CSC 483 - Applied Biological Data Science - W1D1

Today (105 min)

- Introductions? (15')
- Fermi questions (30')
- What is biological data science? (30')
- Course goals, arc, project (15')
- Colab rules & grading scheme (15')

Free write: scale of “biology” to “data science”

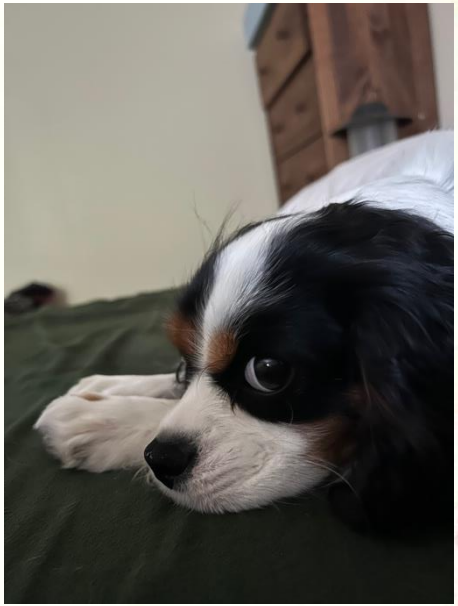
- what classes or experiences have you had? where do they fall on the spectrum?
- where would you place yourself on the spectrum?
- in which direction do you hope to move by taking this class?

Me:

- Georgia Doing, PhD
- she/her/hers
- computational microbiologist studying human skin microbiome and uncharacterized genes
- interests: computational microbiology, small cells & big data

My dog Ginny



* Please email me ahead of office hours if you would like me to make sure Ginny won't be there, not a problem at all!

You:

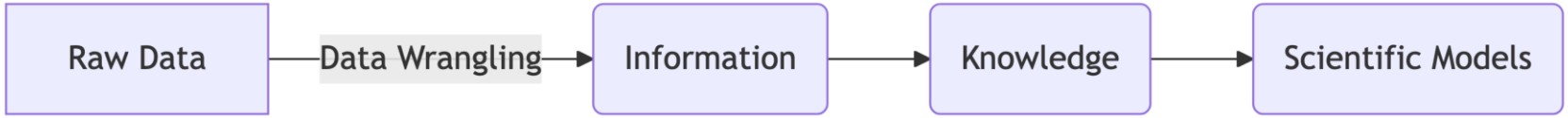
- Name and pronouns
- Help me find you on my roster
- What is something you bring to this class? What classes or experiences have you had? Where would you place yourself on the spectrum from biology to data science?
- What is something you hope to learn in this class? In which direction (toward biology or data science) do you hope to move by taking this class?

Fermi questions

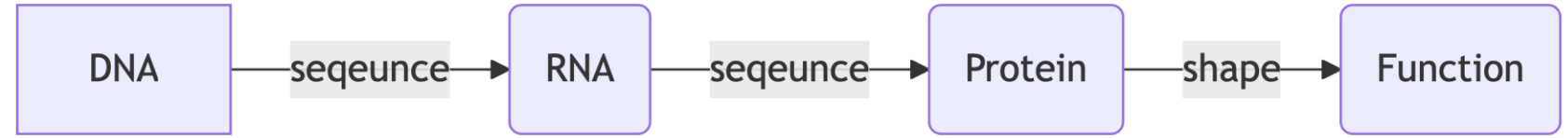
https://fermi-questions.andrechek.com/

- in pairs
- if you want a different question, refresh page
- 10 mins
- answers are in orders of magnitude

What is Data Science?



What is Biological Data?



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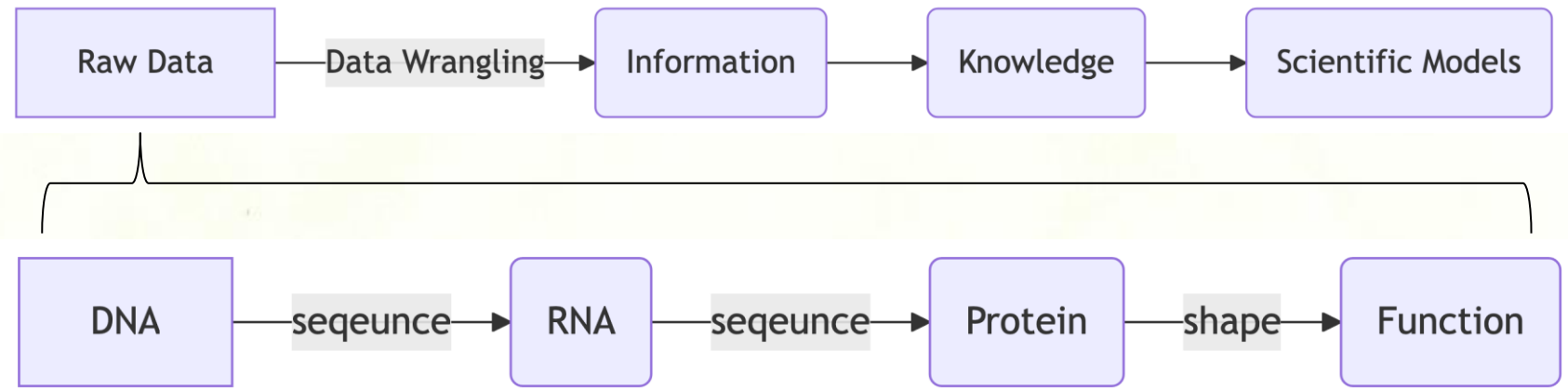
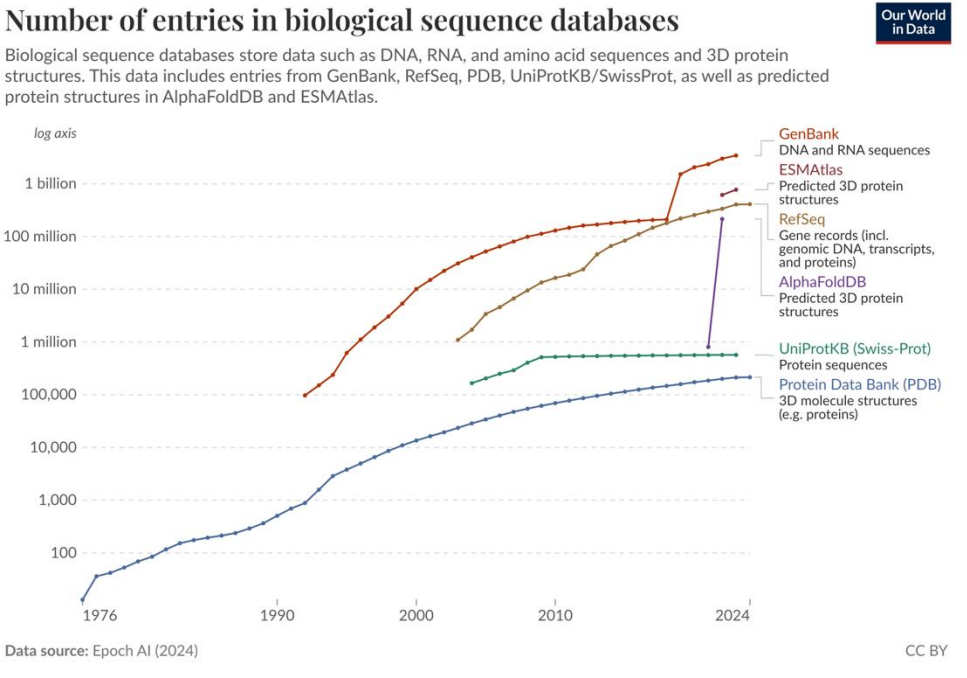


