

METAGENOMICS: FROM GENES TO ECOSYSTEMS (487/587)

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Fall 2016

Assignments Calendar

	Tuesday	Thursday
8/23 & 8/25	N/A	N/A
8/30 & 9/1	N/A	Due: HPC sponsorship request
9/6 & 9/8	MG_HW1 (25 pts): Decide a “person” for your microbiome analyses. Write a description of the person for your methods section. Write a first draft of the introduction to your project. Due: Email us your github user id	C_HW1 (30 pts): Introduction to Unix
9/13 & 9/15	MG_HW2 (25 pts): Download 16 microbiomes for your “person” using the SRA toolkit (2 time points across 8 body sites). Create a samples table that lists metadata for each of the microbiomes including information about the person and the total number of sequences. Write a description of your methods for downloading the sequence data. Due: MG_HW1	C_HW2 (30 pts): Perl6 “Hello world” Due: C_HW1 Quiz (30 pts): on C_HW1
9/20 & 9/22	MG_HW3 (25 pts): Perform quality control on your 16 microbiomes. Update the samples table with the number of sequences for each sample after QC. Write up your QC methods including the cutoffs used for quality control. Due: MG_HW2	C_HW3 (30 pts): Perl program structure, statements, and variables Due: C_HW2 Quiz (30 pts): on C_HW2
9/27 & 9/29	MG_HW4 (25 pts): Perform a metagenomic co-assembly using data from your QCed microbiomes. Write up your methods and create a summary table of the statistics for the assembly in your results section. Upload your contigs to Anvi'o.	C_HW4 (30 pts): Perl operators, functions, and control structures Due: C_HW3 Quiz (30 pts): on C_HW3

	Due: MG_HW3	
10/4 & 10/6	<p>MG_HW5 (25 pts): Recruit reads from your microbiomes back to the assembled contigs using Bowtie. Write up your methods and write up results on the total number of reads that you were able to recruit back to assembled contigs.</p> <p>Due: MG_HW4</p>	<p>C_HW5 (30 pts): Perl I/O</p> <p>Due: C_HW4</p> <p>Quiz (20 pts): on C_HW4</p>
10/11 & 10/13	<p>MG_HW6 (25 pts): Perform gene finding in Anvi'o using prodigal. Write up your methods and describe the total number of ORFs detected in your results section.</p> <p>Due: MG_HW5</p>	<p>C_HW6 (30 pts): Perl arrays and lists</p> <p>Due: C_HW5</p> <p>Quiz (20 pts): on C_HW5</p>
10/18 & 10/20	<p>MG_HW7 (25 pts): Search for Hidden Markov Models (HMM profiles) in Anvi'o. Write up your methods and describe the output of the analysis in the results section.</p> <p>Due: MG_HW6</p>	<p>C_HW7 (30 pts): Perl hashes</p> <p>Due: C_HW6</p> <p>Quiz (20 pts): on C_HW6</p>
10/25 & 10/27	<p>MG_HW8 (25 pts): Perform taxonomic annotation using Centrifuge and upload results to Anvi'o. Write up your methods and describe the output of the analysis in the results section.</p> <p>Due: MG_HW7</p>	<p>C_HW8 (30 pts): Perl regular expressions</p> <p>Due: C_HW7</p> <p>Quiz (20 pts): on C_HW7</p>
11/1 & 11/3	<p>MG_HW9 (25 pts): Perform functional annotation using Interproscan and upload results to Anvi'o. Write up your methods and describe the output of the analysis in the results section.</p> <p>Due: MG_HW8</p>	<p>C_HW9 (30 pts): Perl split and join</p> <p>Due: C_HW8</p> <p>Quiz (20 pts): on C_HW8</p>
11/8 & 11/10	<p>MG_HW10 (25 pts): Perform contig profiling in Anvi'o. Write up your methods and describe the output of the</p>	<p>C_HW10 (30 pts): Perl subroutines and avoiding scope errors</p>

	<p>analysis in the results section.</p> <p>Due: MG_HW9</p>	<p>Due: C_HW9</p> <p>Quiz (20 pts): on C_HW9</p>
11/15 & 11/17	<p>MG_HW11 (25 pts): Perform hierarchical clustering and CONCOCT genomic binning in Anvi'o. Write up your methods and describe the output of the analysis in the results section.</p> <p>Due: MG_HW10</p>	<p>Due: C_HW10</p> <p>Quiz (20 pts): on C_HW10</p>
11/22 & 11/24	<p>MG_HW12 (25 pts): Try out the interactive binning options in Anvi'o. Are you able to improve the binning for your analyses? Write up your methods and describe the output of the analysis in the results section.</p> <p>Due: MG_HW11</p>	- Holiday -
11/29 & 12/1	<p>Final report (100 pts): Write an introduction to your project based on your readings and analyses. Compile your methods and results for MG_HW1 to 12. Write up your final discussion of the results. What patterns do you see? Are these patterns consistent with the literature?</p> <p>Due: MG_HW12; Journal-club presentations</p>	Due: Journal-club presentations
12/6	Due: Final project report and Journal-club write-ups.	-Dead Day-