



Improving Bio restoration of Impacted Sites Through Microbial Profiling (Metagenomics)

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Perceptions

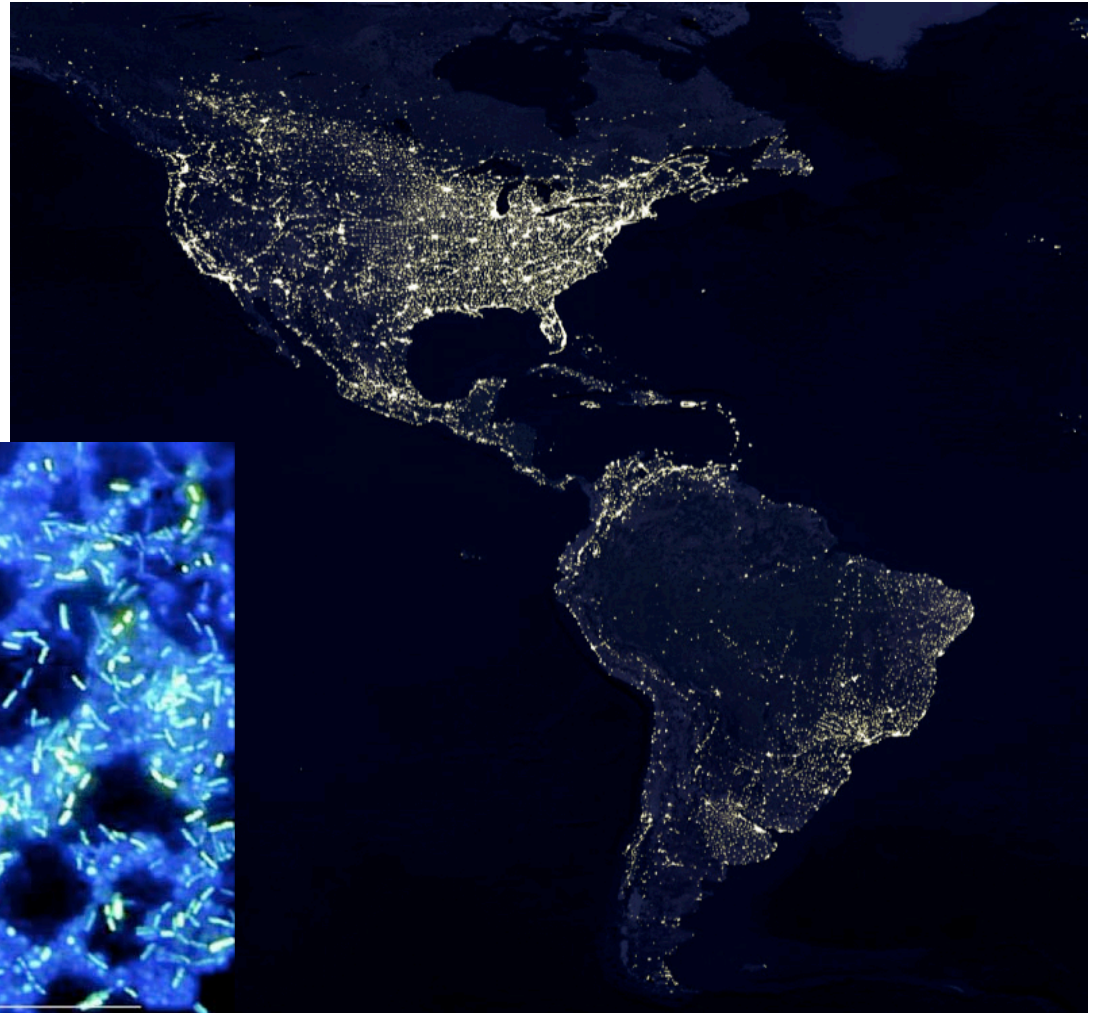
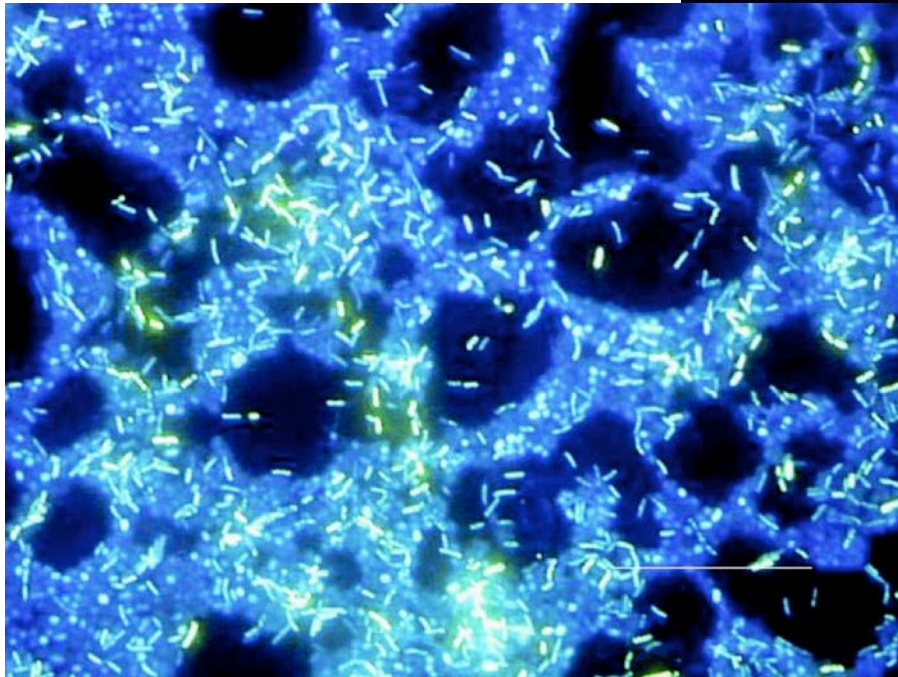
Google search for “microbiologist”



