Welcome

Zoom ground rules
- please include your full name
- you're welcome to keep your camera's off

-> Please use a photo of yourself (Zoom preferences)
-> in the future, if you decide to request for a letter of recommendation, I will remember you better
- please do keep yourself muted if you're not speaking
- if you'd like to speak, please unmute, or if you prefer raise your hand and I will call on you
- please be aware that I will be recording this lecture and all future lectures
-> videos will only be shared with fellow classmates -> added to OneNote

Introductions

- Prof. Jean Fan
    - Assistant professor in BME
    - run a research lab
    -> this course material is based on my lab's active research
    - I did get my BS from Hopkins in BME and applied math
    - then I did my PhD at Harvard in Bioinformatics
    - then I did my post-doc fellowship at Harvard in chemistry and physics (technology)
    - I previously taught a version of this course for middle schoolers and highschoolers
    - I was a professional photographer for a little bit
    - my goal for this course to introduce you all to some real world application of biology,
chemistry, math, and other things that you've been learning about
        -> mostly focusing cutting edge aspects of the genomics field
        -> getting you all to learn and think critically about information data visualization
        -> I'm very curious what you all will come with

- TA: Lyla Atta
    - MD/PhD student in 2nd year of PhD
    - research student in Prof. Fan's lab
    - did undergraduate in BME and statistics/data science
    - like to take pictures, read, podcasts, explore Baltimore

Ice breaker question: if you were a potato, what way would you like to be cooked?

Addressing the course location
- Thank you all for your flexibility
- My goals:
    - transparent decision making process
    - take you guys into consideration
    - keep you all safe while actively engaged and learning
    -> this Zoom situation will be re-evaluated at the end of two weeks
    -> you are welcome to share with me your concerns

Structure of every class
- first half lecture
- water/bio break
- second half, hands on computational lab
- last 10 minutes: reflection cards
- first 10 minutes: introduce lesson objectives, also address questions from the reflection cards from last class

Lesson learning objectives: by the end of this lesson, you should all understand what is expected from and what you can expect from this course

By the end of this course:
  - critique a data visualization
  - distinguish a good one from a bad one
  - techniques to improve bad data visualizations
  - design, produce, interpret data visualization -> spatially resolved transcriptomics data
  - become more comfortable with programming in R, version control, and other programming basics

Poll: why are you folks taking this course?
  - want to gain more experience in programming? (2)
  - want to gain more experience in genomics (spatial, single cell, etc)? (3)
  - want to gain more experience in visual communication? (1)
  - other?
  -> feel free to let me or Lyla know

Pre-requisites
  - all should have access to a laptop, download data, install software (R, R packages)
  - you know basic biology
     - central dogma, cells, tissues
  - basic statistics
     - estimates of standard errors, distributions

Other course logistics
- Classes are MWF 8am to 9:50am
- Office hours with Prof. Fan MW after class (different Zoom)
- Office hours with Lyla F after class
-> office hours == time to get help homework, ask additional questions, time to spend with your profs and TAs

- 8 week course
- 1 to 2 homework assignment per work -> have you guys complete the bulk of it in class
-> hw don't have correct answers (or wrong answers)
-> much more like the real world
- 2 quizzes (technically 3, 1 won't be graded)
- 1 final presentation
- evaluated by peer review (peer grading)
- multiple extra credit assignments

Grading
- we want to give you a grade that best reflects our assessment of your effort and learning
    -> every can get the A
    -> A == excellent
    -> B == passing
    -> C == needing improvement
-> rarely give outs grades below C
-> if you consistent submit work, participate in discussions, you will very likely end up with an A or B
- A+ are possible
- with extra credit, in theory 100%+ is possible

Grading continued
- homeworks 40%
- quizzes 10%
- attendance, participation 30%
- final presentation 20% (alternative to exam)
- extra credit assignment to boost your grade up half a letter (B+ to A-)

Homework grading
- we will be turning in homework via Github
- electronic time stamp
- assignments must be submitted by midnight in order to receive full credit
-> please don't procrastinate
-> late homeworks will not accepted

Data visualization homeworks
- creating and describing data visualization
- evaluating you based on:
    - did you address the question (30%)
    - did you use appropriate data visualization techniques (30%)
    - was your description clear and precise (30%)
    - was your code reproducible (10%)

Data visualization review homeworks
- critiques
    - clear and precise (50%)
    - polite and constructive (50%)

Code of conduct

-> course website

- please review

- please be considerate of speech and actions

- help each other improve

Policy on plagarism

- what is plagarism?

   -> using someone else's ideas without giving them credit for it - Sai

- we do welcome sharing of ideas between student

- welcome to consult online material

- also welcome to work together

- please provide a statement of attribution

   -> mentioning that you consulted a particular source and provide a link

   -> just mention you collaborated with so and so

Disability services

Health-related absences

- if you're not feeling well -> get tested -> please don't to class (includes virtual class)

- please do let Lyla or myself know

-> anticipate your absense, do our best to make sure you are able to keep up

Questions, comments, feedback -> virtual reflection cards

Slack channel: genomic-data-viz.slack.com
- ask questions
- if you need to schedule one-on-one meeting (if you're not able to make it to office hours)

Course website: jef.works/genomic-data-visualization