MG_HW1: Starting your class project

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Abstract

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Protocol

Step 1.

To get started on the project, you will need to choose a healthy human subject. Each group (students A anf B) will have 16 microbiomes from two time points. Student A will put their name down next to the eight microbiomes for time point 1, and Student B will do the same for time point 2. These are your samples for the class project.

Step 2.

Read the paper these samples are derived from:

Hannigan GD, Meisel JS, Tyldsley AS, Zheng Q, Hodkinson BP, SanMiguel AJ, Minot S, Bushman FD, Grice EA. The human skin double-stranded DNA virome: topographical and temporal diversity, genetic enrichment, and dynamic associations with the host microbiome. MBio. 2015 Oct 30;6(5):e01578-15.

NOTES
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Note that the paper describes data for the virome and microbiome. The samples you will be analyzing are for the microbiome only (just bacteria). The paper will be pretty complicted! You are just expected to get a grasp of where the data come from and how the samples were taken. In addition, you should think about the aims of the project.

Step 3.

Read a review on the skin microbiome to get an overview of what we know about the skin microbiome in health humans:

Grice EA, Segre JA. The skin microbiome. Nature Reviews Microbiology. 2011 Apr 1;9(4):244-53.

Step 4.

Let's get started on your project! The first thing we need to do is to create a google document, and share that with Dr. Hurwitz. You will keep adding to this google document over the semester, and it will become your completed project as we add in information for each step in the bioinformatics analysis.

1. Go to google drive

2. Click on the "new" button in the upper left hand corner, select "Google Docs"

3. Name the document "LastName_ABE487_Project", by clicking on "Untitled Document" in the upper left hand corner.

4. Share the document with Dr. Hurwitz, by clicking "Share" in the upper right hand corner. Add my email address in the window provided: bhurwitz@email.arizona.edu

Step 5.

Add in an outline we can work from in the Google doc, by adding in the following sections:

1. Introduction

2. Methods

3. Results

4. Discussion

5. Conclusions

6. Tables

7. Figures

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Note that we will be adding in subsections for each part of the project. For example "2.1" will describe our subject and how the samples were taken.

Step 6.

Write draft 1 of the introduction: Given what you read about the skin microbiome, and the paper these data were derived from, write a short introduction to your project. Be sure to say why microbes are important on the skin, introduce the concept that microbes can differ by body site, and describe your project (one healthy individual, at one time point, and eight body sites).

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Note that we will keep refining this introduction as we add more to the project. This is just a first draft to get you thinking...

Step 7.

Write up the methods for sample collection (methods 2.1). Read the methods in Hannigan et al. and write up a smaller methods section on sample collection describing just the data you have. You should rewrite in your own words. This should be included as section 2.1 in your report and called 'sample collection'.

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Note, the paper talks about the complete data set of 16 individuals. Just describe the individual you have, and the time point the samples were taken from. You can get this information out of the excel spread sheet describing the microbiomes.

Step 8.

Write up the methods for sequencing (methods 2.2). Read the methods in Hannigan et al. and write up a smaller methods section on sample sequencing describing just the data you have (not the viromes). You should rewrite in your own words.