Biological Data Accumulation



https://ourworldindata.org/grapher/number-of-entries-in-biological-sequence-databases

What is Biological Data Science?

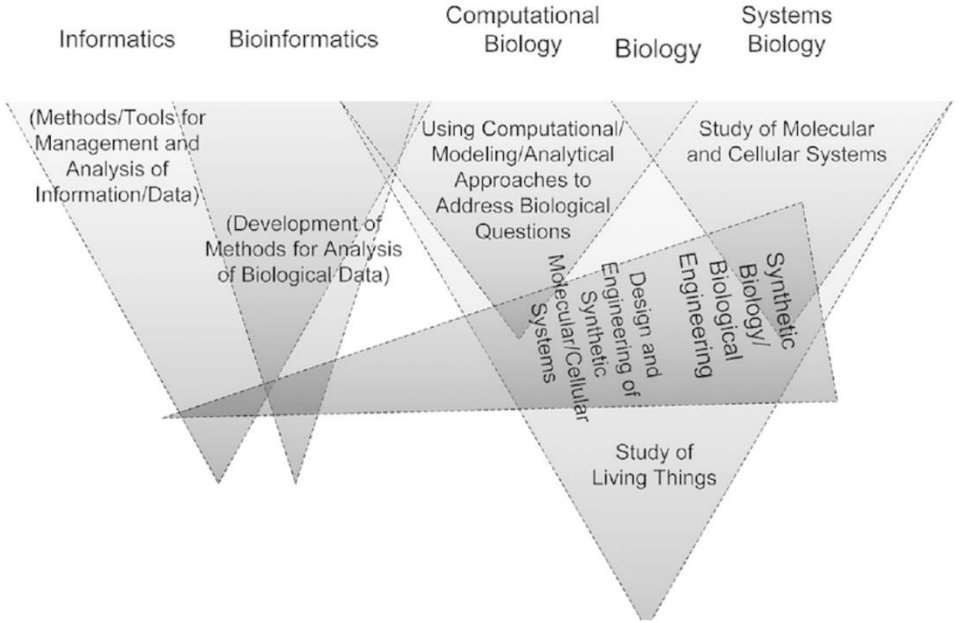
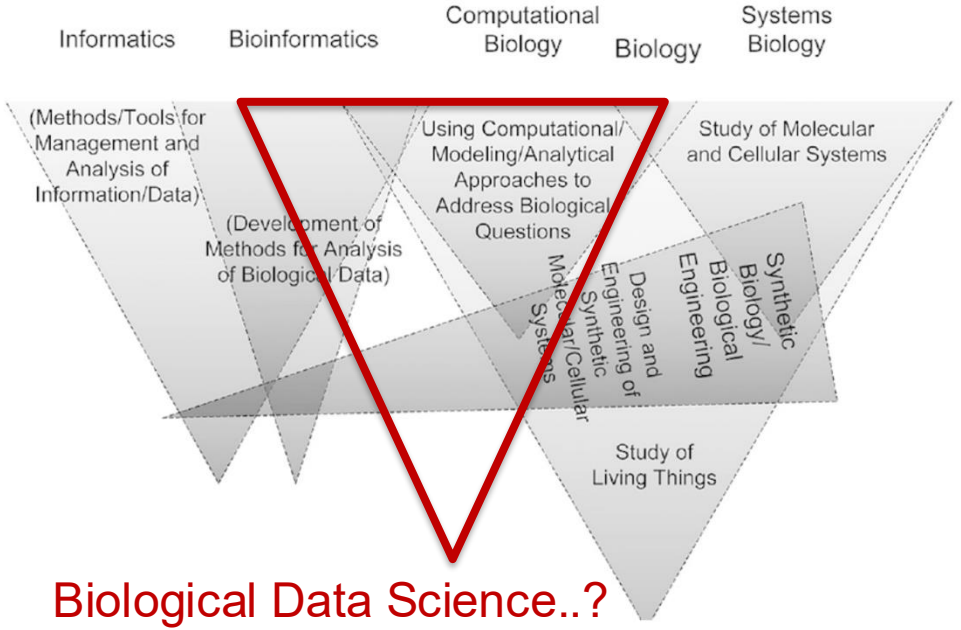


