

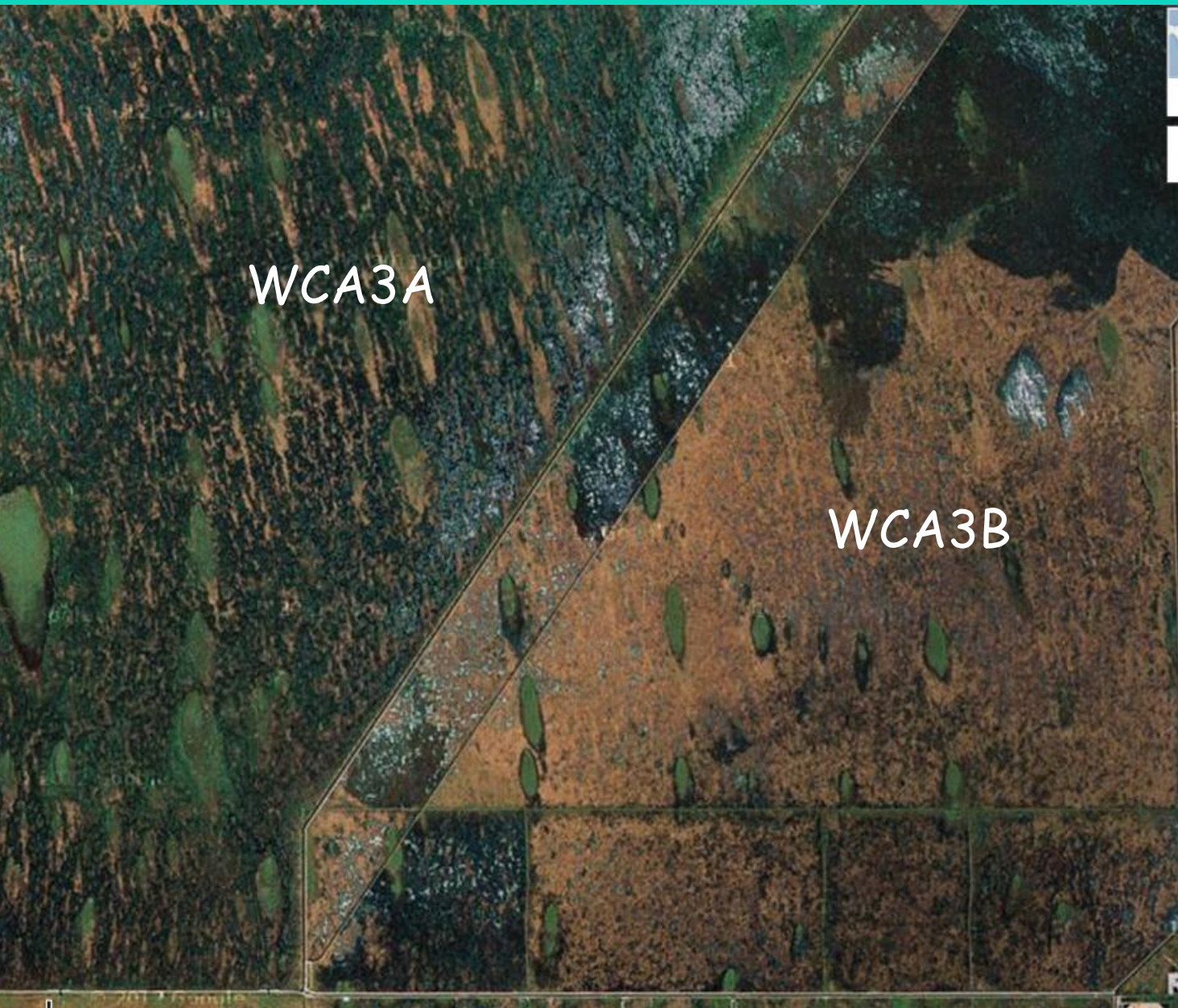
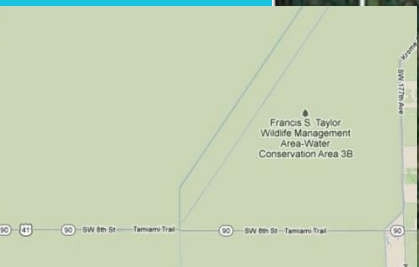
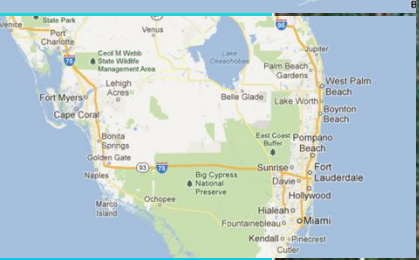
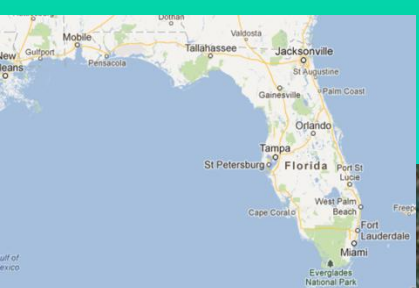
Cyanobacteria Species from Florida Everglades Floc

