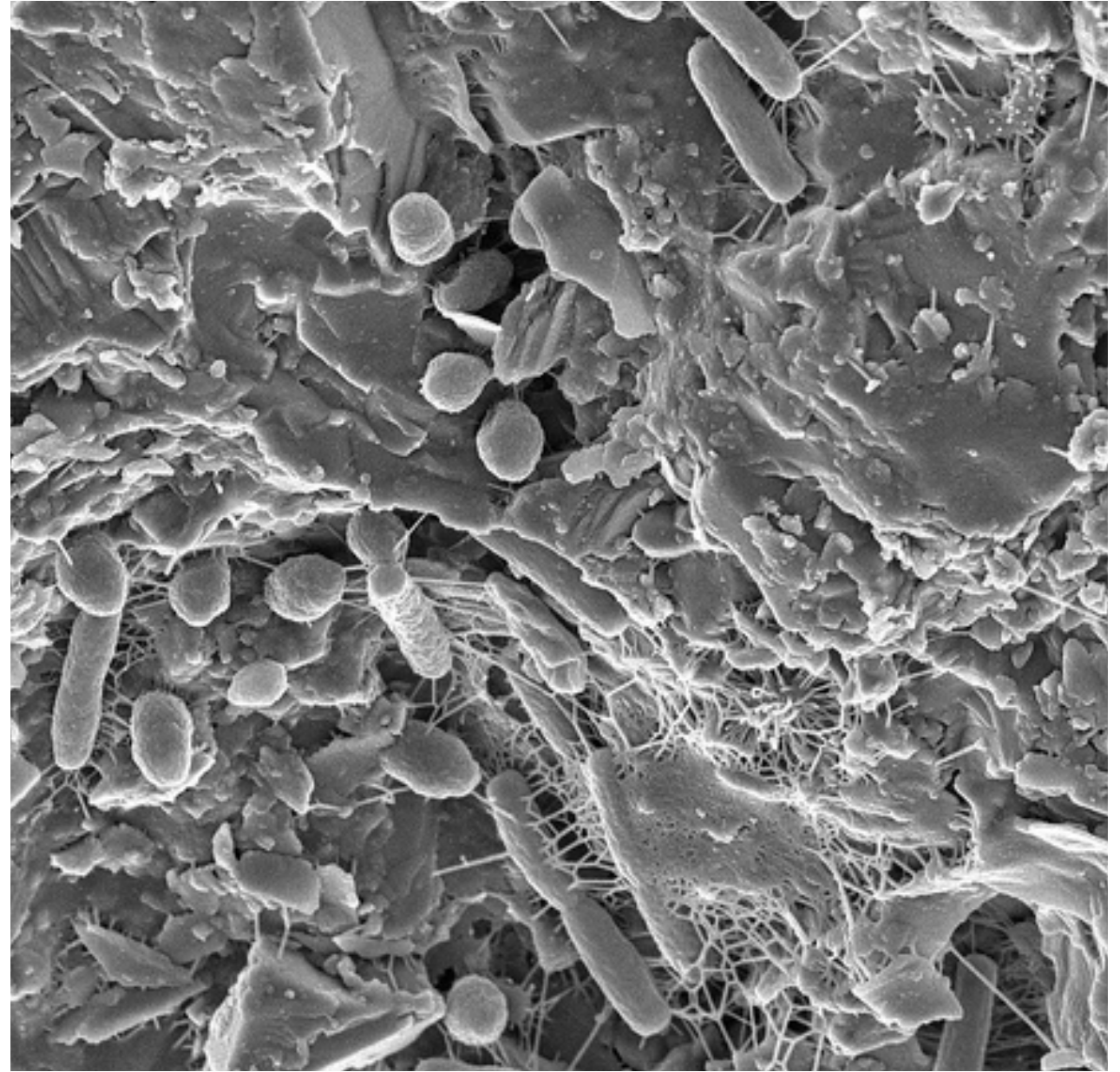


16S rRNA Microbiome Profiling and Amplicon Sequencing



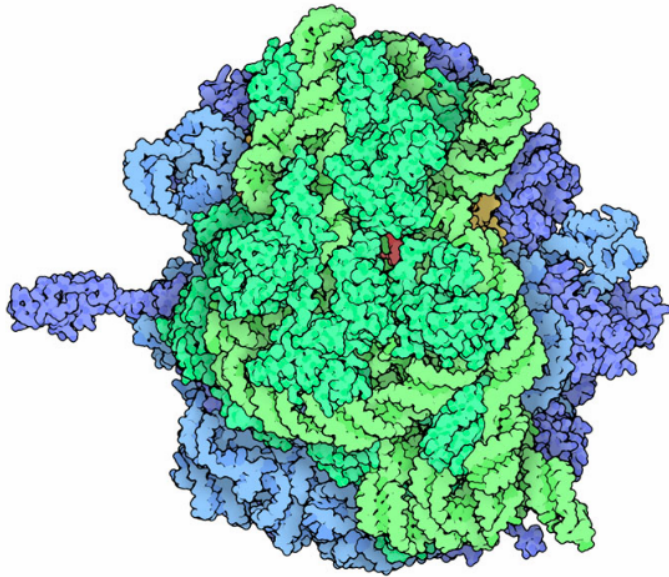
The Need for Culture-Free Methods to Profile Microbial Communities