FIGURE 2.1 A disciplinary map of "informatics," "bioinformatics," "computational biology," "biology," and "systems biology" according to one practitioner. (Christopher Burge, "Introduction to Computational and Systems Biology" (7.91), lecture, Massachusetts Institute of Technology, February 8, 2007. Reproduced with permission.)

What is Biological Data Science?



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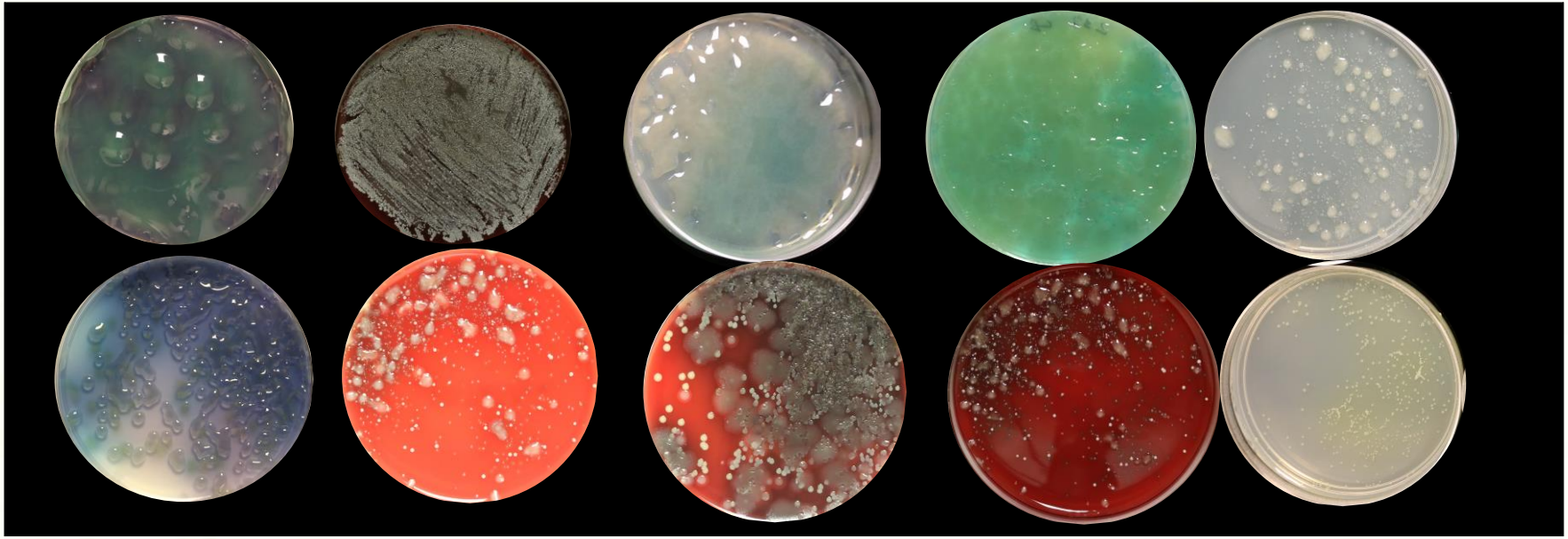
Biological Data Science to Me

My interests: computational microbiology, small cells & big data



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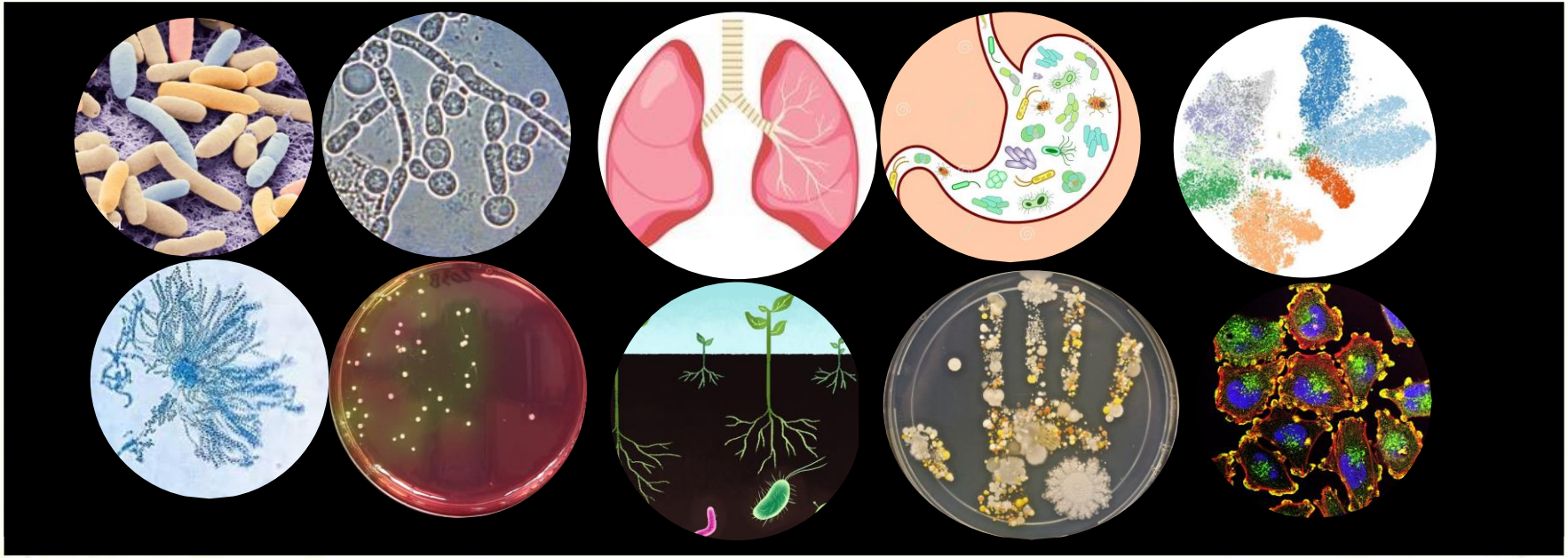