Barry H. Rosen, USGS, Orlando, FL

Jaroslava Komárková, Hydrobiological
Institute, Czech Republic

Jiří Komárek, Institute of Botany,
Czech Republic

Collection site



Collection site

Enlarged view of the DECOMP Physical Model footprint indicating the locations of the walkways and monitoring stations.

Abbreviations are as follows:

C = control

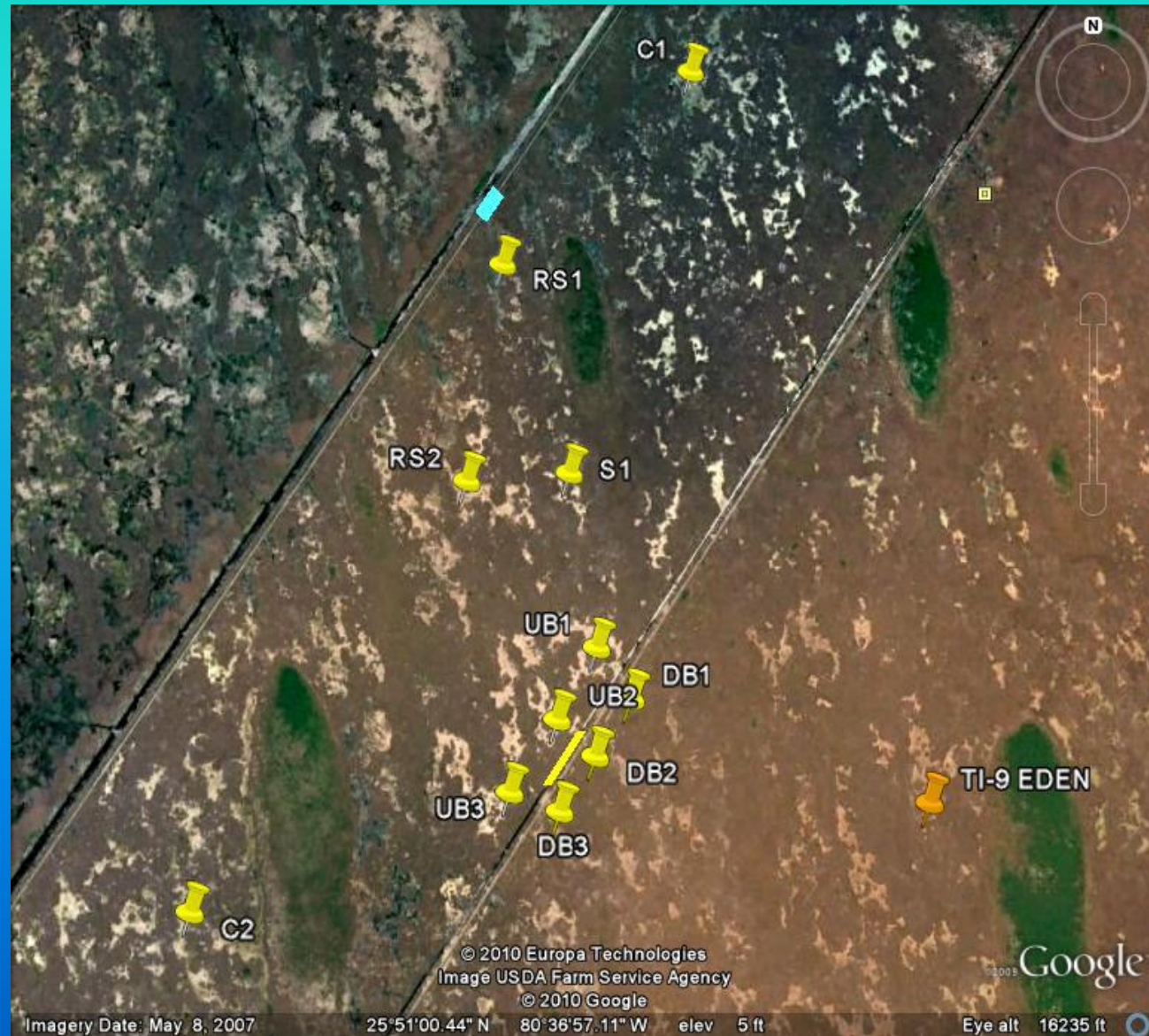
RS = ridge/slough

S = slough

UB = upstream backfill

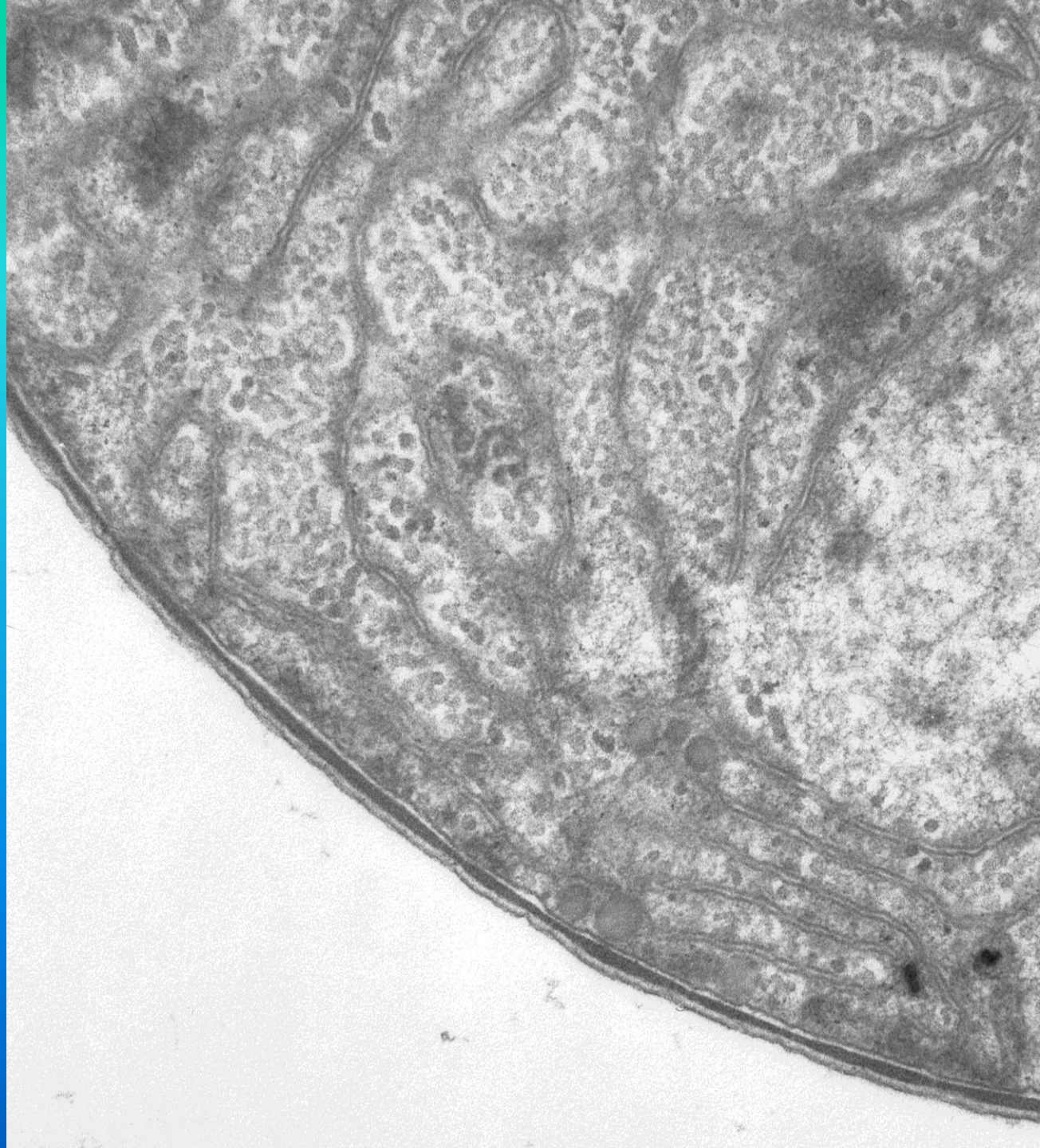
A project goal is to examine how particles are transported by flow.