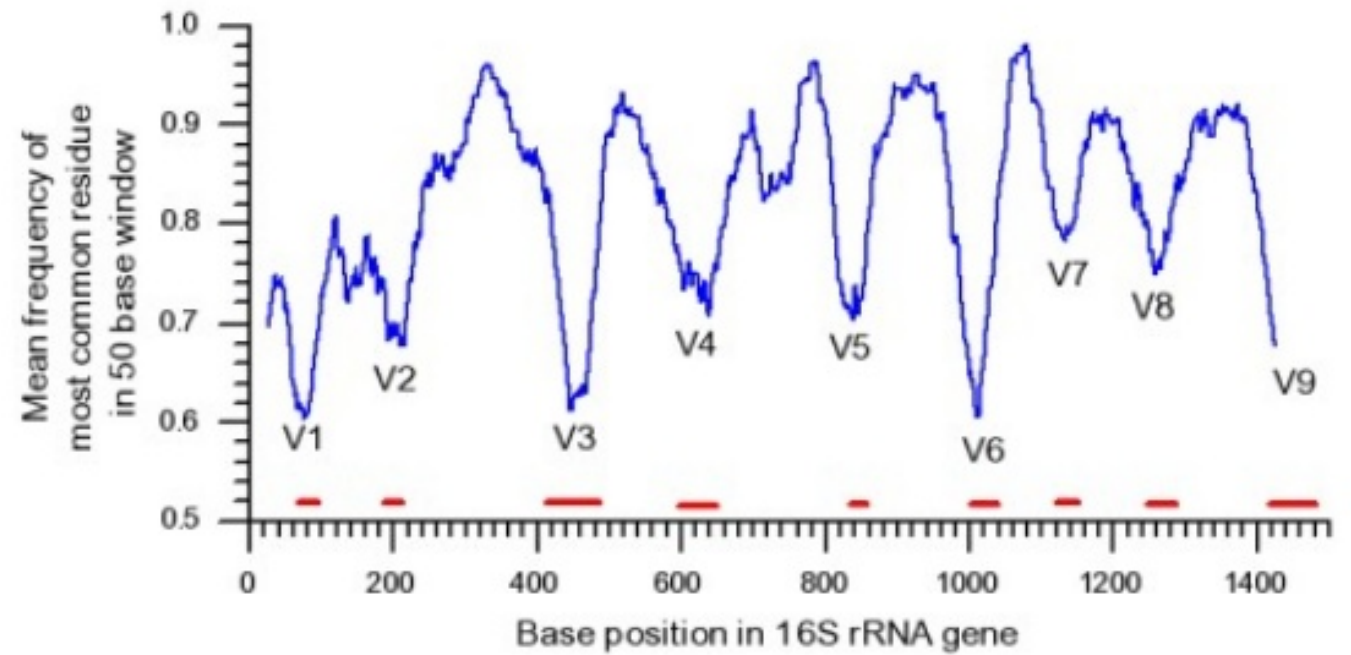
Handelsman et al. 1998

Only a tiny fraction bacteria and other microbes can be cultured.

16S rRNA as a Universal Barcode

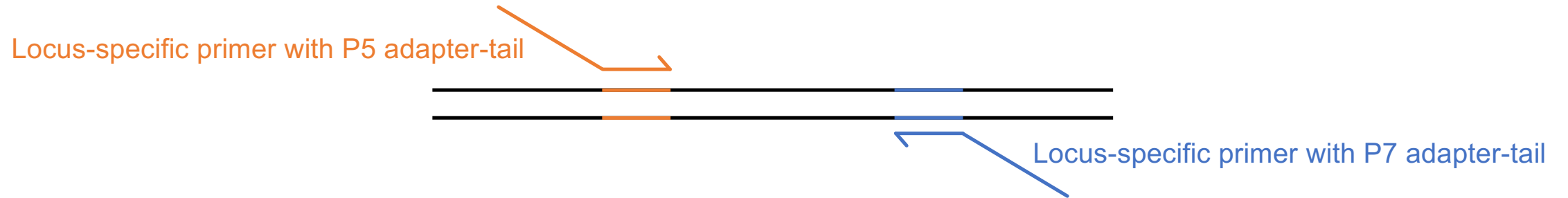


The bacterial ribosome (16S rRNA in green)



Illumina 16S Amplicon Sequencing

Incorporating Illumina adapters with PCR



5' - AATGATACGGCGACCACCGAGATCTACACATCGTACGTATGGTAATTGTGTGCCAGCMGCCGCGGTAA - 3'

5' - CAAGCAGAAGACGGCATAACGAGATAACTCTCGAGTCAGTCAGCCGGACTACHVGGGTWTCTAAT - 3'