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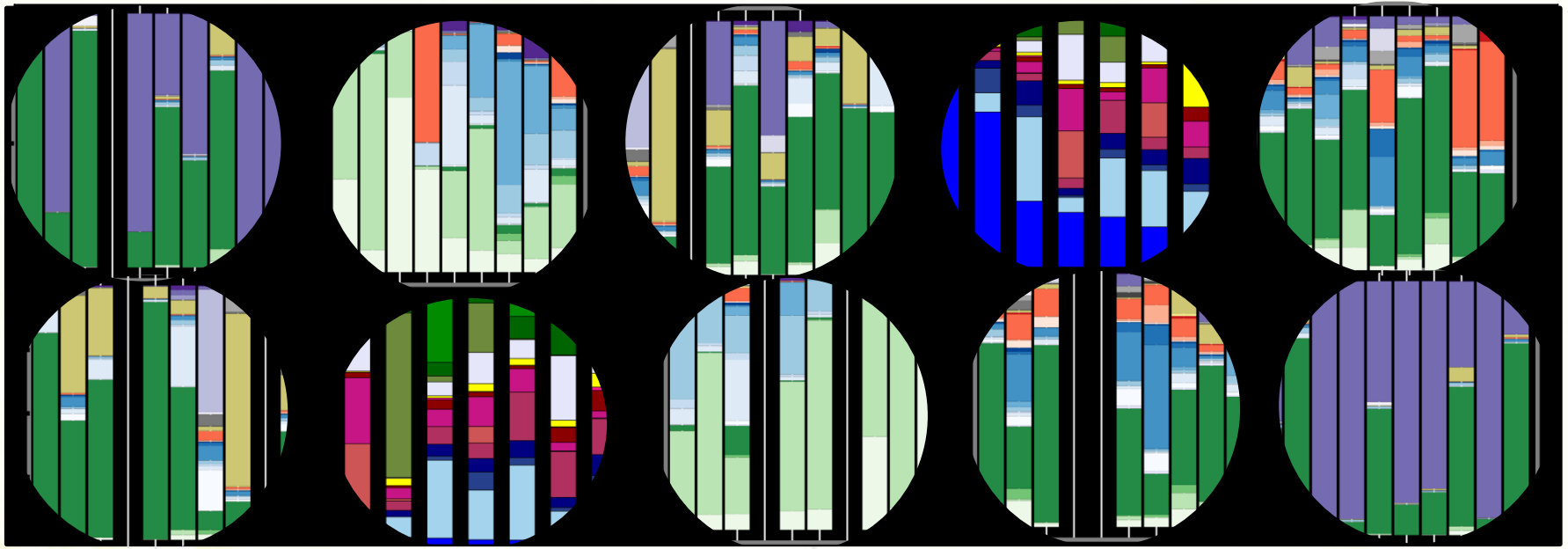

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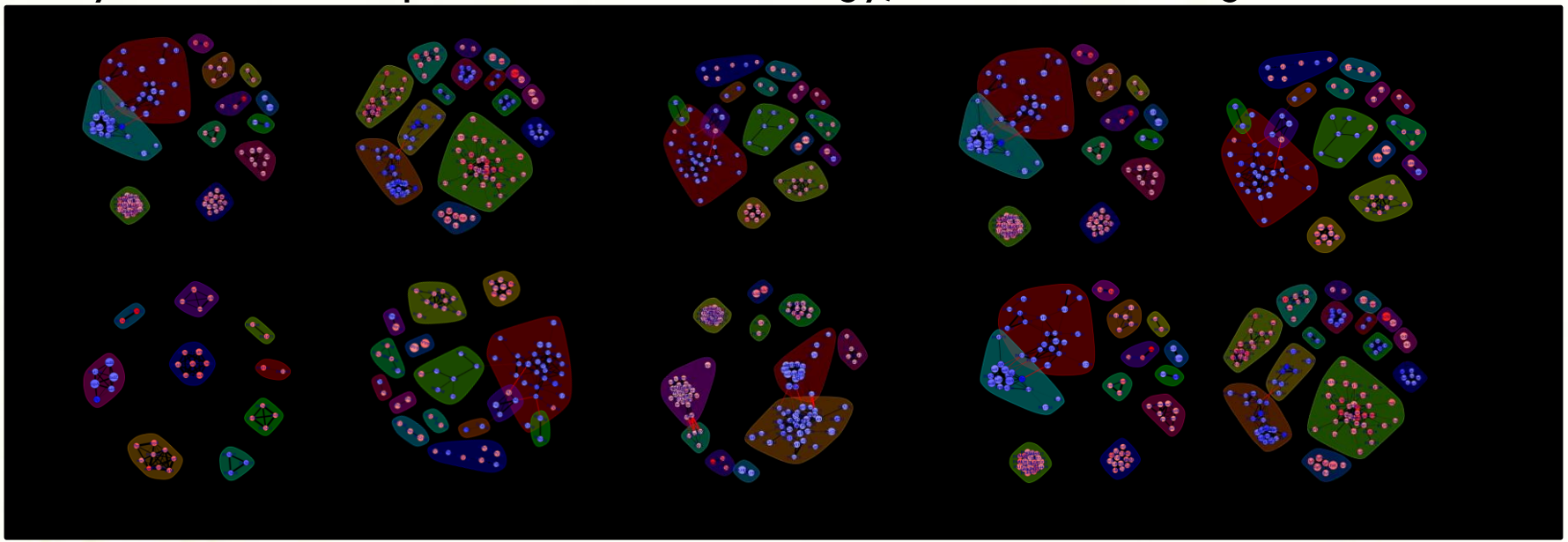

