

# What aspect of *soil health* do we care about?



OKANAGAN

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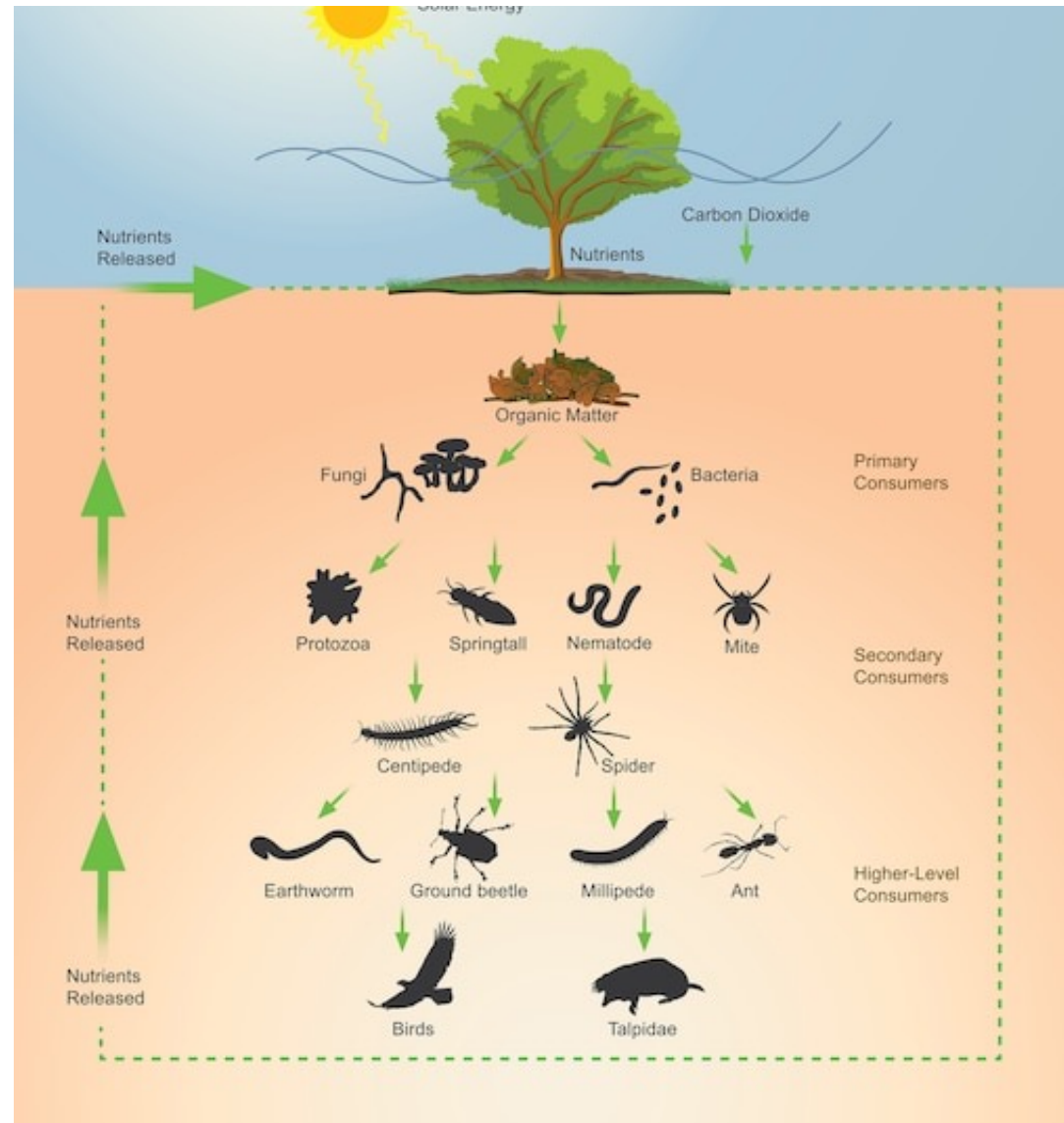
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Soil biodiversity  
= soil health



# What do we measure?

- Which group is most important?