Community

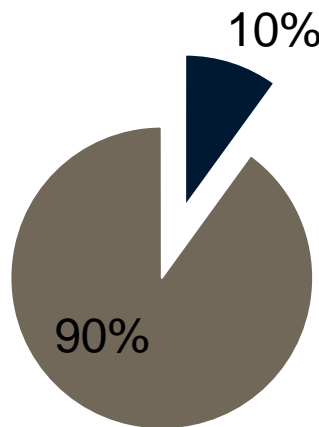


Relationships



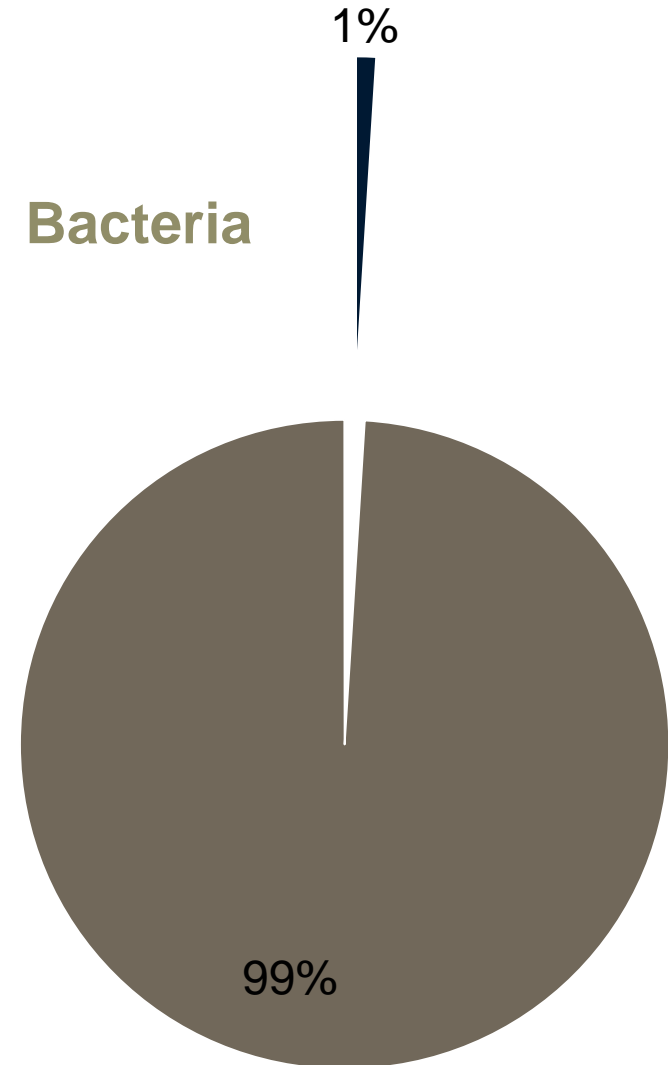
Perspective

Land animals



~10 Million

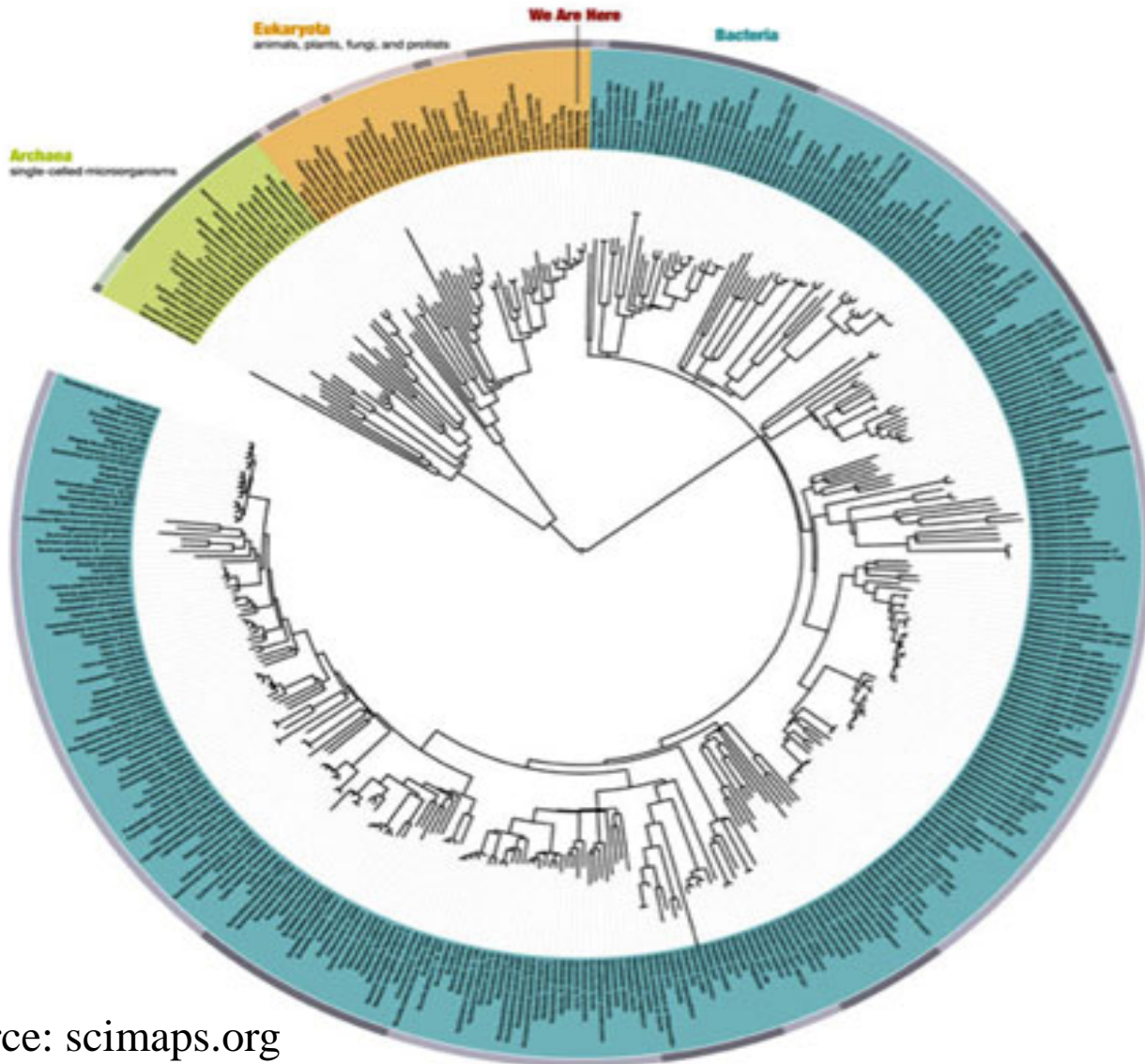
Bacteria



~100 Million

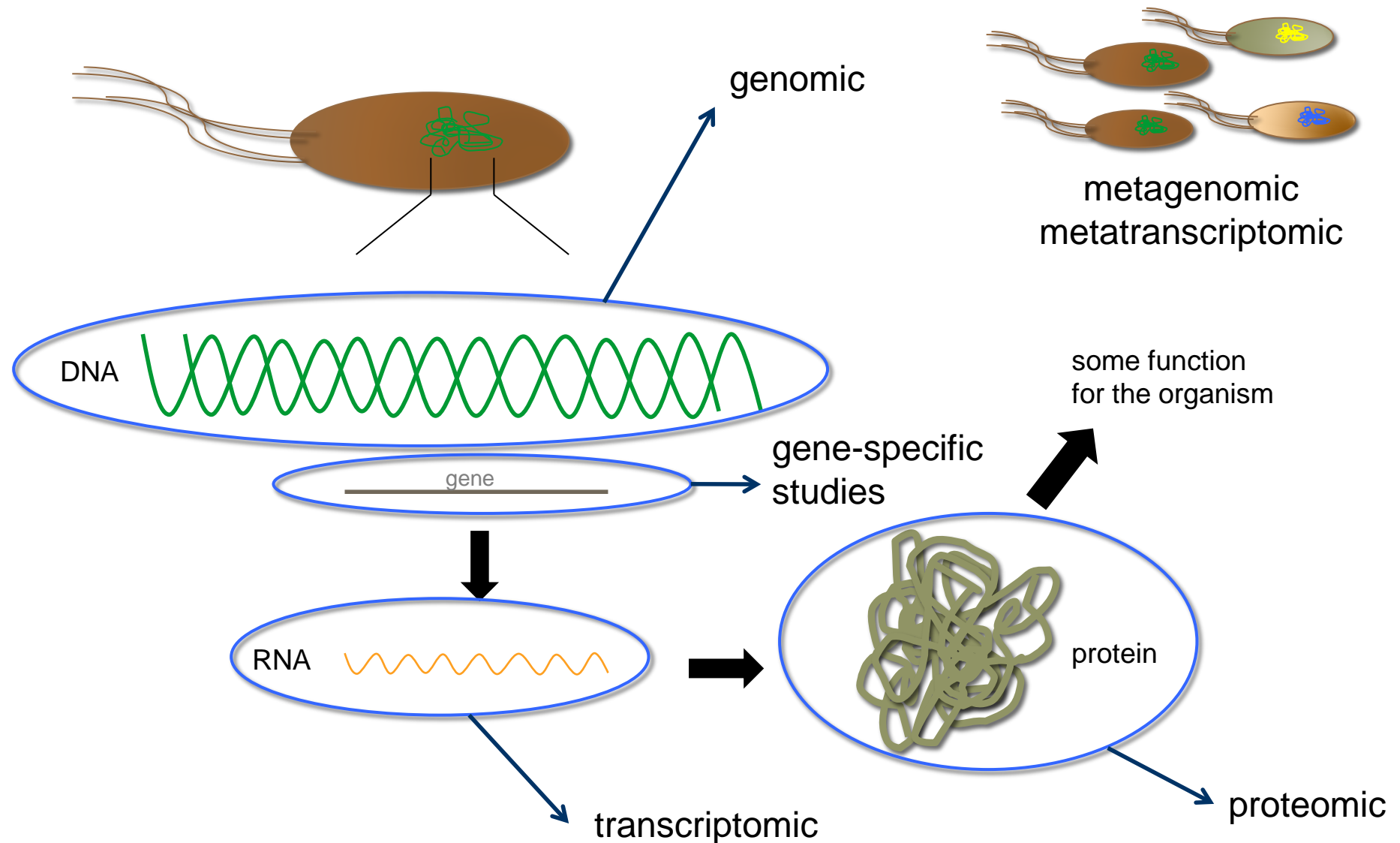
Challenge = opportunity

Tree of Life



Source: scimaps.org

Brief overview of "omics"





DNA

RNA

amplicon
sequencing

whole genome
shotgun sequencing

transcriptome
sequencing

**1) Who is there?
(targeted)**

**2) Who is there and
what might they
be able to do?**

**3) What are they
actually doing?**

1) Who is there?

