Lecture 1: Introduction Sep 4

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Pre-course survey

- Background of students: more than 80% BME and 6.4% CS and AI students
- Most students take this course because the three credits and degree requirement
- Epidemiology, photoacoustic, and CRISPS are the most popular topics
- Most students prefer not to take quizzes and exam (the less the better)

Grading Overview

- Homework (20%): Three graded assignments (5% each), One non-graded programming assignment (5%)
- Scribing (10%): Summarize a lecture submit one week after, Each student must complete at least one lecture, Can sign for up to two for additional 1%
- In-class Quiz (10%)
- Midterm (20%)
- Project (20%)
- Final (20%)
    Do not cheat or use AI tools!!

A brief overview of DATA

- Why we analyze data: useful, e,g, Taobao guess your preference for analyzing your data
- Type of date: Web, biological, bank/credit, mobile
- The ability to analyze data increases, e.g., computer power, then the cost of it decreases, e.g. sequencing cost

What data can we measure

- Gene and mutations: smallest element
- Gene expression: how much gene has been expressed into RNA and protein. Measure the number of copies of the gene to measure the number of proteins from the gene>> gene expression measurement, which can describe cells and a person
- Proteome: can be measured for disease, might be a drug target
- Metabolome
- Etc.

Phenotyping>> Health status or risk A big data approach for precision health