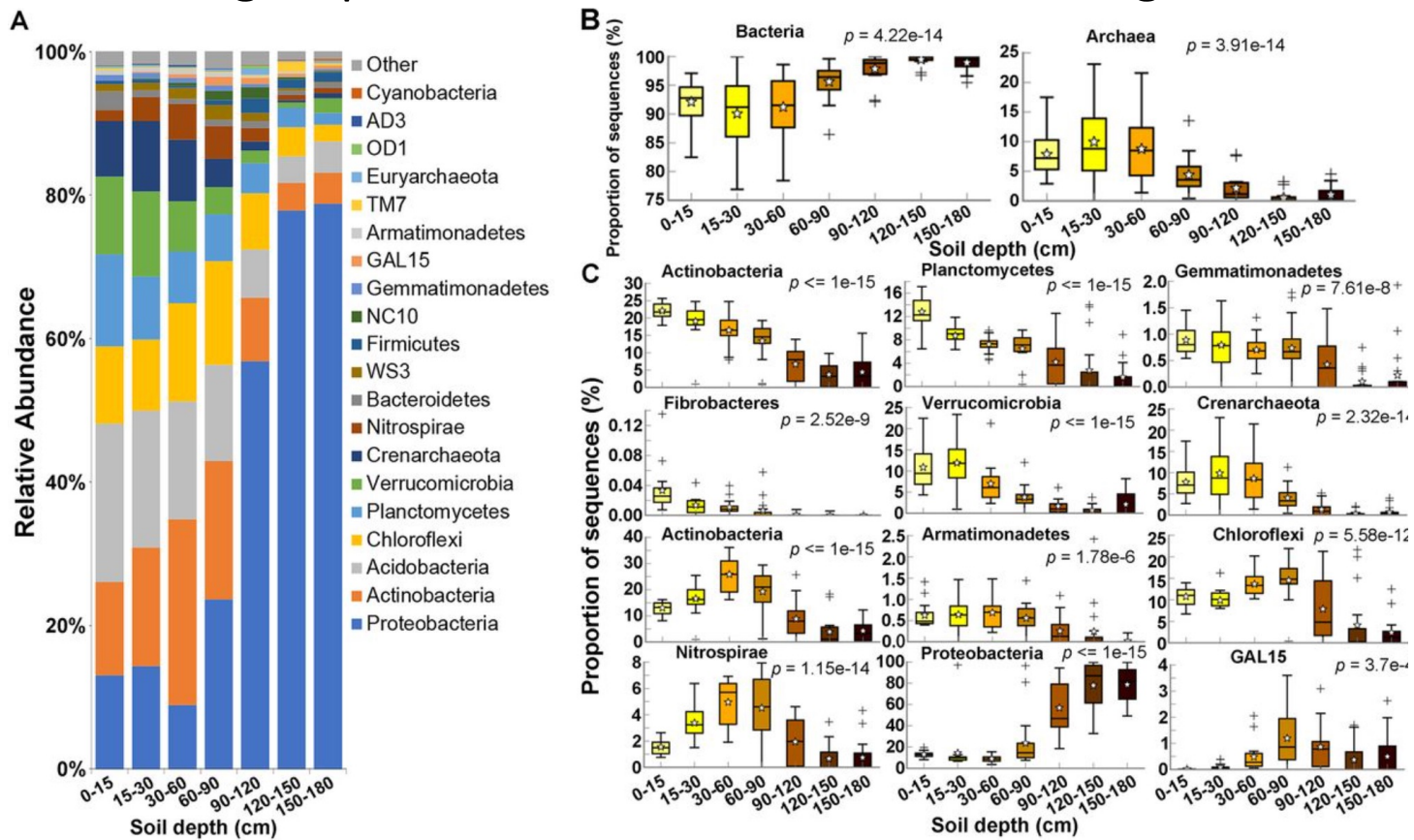


# How do we measure?

- 1) Who's there
- 2) What they're doing

# 1) Who's there?

- Sequence the groups of interest: bacteria and/or fungi



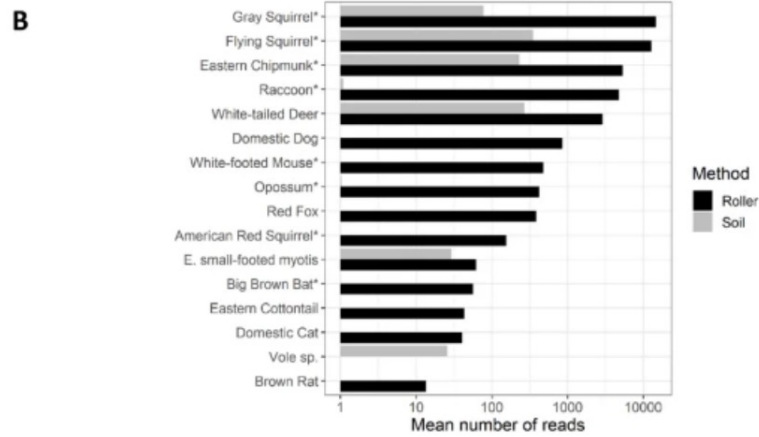
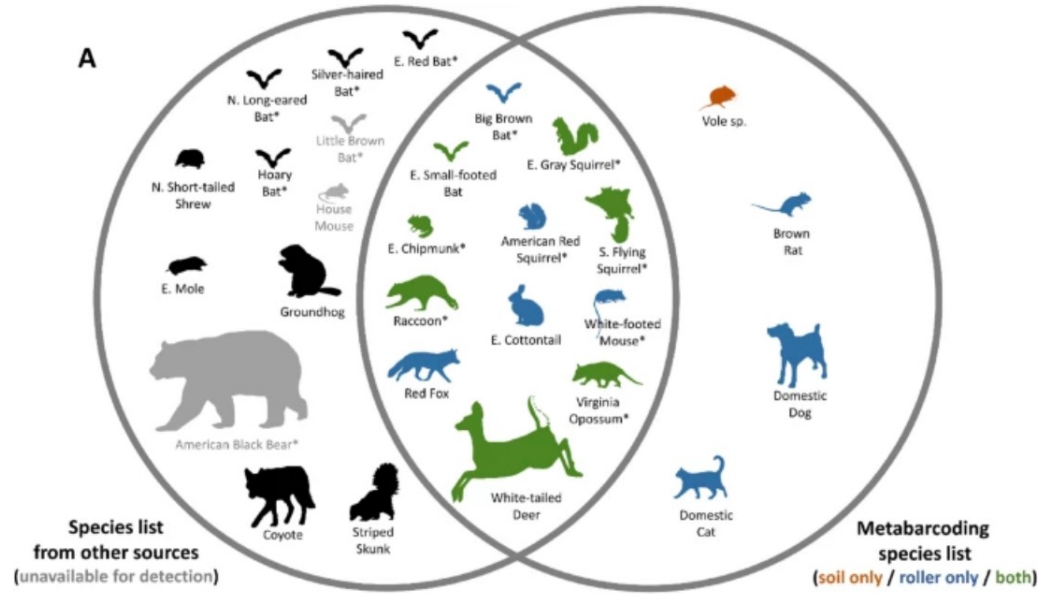
# Community Sequencing:

- Pros:
  - good resolution – down to species level
  - gives an indication of abundance
  - can see how spp change with different treatments
  
- Cons
  - Many taxa remain undescribed
