

# **ANEQ-505**

## **Microbiome of Animal Systems**

# Ice Breaker

Tell us:

- Your name
- Enrolled degree/position at CSU
- Department
- Favorite microbial system

<https://microbiomenetwork.colostate.edu/>

← → ⌂ microbiomenetwork.colostate.edu ☆ 🔍 P 📁 | 🔍 | 🚙 Relaunch to update :

 **CoSMIC**  
Colorado State Microbiome Network

ABOUT US ▾ EDUCATION ▾ RESEARCH ▾ EVENT CALENDAR ▾ COSMIC NEWS FRMS

MAKE A GIFT JOIN THE MICROBIOME LISTSERV



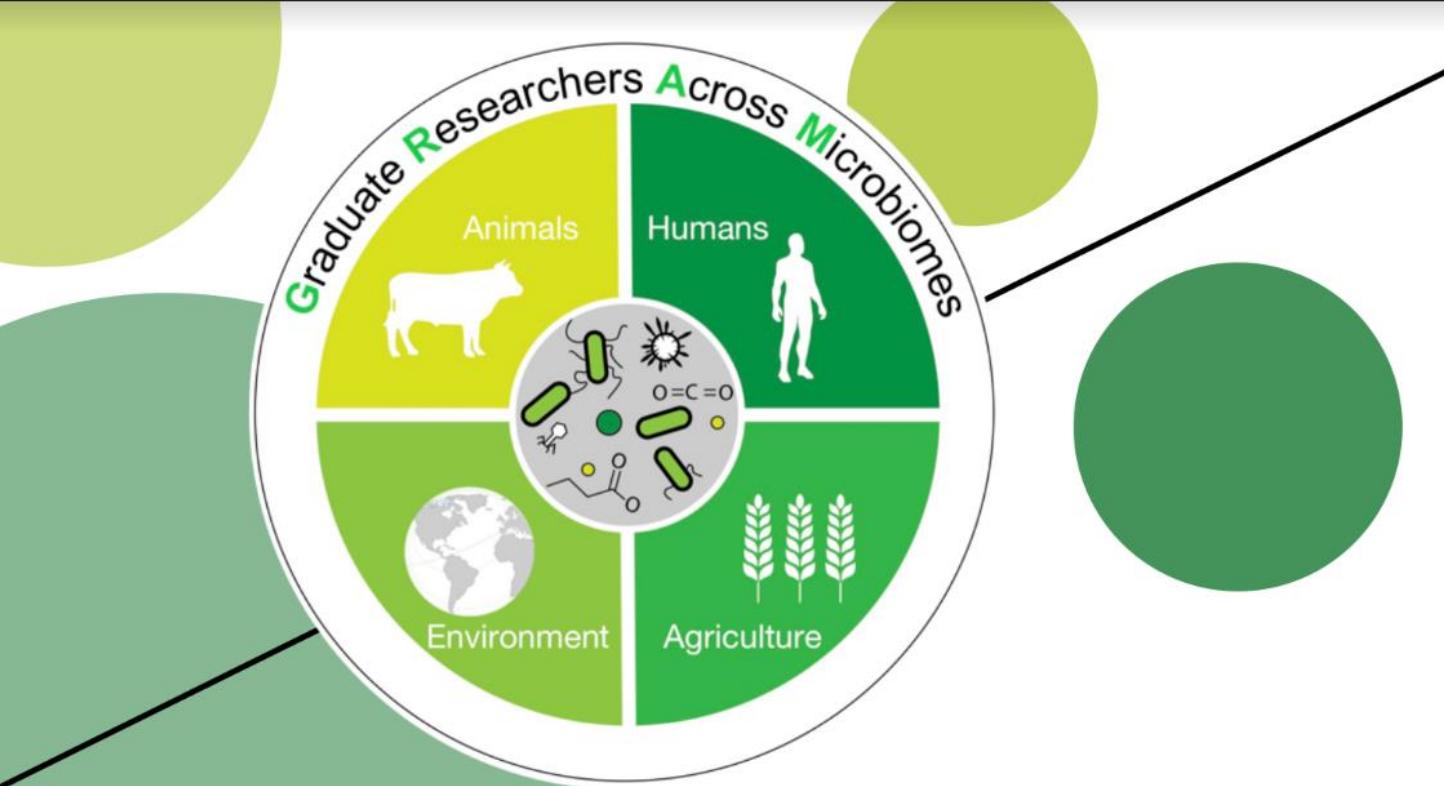
Discovering microbial solutions to global challenges

What is a microbiome?

