2020 SISMID Module 15: Microbiome Data Analysis
All times are PDT time zone

Monday, July 27	
8 - 8:50 a.m.	**Live with break outs (Zoom)** 1. Introduction: Microbiomes in Biology and Medicine 2. Introduction: Students work in groups
9:05 - 9:55 a.m.	**Live lecture (Zoom)** Lecture: preprocessing sequences with DADA2
10:10 - 11 a.m.	**Groups** 1. Software installation **2.** Complete DADA2 tutorial
11:30-12:20 p.m.	**Live → Zoom** 1. DADA2 tutorial de-brief. 2. Phyloseq package
12:35 - 1:15 p.m.	**Live lecture (Zoom)** Data normalization and alpha diversity with phyloseq
1:30 - 2:20 p.m.	**Group work** Download datasets, including group-assigned data 1. Load data into R/phyloseq 2. Pre-process the data: quality filter, taxonomy, tree, create snapshots
Tuesday, July 28	

8:00 - 8:50	**Live lecture with short breakout (Zoom)**
	1. Debrief
	2. Multivariate microbiome data visualization and analysis:
	    a. distances (break-out on exercise)
	    b. ordination
	    c. robust MANOVA with Wd*

9:05-9:55	**Group exercises** 1. Computing distances 2. Ordination plots 3. Multivariate statistical testing
10:10-11:00	**Live Zoom** 1. Debrief 2. Alternative methods for multivariate analysis MiRKAT
11:30-12:20	**Live Zoom**

	Testing, multiple testing, feature selection
12:35-1:15	**Live Zoom** Multivariate mediation analysis
1:30-2:20	**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 29	
8 - 8:50 a.m.	**Group Work Continued from the day before**
9:05 - 9:55 a.m.	**Live Zoom Group work presentations**
10:10 - 11 a.m.	Questions, feedback, references, resources, assessment, graduation