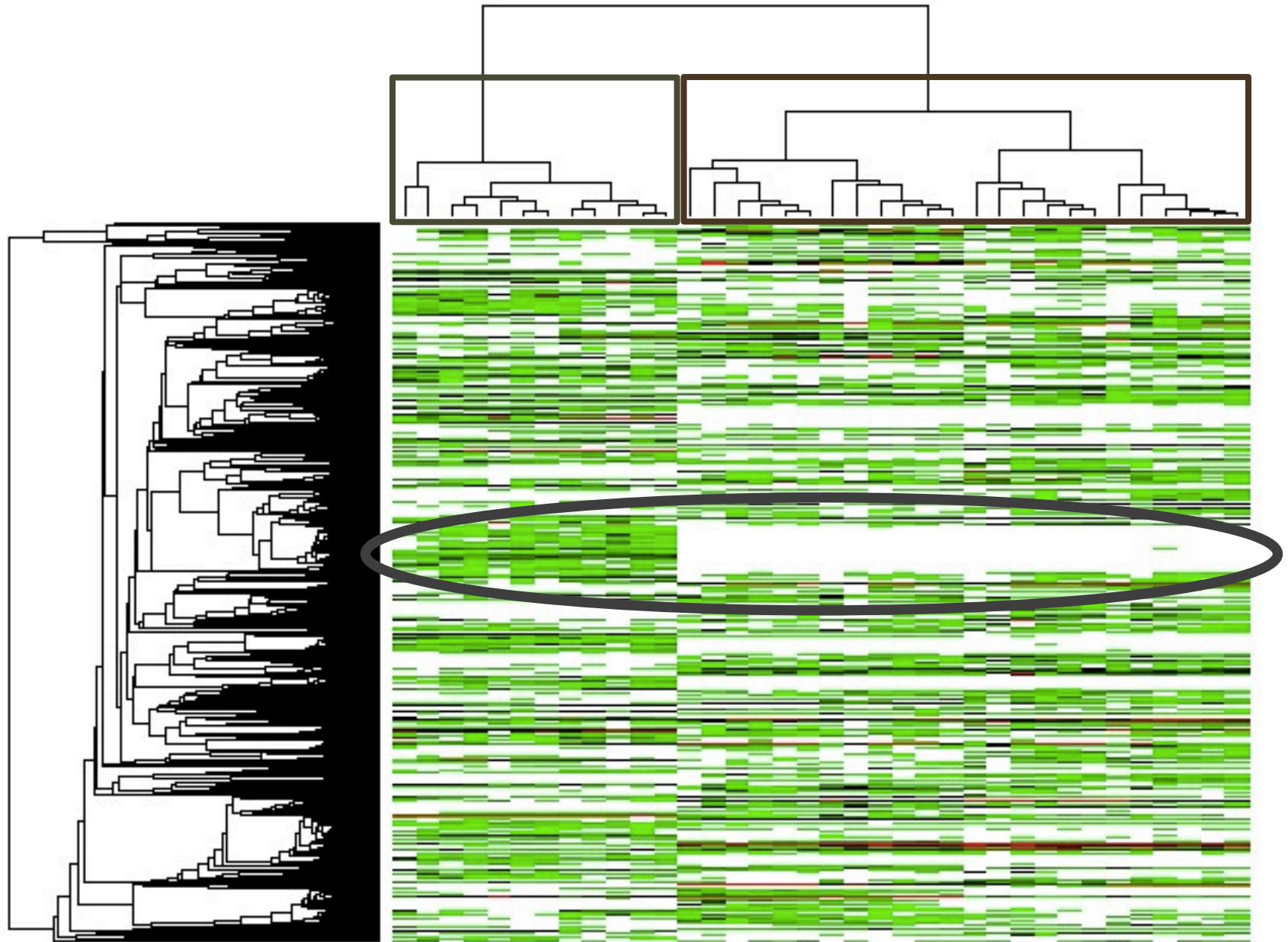
Amplicon Sequencing

- Targeted
- Bacteria
- Archaea
- Algae
- Fungi
- Invertebrates
- ...???