Microbiomes, or the invisible microbial communities living in and around us, control every part of our world, from our

Why CSU for microbiome research

- Colorado State University is at the **forefront of microbiome research**, recognized globally for its interdisciplinary excellence across six major colleges.
- Our scientists and engineers **collaborate to address pressing societal challenges**, from climate change to public health and agricultural sustainability, in partnership with our top-ranked veterinary school.
- The **Colorado State Microbiome Network (CoSMIC) exemplifies our**



# GRADUATE RESEARCHERS ACROSS MICROBIOMES

We are a group of graduate students and post docs affiliated with several departments across campus

Our mission:

- Provide a place to connect over **microbiome research**
- Promote **professional advancement** of our members
- Cultivate and maintain a **support network** for early career scientists



# Front Range Microbiome Symposium

Overview   Registration   Invited Speakers   Agenda   Steering Committee   Support the Symposium   Code of Conduct   Past FRMS Meetings   Q

Moving to every other year.. 2027, 2029, etc

Instead, we have CoSMic activities, including an 4/24 Lunch & Learn that we will encourage instead of class

HOME

RESEARCH ▾

PEOPLE

STUDENTS ▾

LISTSERV

JOBs

FRONT RANGE MICROBIOME SYMPOSIUM

# Microbiome Science and Engineering

Graduate Certificate

Graduate Certificate

Requirements and Curriculum

Certificate at a Glance

Program Code

MBSF-CT

Credits

12 credits



Certificate Overview

This certificate provides a foundation in the concepts and methods of

Start Application

Please review deadlines and admission requirements first.

Apply Now

Questions?

Request More Information

or contact Charlene Spencer

# Useful links

<https://www.research.colostate.edu/microbiome>

<https://www.research.colostate.edu/microbiome/teaching/>

<https://www.research.colostate.edu/microbiome/gram/>

Twitter: @GRAM\_CSU

<https://frontrangemicrobiomesymposium.com/>

<https://canvas.colostate.edu/>

SUMMER 2023  
2026SP-ANEQ-505-001

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2026SP-ANEQ-505-001: Microbiome of Animal Systems

Welcome to ANEQ 505!



To get started, please go to Modules.

Course Status Published

Import Existing Content Import from Commons Choose Home Page View Course Stream Course Setup Checklist New Announcement Course Analytics View Course Notifications

Coming Up View Calendar Nothing for the next week

# ANEQ-505 Course Learning Objectives

- Explain basic concepts and general trends in microbiome science
- Become an expert in strengths and weaknesses of high throughput amplicon data sets
- Become an expert in technical issues that can lead to biases or study effects during data analysis
- Install and utilize QIIME2 software for analysis of tutorial 16S rRNA data sets and a teaching data set
- Participate in project design, sampling, analysis, interpretation, and drafting methods and results text for a teaching data set generated during the semester
- Critically discuss current and fundamental literature, and understand where the field is going

Course  
Content

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LECTURES

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TUTORIALS



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GROUP PROJECTS

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READINGS

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LEADING A PAPER

# Grading

- Quizzes will cover information learned in lectures, tutorials, and assigned readings. 50%
- You will lead one paper. 10%
- You will analyze and describe a data set that will be assessed twice for a grade. 40%

# Computing

We use the Alpine HPC, but also we will use your laptops, particularly to visualize results

- CSU Users:
  - Get Started with [Alpine, CSU page](#)
  - Fill out account application form, if needed
  - Duo authentication
  - Then get an RC user account



Define “microbiome”

