Everything is NOT everywhere: network and trait-based approaches to microbial communities

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Drivers of community assembly

historical biogeography and large-scale environmental variation

Microbes

„Everything is everywhere, but, environment selects“

Baas Becking, 1934

Finlay, 2002, Science
Microbes

„Everything is everywhere, but, environment selects“
Baas Becking, 1934

„Some things are everywhere and some things are not. Sometimes the environment selects and sometimes it doesn’t“
van der Gast, 2013
1. large scale, modularity analysis

2. local scale, trait-based analysis
Modularity analysis

Modularity analysis

Modularity analysis

Modularity analysis

module 1

1
2

module 2

3
4

communities

species

DESMIDS

Trait analysis

**volume**

surface-to-volume ratio

*Micrasterias pinnatifida* $S:V = 0.71$

*Micrasterias rafslsii* $S:V = 0.08$
Modularity analysis

Module composition in regions

4 main modules
Modularity analysis
Processes structuring desmid communities

• large-scale environmental filtering

• biogeographical history

Everything is NOT everywhere, BOTH environment and biogeography matters
Assembly processes of desmids are similar to those driving macroorganism.