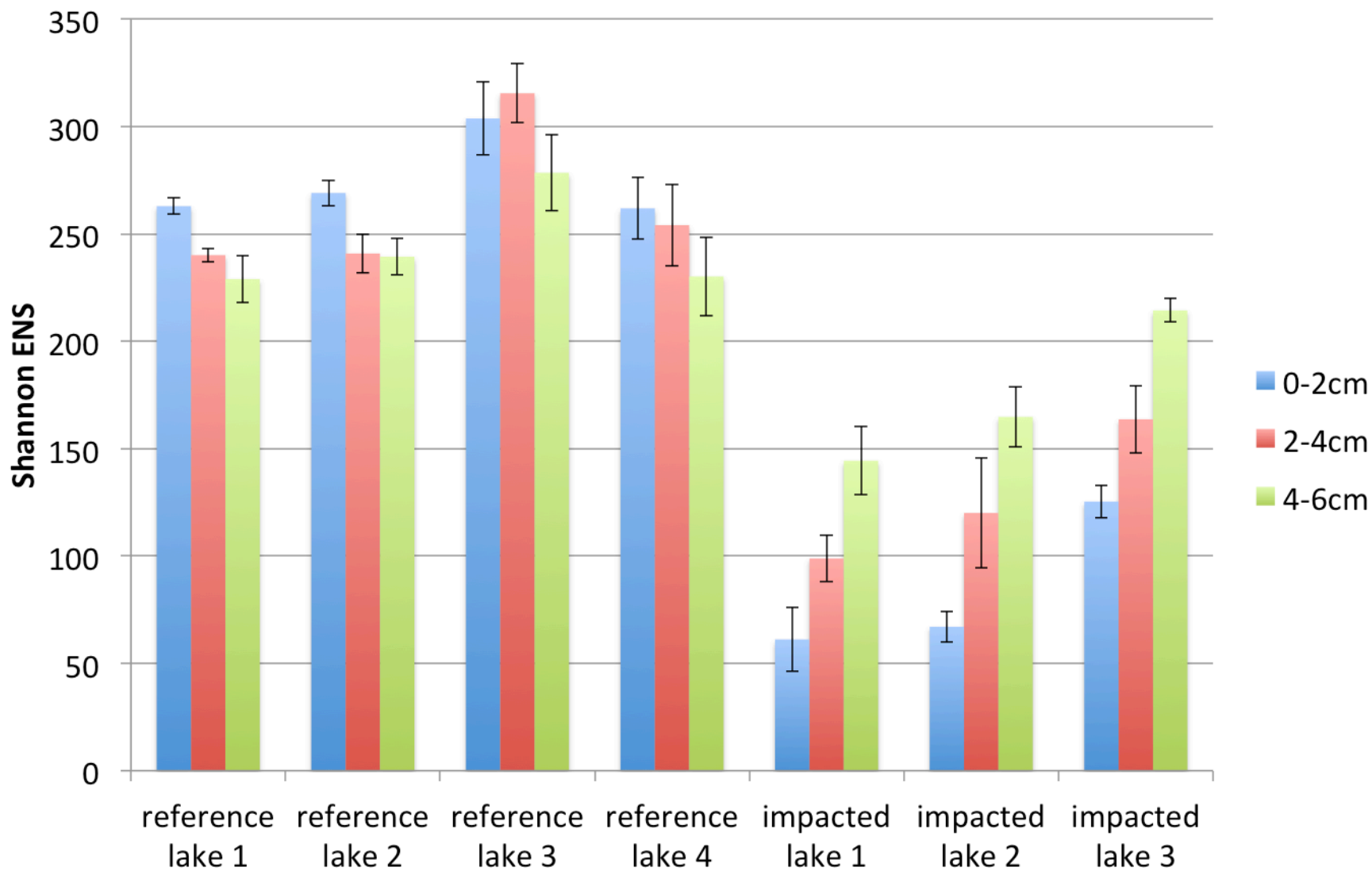


Methylamine-enriched community of Lake Washington sediment featuring *Methylothermobacter* cells.

