Notes with Nandita / rough paper outline

* Differentiate between reductions in genetic diversity vs. species diversity
* List of who is saying what
* Document with literature notes
* Document with research results
* Within-species genetic diversity
  + Kirk’s idea of using strep as a control in the oral microbiome
  + Instead of just looking at Strep mutans, look at oral bacteria
  + Look at top prevalence species in oral and contraction
  + Pi between Madagascar / Ethiopian populations vs. HMP data
    - As a motivating set of data, e.g., Figure 1
  + Figure 2 🡪 SFS
  + Figure 3 🡪 Add in negative selection, match nonsynonymous SFS
  + Figure 4 🡪 Demographic models
  + Figure 5 🡪 Use LD as a measurement of how well the model fits the data
    - If it doesn’t match perfectly, we can mention needing better models
  + Figure 6 🡪 phylogeny / different method to support model findings
* Suppose we could get the QP data out of Madagascar data
* Paper layout:
  + We expect to see demographic contractions in gut microbiome, and demographic expansions in oral microbiome
  + Linked to the same anthropogenic forces

1. Show difference in pi (or some sort of summary statistic describing genetic diversity between Madagascar/Ethiopian and HMP gut microbiome data
   1. Not necessary to have two populations for oral microbiome if unavailable
2. **Search for oral microbiome dataset of rural or African population**
   1. **Compare pi in oral data for two different populations**
3. **Search for other oral metagenomic datasets for a control (cavities?)**
   1. **It would be nice to search for the available resources**
4. Make Sfs w + w/o nonsynonymous, selection
   1. DFE to fit selection, not a paper on inferring the DFE of the microbiome
5. Some form of LD analysis (empirical vs. model) or phylogeny-based analysis to suggest that our results are model/method-agnostic.

//TODO 20210722

* Dadi inference of top 40 species
  + General level of contraction
  + Some form of summarizing feature over all species
    - Error bars of contraction with respect to ancestral population size
    - Oral vs. fecal (red vs blue or something like that)
  + Mess around with Prevotella copri