

# Why ribosomal RNAs?

- Found among all living organisms (for 3.8 of the last 4.5 billion years). Integral part of protein synthesis machinery.
- Cell component analyses provide culture-independent means of investigating questions in microbial ecology (lack of morphology).
- rRNAs offer a type of sequence information that makes them excellent descriptors of an organism's evolutionary history (i.e., molecular clock-like).
- SSU rRNA genes contain regions ranging from highly conserved to highly variable, allowing for phylogenetic inference over long periods of time (clock ticks analogous to calendar and seconds).
- No detectable horizontal gene transfer, especially important for the prokaryotes.
- Large and growing database; RDP contains ~30,000 SSU rRNA sequences.