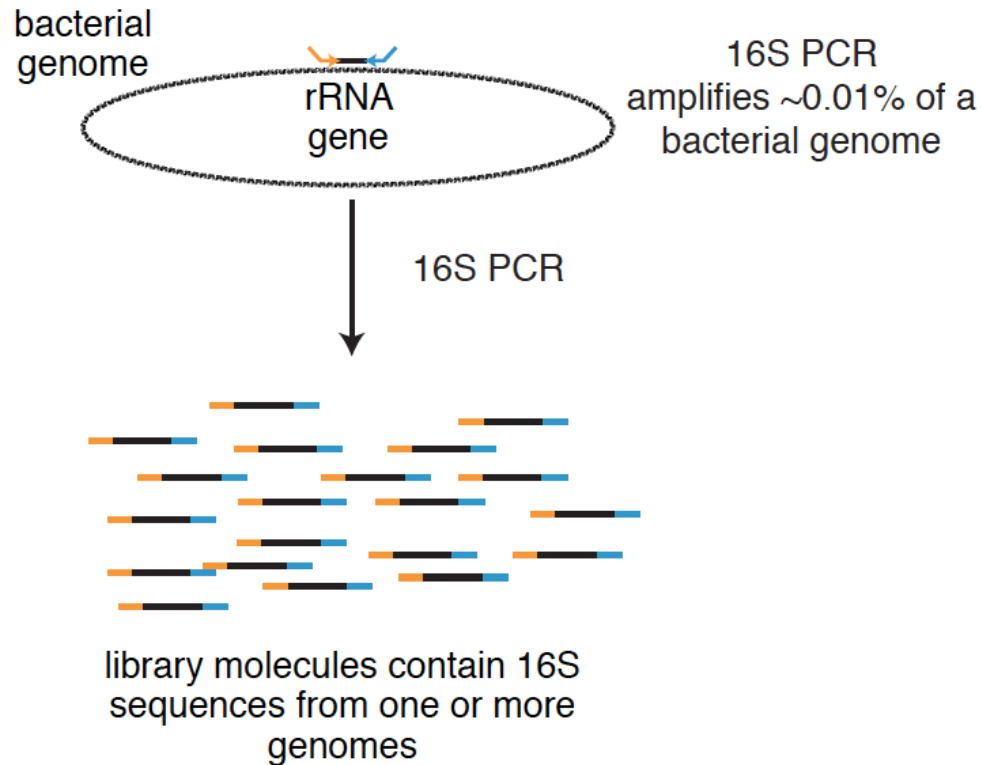
p5 and p7 flow-cell binding

i5 and i7
indexes

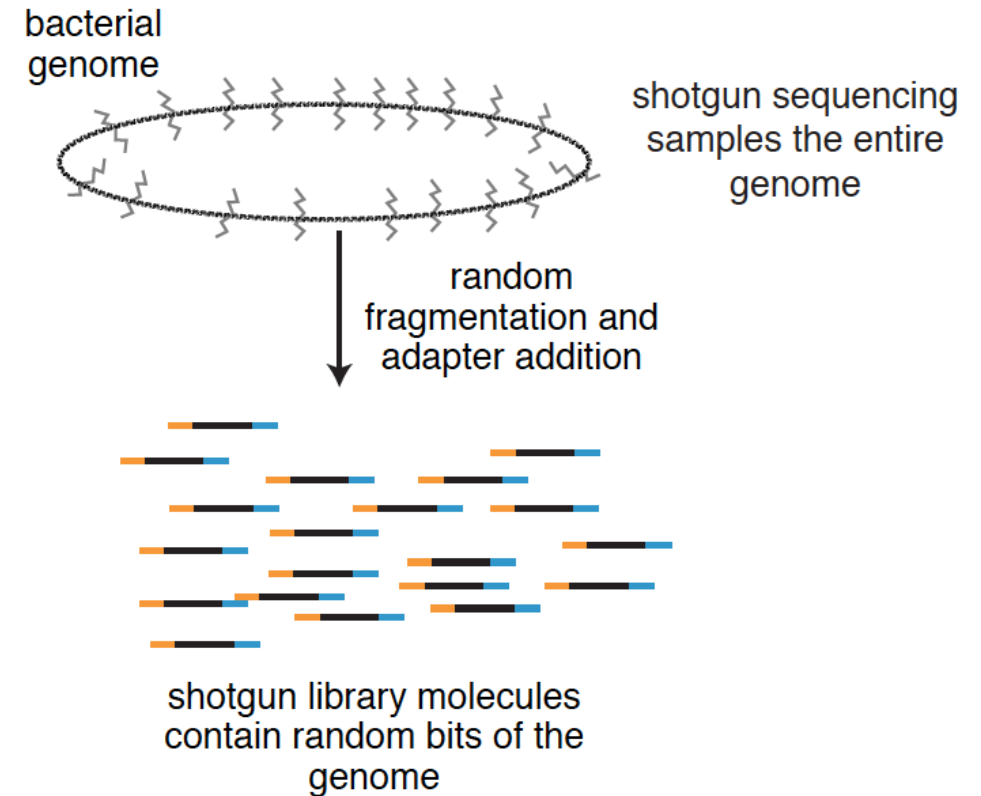
16S-Specific Primers

16S Sequencing vs. Shotgun Metagenomics

16S Amplicon Sequencing



Metagenome Sequencing



What are the pros and cons of 16S vs. metagenome sequencing?