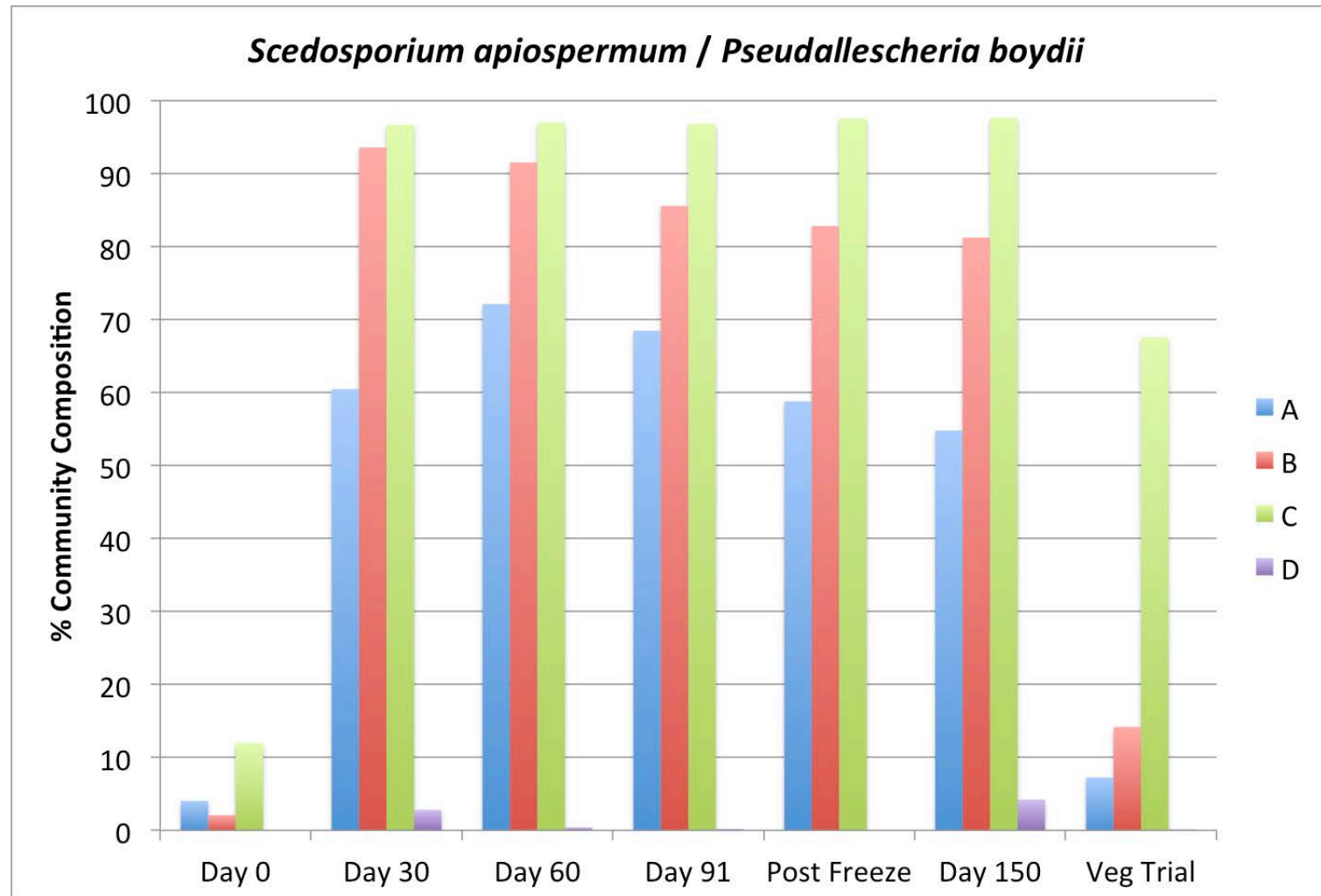
Photo © Dennis Kunkel Microscopy, Inc. (Color by Ekaterina Latypova)