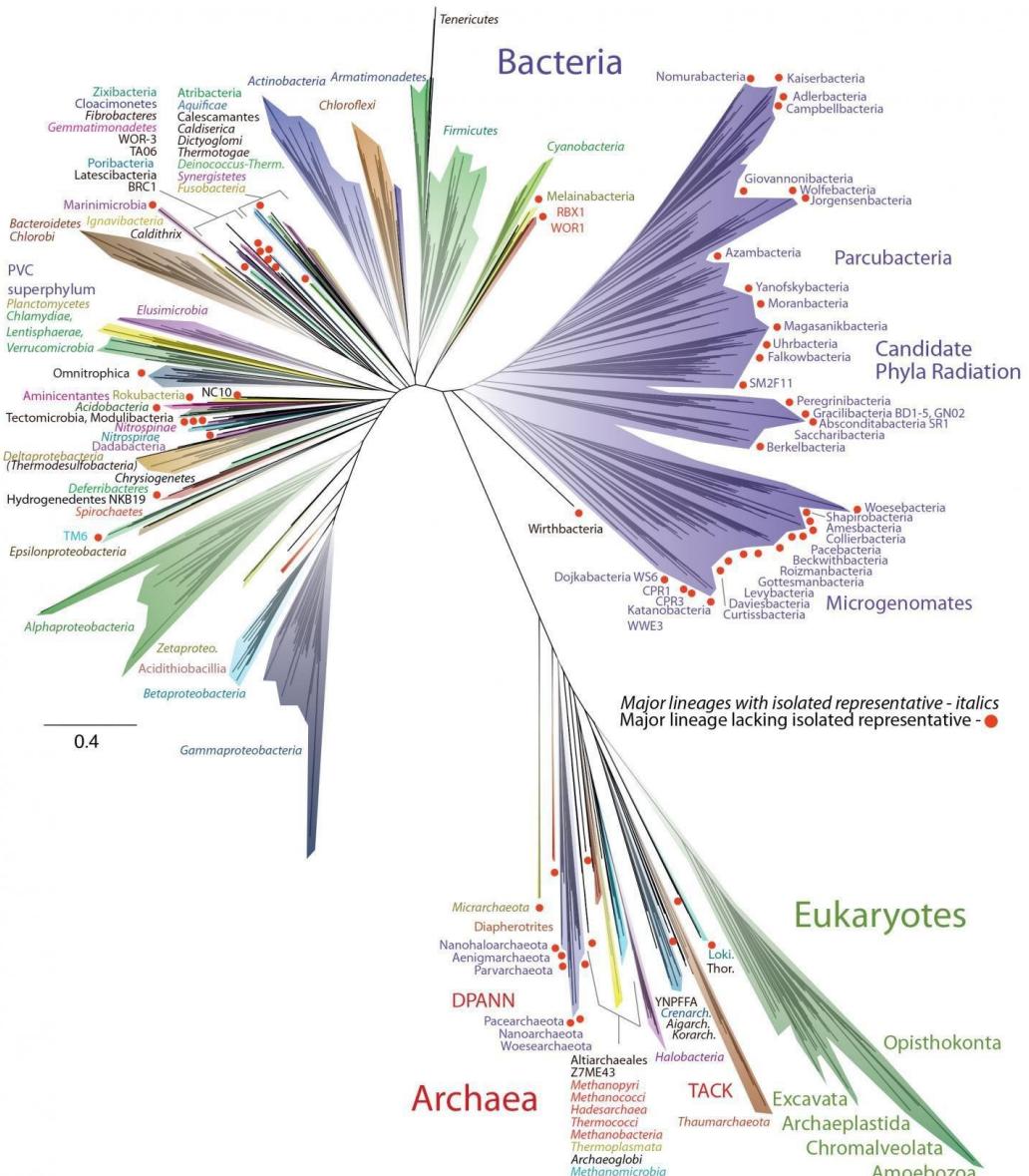


Identify the major fields of science that underly microbiome science

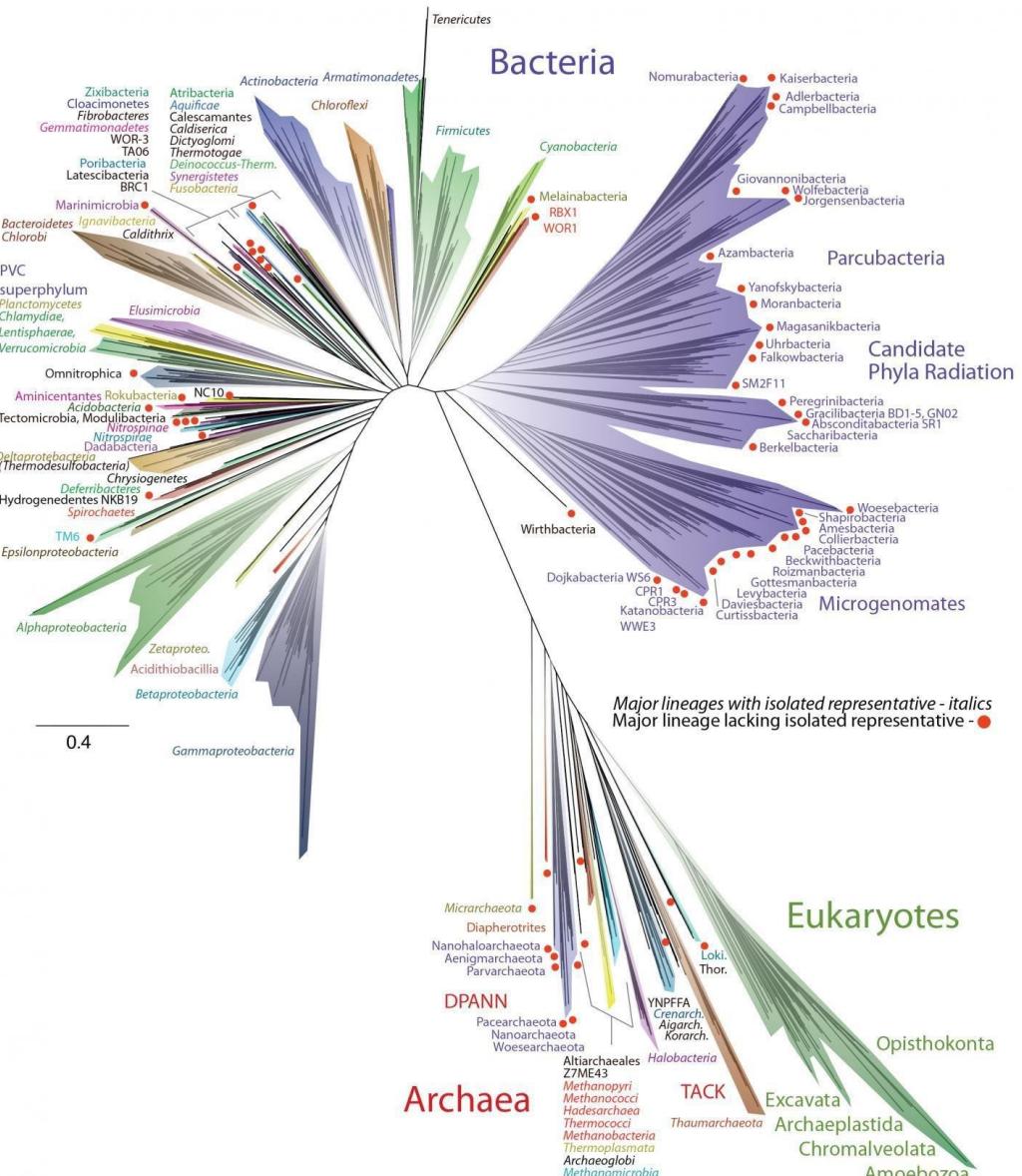


Describe different “omic” data types and what they tell us

# We live in a microbial world



# We live in a microbial world



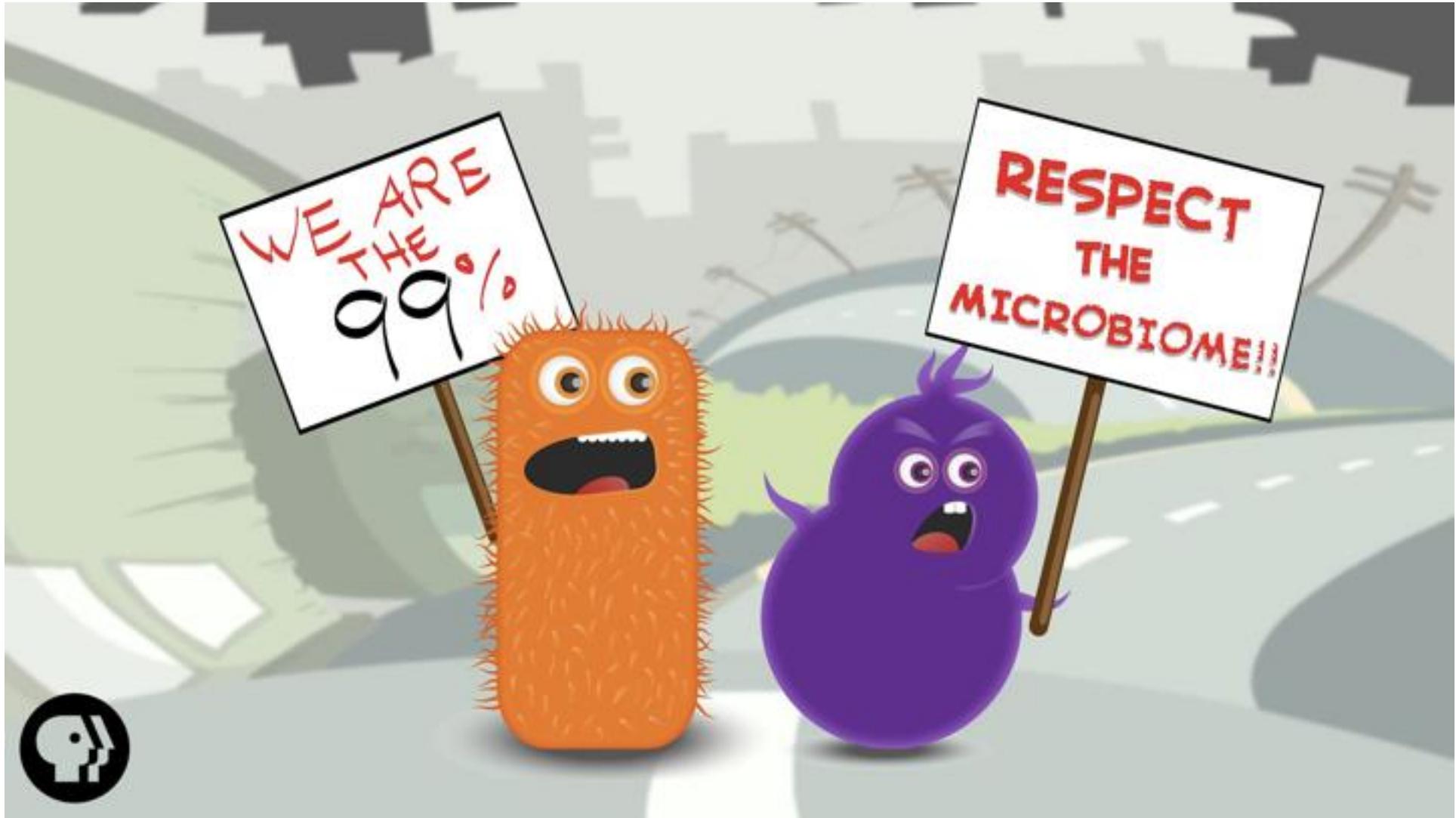


Microbes live in complex and diverse communities, everywhere on Earth



Microbial ecology is the study of microbes in an environment and their interactions with each other.





# Microbiome Research

Microbiome – The genes and small molecules of microbes that are interacting in an environment.

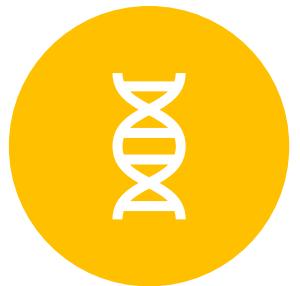
# MICROBIOME



Microbiology



Ecology



Genomics



Chemistry

**We study ...**

structure,  
diversity,  
function,  
communication



**We sample ....**

DNA,  
RNA,  
proteins,  
metabolites