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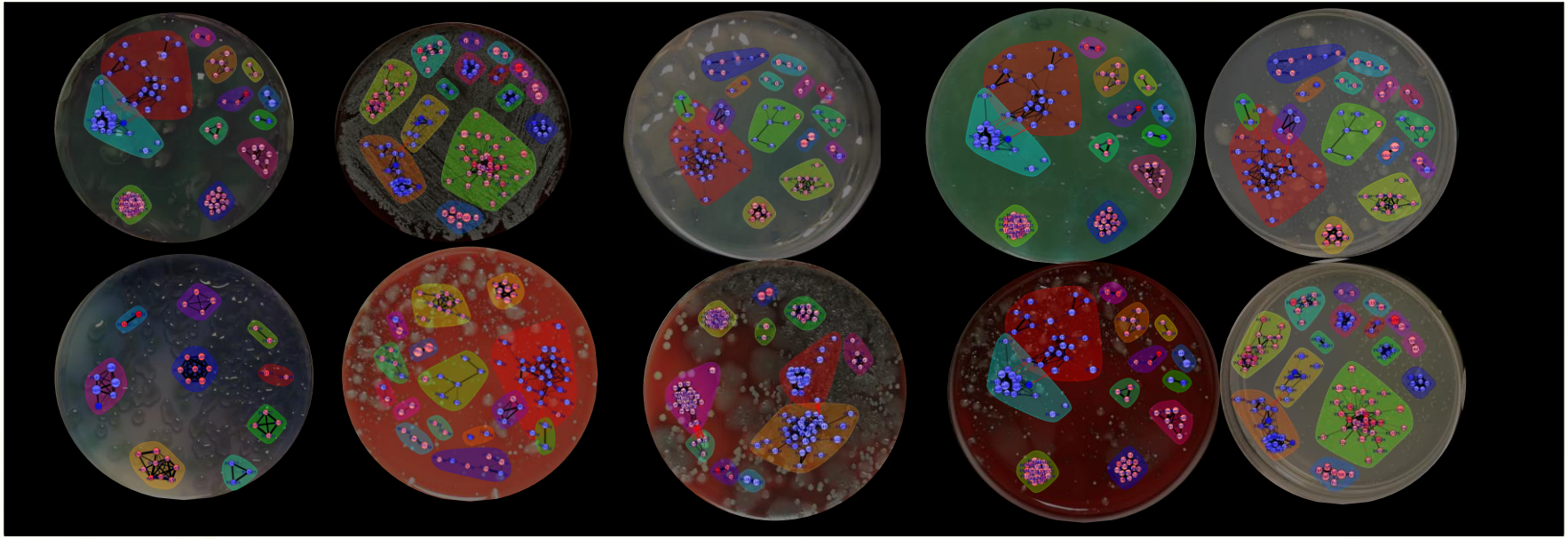