Archaea Shannon Effective Number of Species



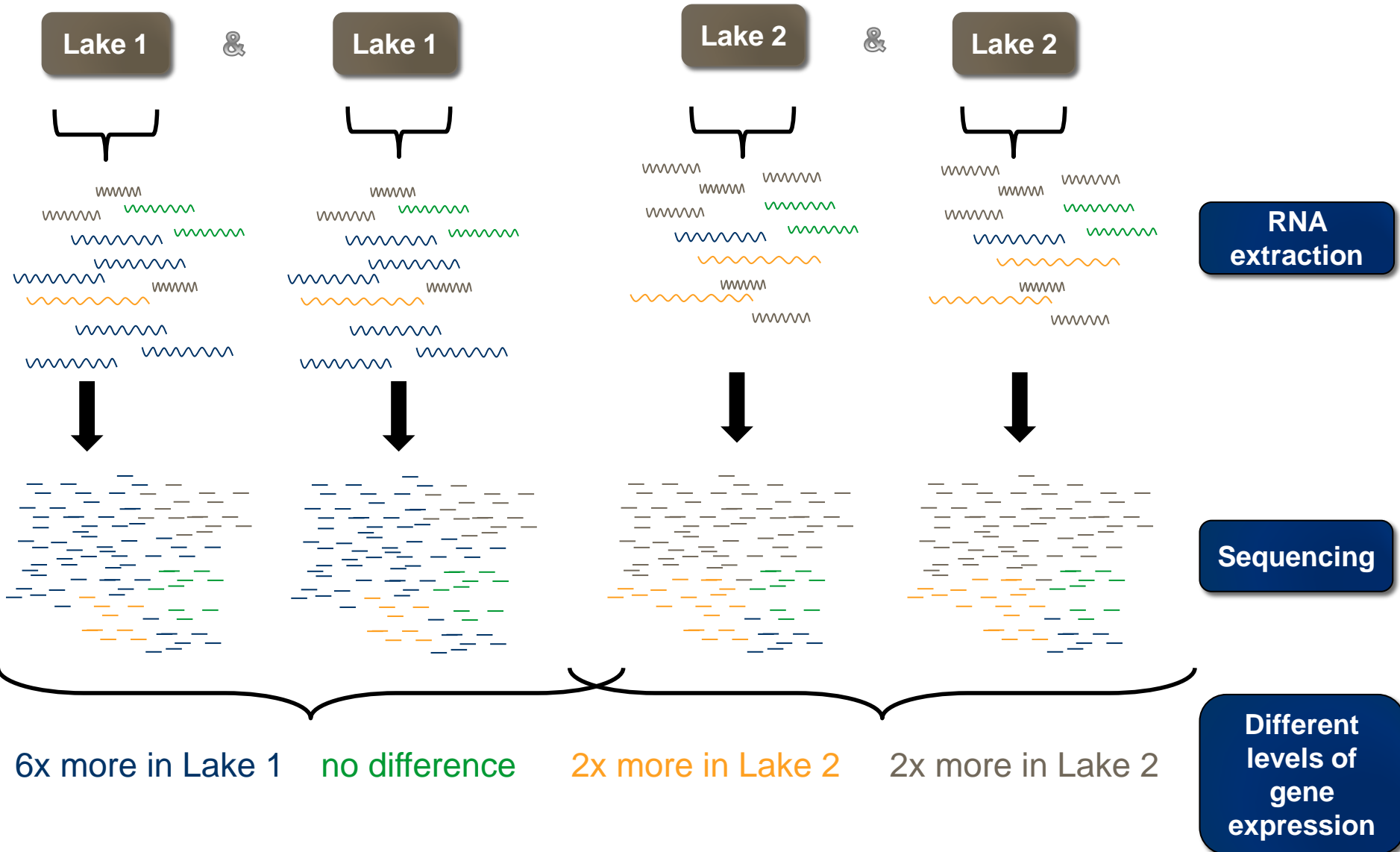
Key players

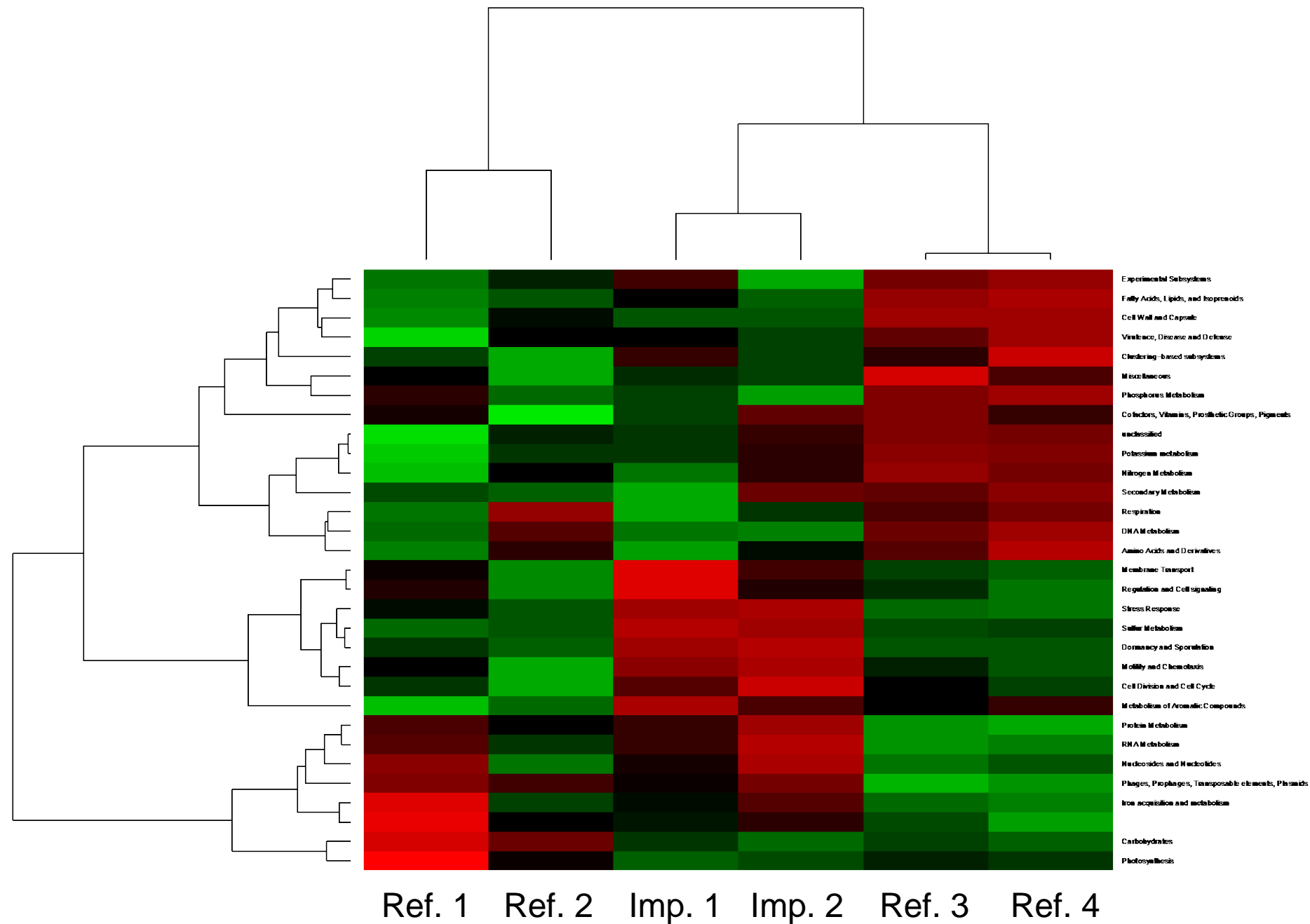


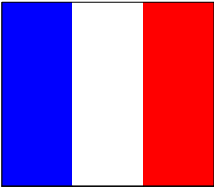
2) Who is there and what might they be able to do?



3) What are they actually doing?







1956

1729

1636

2213

1697

3

2049

1637

1795

2183

2491

Applications

- What microbes/pathways are available for use?
- How are microbes responding to treatment?
- How is contamination affecting basic trophic levels?
- What can be done to improve treatment?
- Why are sites/treatments responding differently?
- Diversity indices

Thank-You



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