  - Does not reflect functioning
  - Limited to the group of interest (ie bacteria, fungi)
  - Spatial heterogeneity and hyperdiversity means you have to sample intensively



1) Who  
eDNA: see

Figure 1



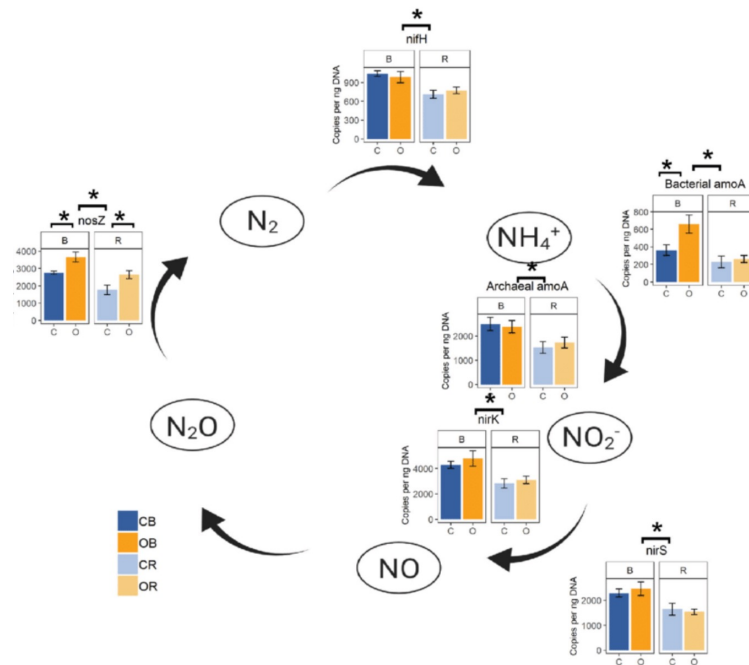
# eDNA

- Pros:
  - Targets entire soil community (with the right primers)
- Cons:
  - Groups are not equally represented
  - May over represent large and /or dead things
  - Do we care about all organisms?



