slide for reference)
4. Introduce partner to class

There are three important points:

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3. and a third one.

Computer Requirements

Software

github

Analysis Software

Cluster Computing

Computer Languages

Brief History of Sequencing

How Did We Get Here?

Last Generation Sequencing

Sequencing Output

Course Motivations

Computational Need

Lack of Offerings

Cheap/Free Data

Personal Experience

The End