

2022 SIS MID Module 15: Microbiome Data Analysis

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Course resources

Zoom Meeting

Topic: SIS MID 2022 Module 15. Microbiome Data Analysis

Time: This is a recurring meeting Meet anytime

Join Zoom Meeting

<https://clmson.zoom.us/j/99911471070>

Meeting ID: 999 1147 1070

One tap mobile

+13017158592,,99911471070# US (Washington DC)

+13126266799,,99911471070# US (Chicago)

Find your local number: <https://clmson.zoom.us/u/aeqLVH0bHO>

Join by SIP

99911471070@zoomcrc.com

Slack

Workspace: <https://uwbiostatisticssisa.slack.com>

Channel: [Mod15_microbiome_data_analysis_2022](#)

Google Drive

<https://drive.google.com/drive/folders/12rNaw-K3aK8MgqLPI5LVwKgk5-qv-dnC?usp=sharing>

*****All times are PDT time zone*****

Monday, July 25

08:00 - 08:50 Live with breakouts

1. Introductions
 - 1.1. Instructor introductions
 - 1.1.1. Alex
 - 1.1.2. Joey
 - 1.1.3. Bashir
 - 1.2. Introduction to core resources
 - 1.2.1. Zoom mechanics and etiquette;
 - 1.2.2. Slack channel;
 - 1.2.3. Google Drive;
 - 1.2.4. Project Datasets.
2. Random-group ice breaker:
 - 2.1. Fill out survey
 - 2.2. Then do activity

08:51 - 09:04 Short break

09:05 - 09:55 Live Lecture 01

Lecture: Amplicon seq data generation and preprocessing with DADA2/R

09:56 - 10:09 Short break

10:10 - 11:00 Groups

1. Intro to the code steps (Lecture 01b, 15 min)
2. Complete DADA2 tutorial (groups)

11:01 - 11:29 “Lunch” break

11:30 - 12:20 Live Lecture 02

1. Debrief: DADA2 tutorial (30 min)
2. Lecture 02 - phyloseq package (20 min)

12:21 - 12:34 Short break

12:35 - 13:15 Live Lecture 03

Data normalization and alpha diversity with phyloseq

13:16 - 13:29 Short break

13:30 - 14:20 Start Group Data Analysis Project

1. Full group live to start
2. Talk about data
3. Pointer to Day-01 Doc
4. Breakouts

Tuesday, July 26

08:00 - 08:50 Live Lecture 04 (w short breakout)

Multivariate microbiome data visualization and analysis:

- a. distances (break-out exercise)
- b. ordination
- c. clustering (with break-out exercise)

08:51 - 09:04 Short break

09:05 - 09:55 Group exercises

1. Computing distances
2. Ordination plots
3. Debrief

09:56 - 10:09 Short break

10:10 - 11:00 Live Lecture 05

Testing, multiple testing, feature selection

11:01 - 11:29 “Lunch” break

11:30 - 12:20 Break out into project groups

Taxa multiple testing tutorial

12:21 - 12:34 Short break

12:35 - 13:15 Live Lecture 06

Testing Multivariate Hypotheses:

Robust MANOVA with W_d^*

Multivariate mediation analysis

13:16 - 13:29 Short break

13:30 - 14:20 Group work, applied group’s dataset

1. Review dataset/experiment
2. PCoA
3. Multivariate associations
4. Multivariate mediation analysis
5. Microbial features selection

Wednesday, July 27

08:00 - 08:30 Q/A

08:30 - 08:50 Group work, applied group's dataset

Meet on Zoom to discuss the format of the presentations; then work on the presentations in groups.

08:51 - 09:04 Short break

09:05 - 09:55 Group work presentations

09:56 - 10:09 Short break

10:10 - 10:45 Wrap-up

Questions, feedback, references, resources, graduation.

Recordings of live sessions should be available through September.