## 2) What they're doing

- Quantitative PCR: Specific gene assays

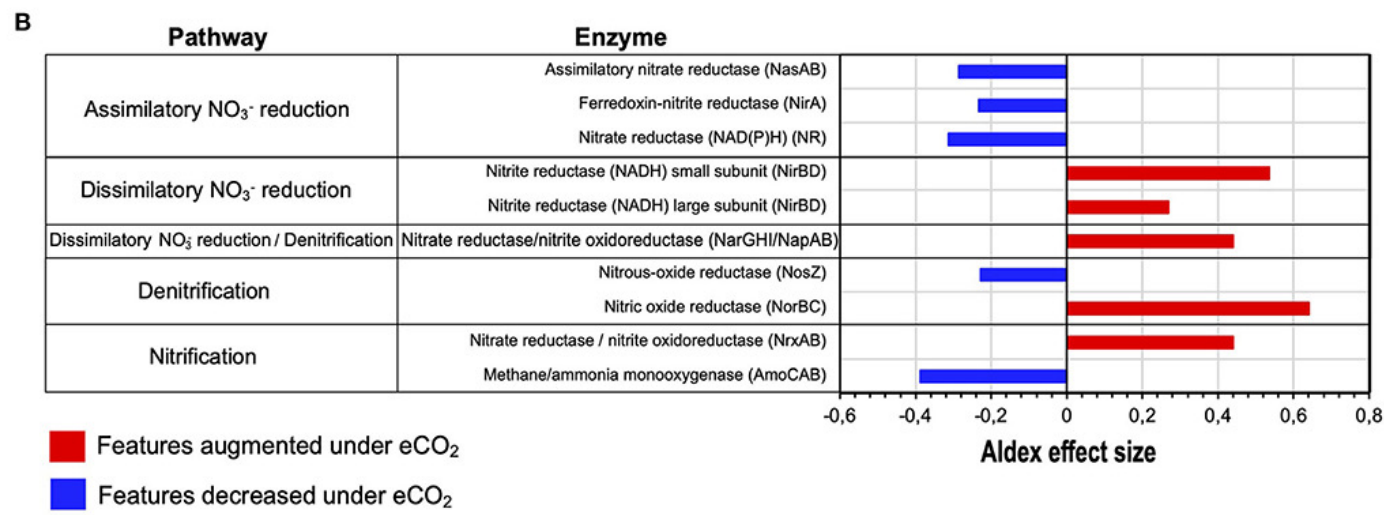
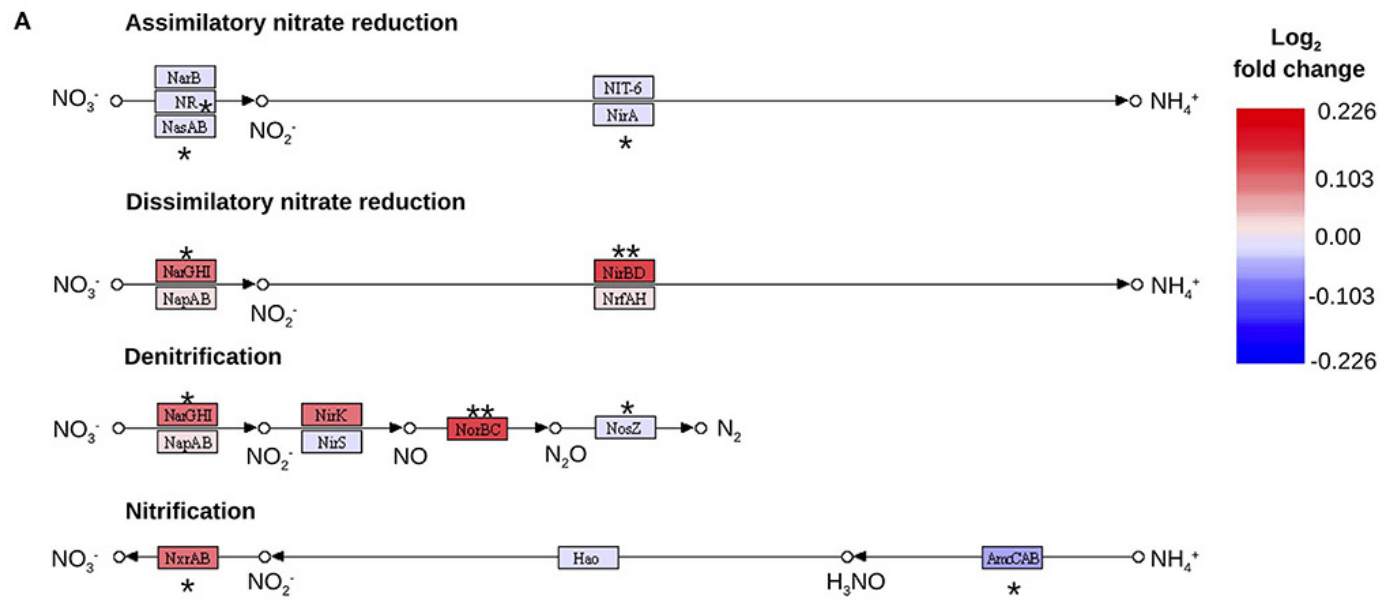


# Gene assays

- Pros
  - Relatively cheap
  - Gives high resolution information about specific genes
- Cons
  - Only tells us about the genes we're looking for

# 2) What they'

- Metatranscripto



# Metatranscriptomics

- Pro
  - Comprehensive information about bacterial/fungal functional capacity
  - Can identify specific steps that are underfunctioning in a nutrient pathway
- Con-
  - Expensive! Cannot sample as intensively
  - A lot of information, maybe more than we need

Which is most relevant for this study?

And what can we afford?