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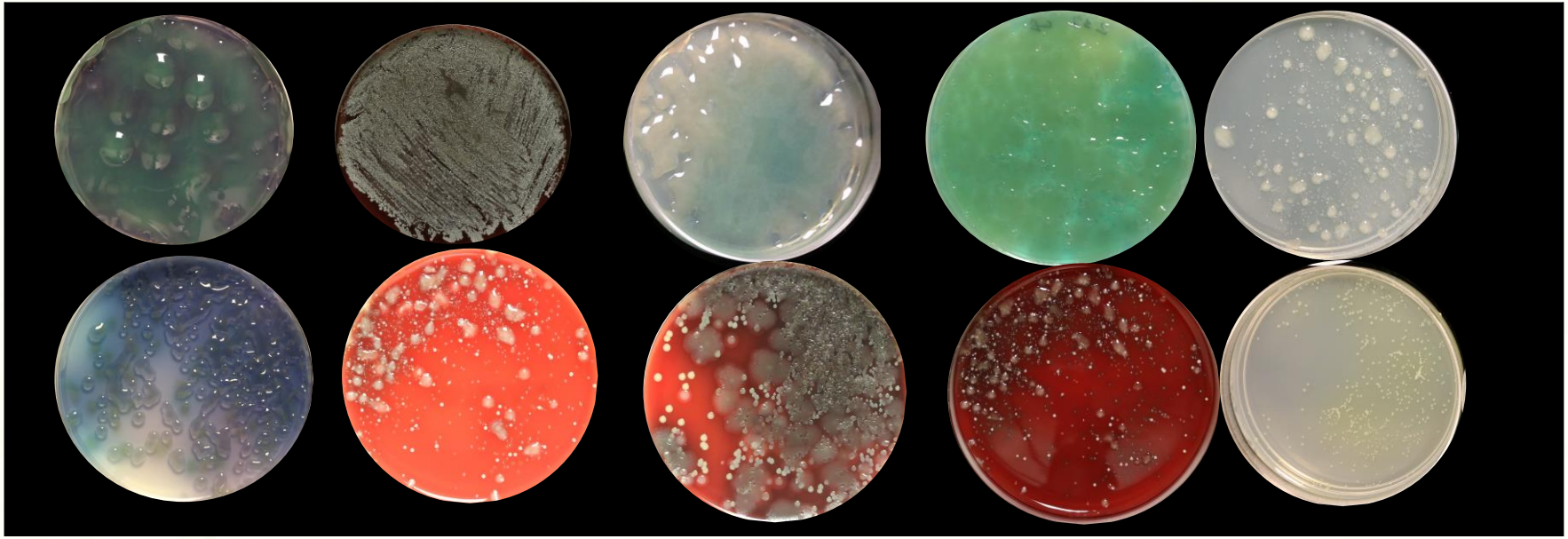
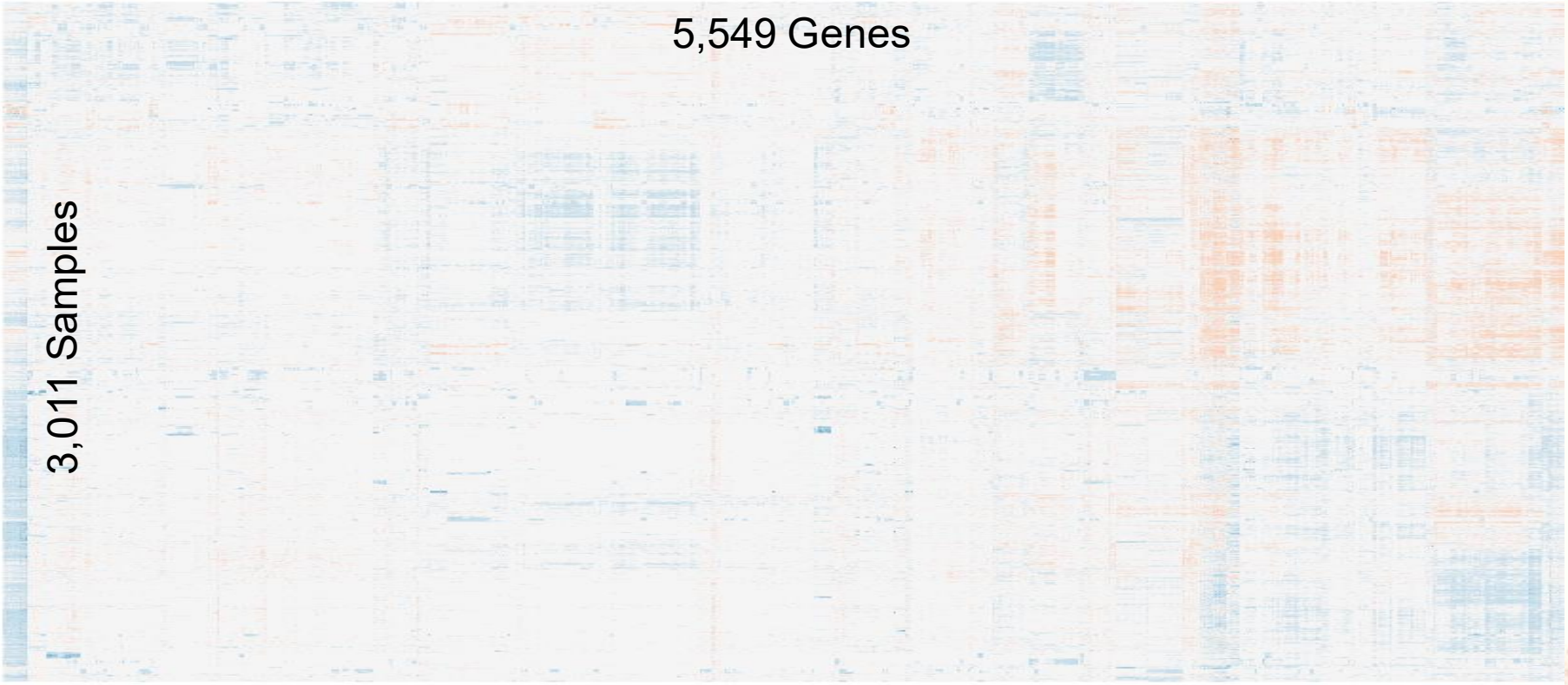
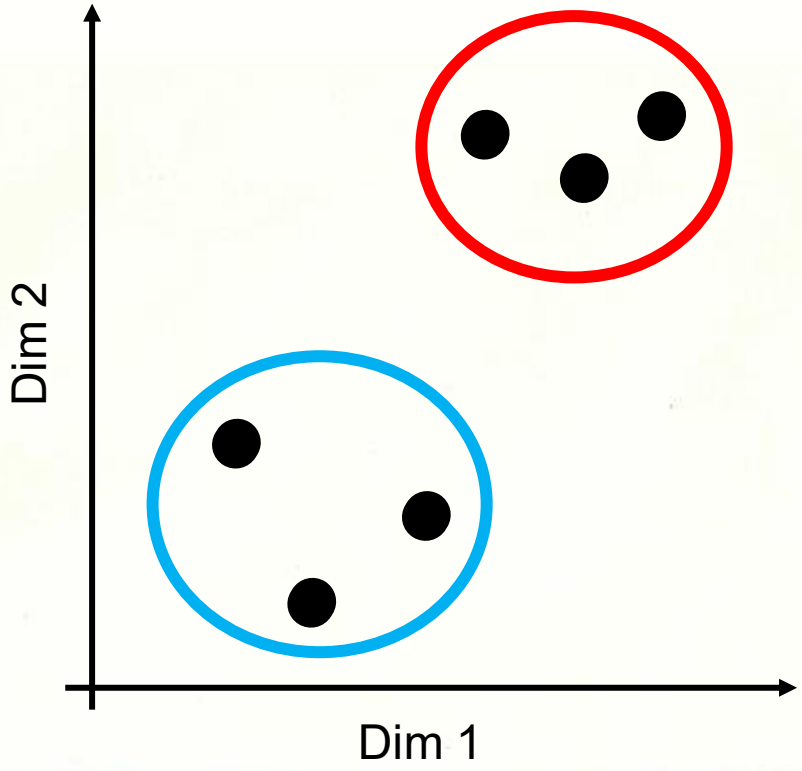


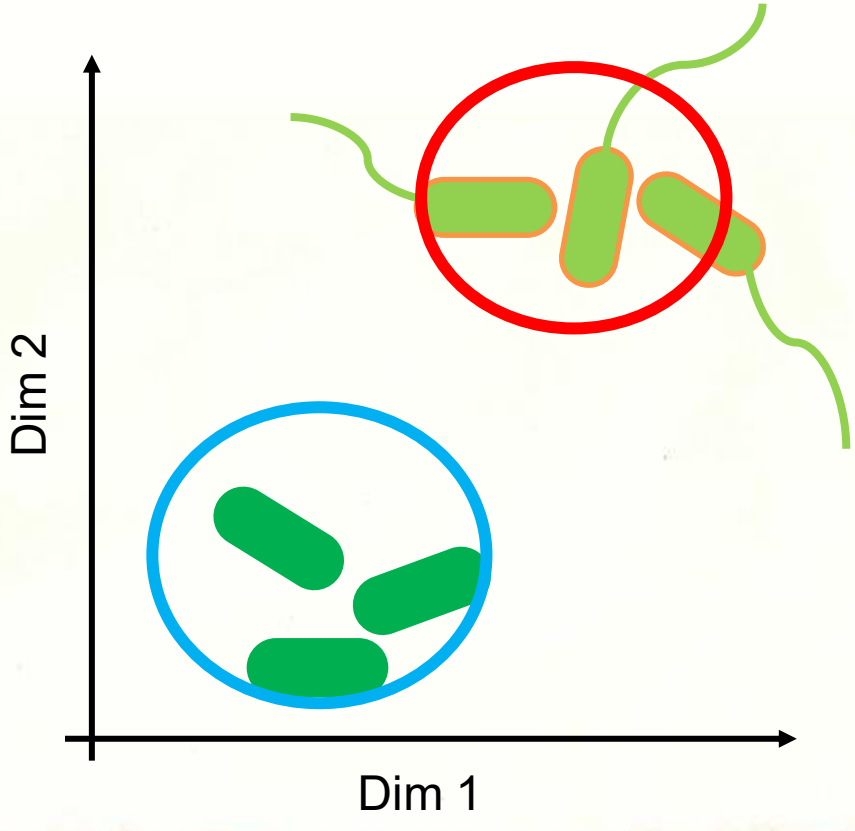
Biological Data Science to Me



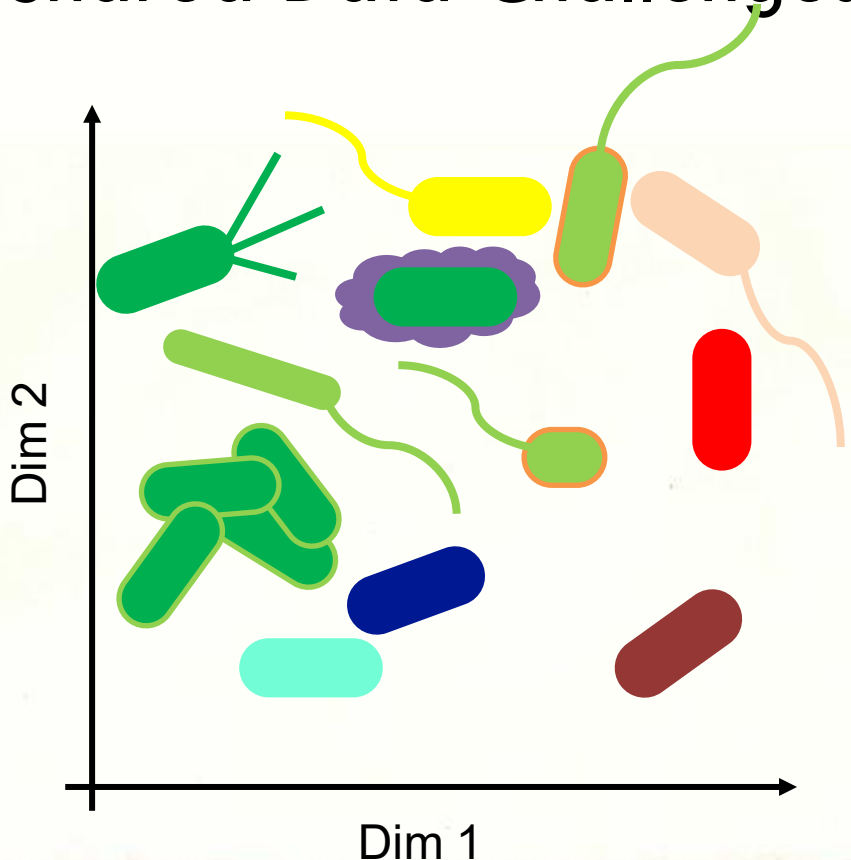
Generic Data Problems



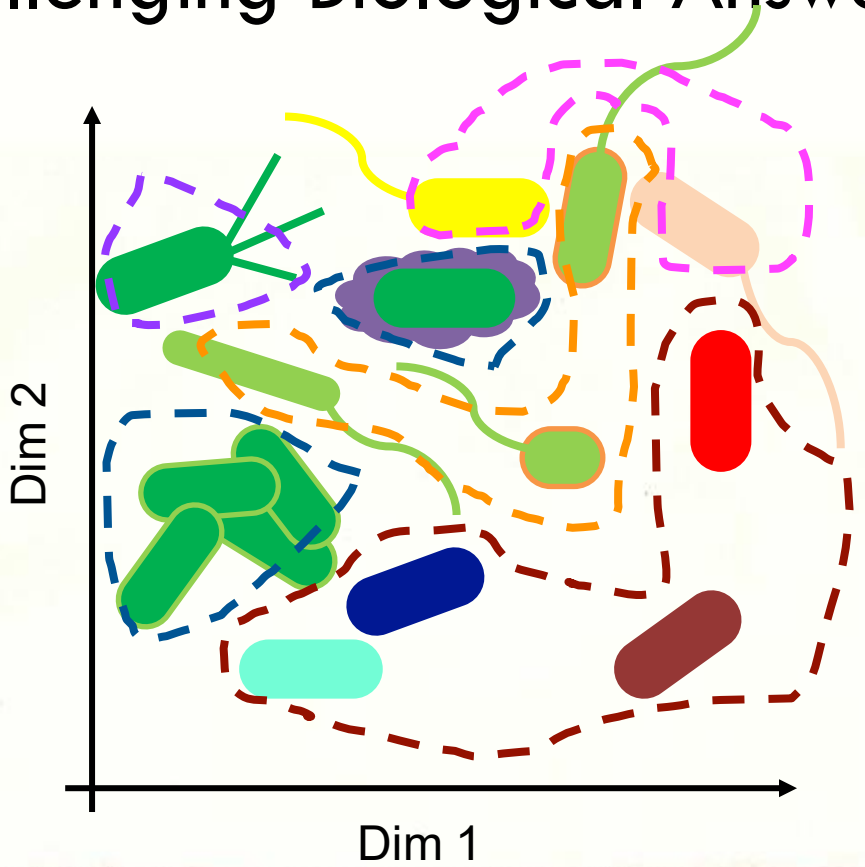
Specific Biological Questions



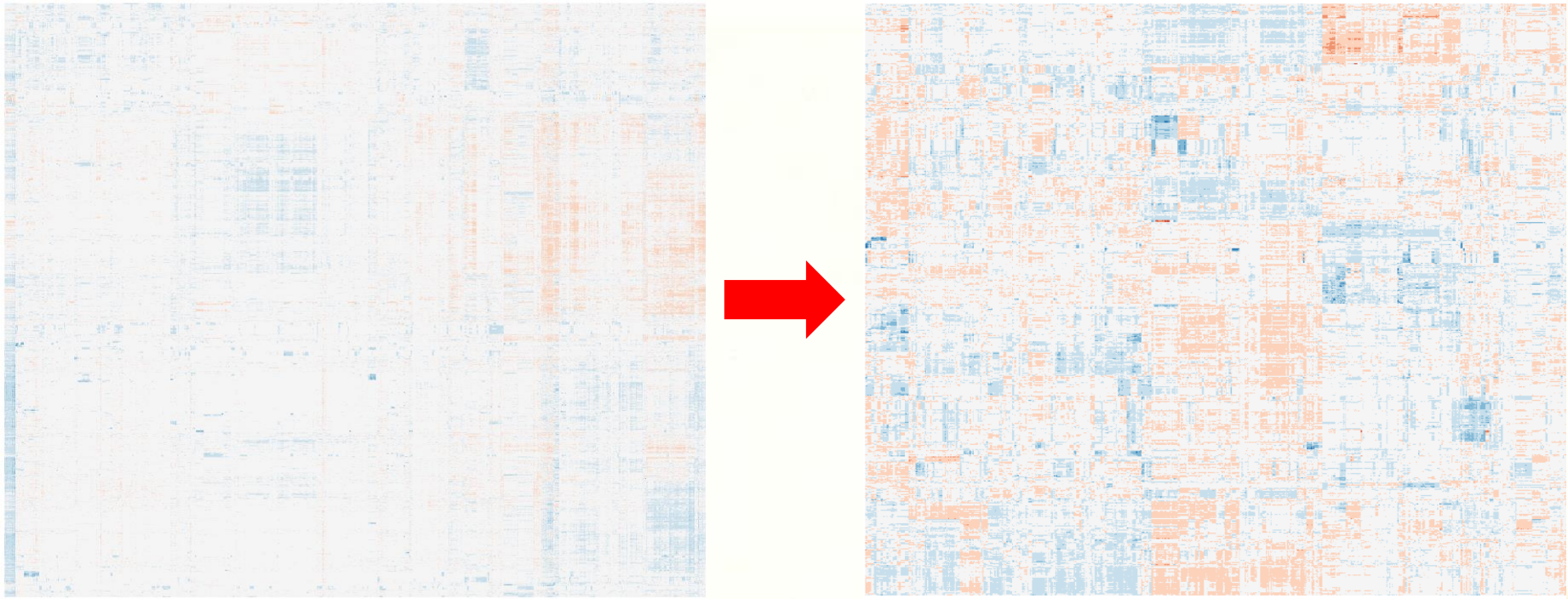
Shared Data Challenges



Challenging Biological Answers



State-of-the-Art … Open Questions



Lab machines: getting started

- Log on:
  - Your Union usernames
  - Default password: the word union followed by your ID number; e.g., union12345

Always log off before leaving the lab