Cyanobacteria are a component of the particles and flocculent material.



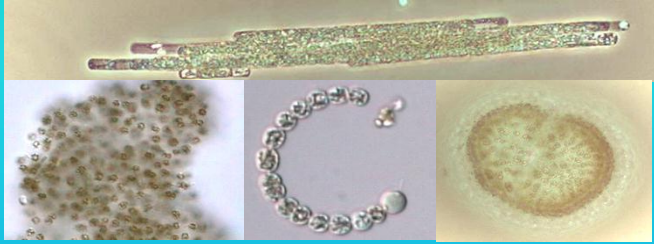
Cyanobacteria

- gram negative
- thylakoids



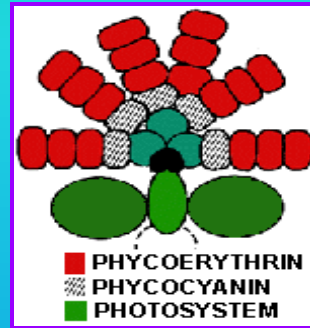
Ecological strategies for cyanobacteria

✓ Morphology

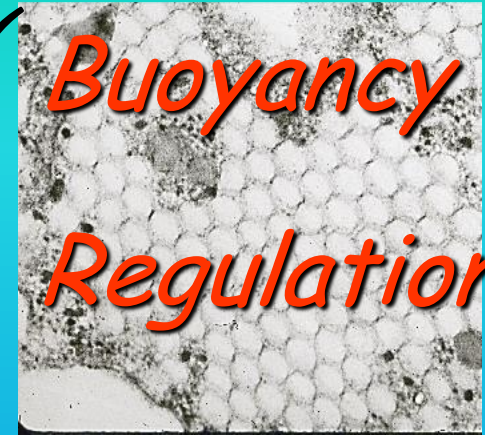


grazing, floating

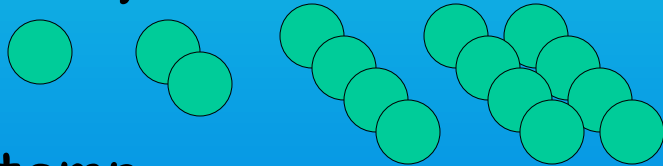
✓ Pigments



✓ Buoyancy Regulation

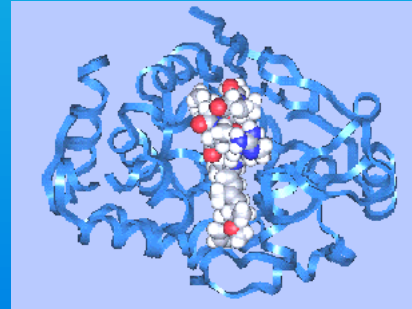


Rapid Growth



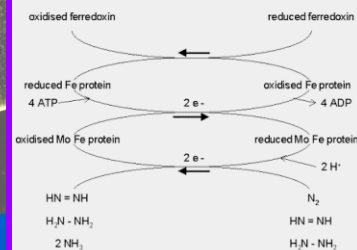
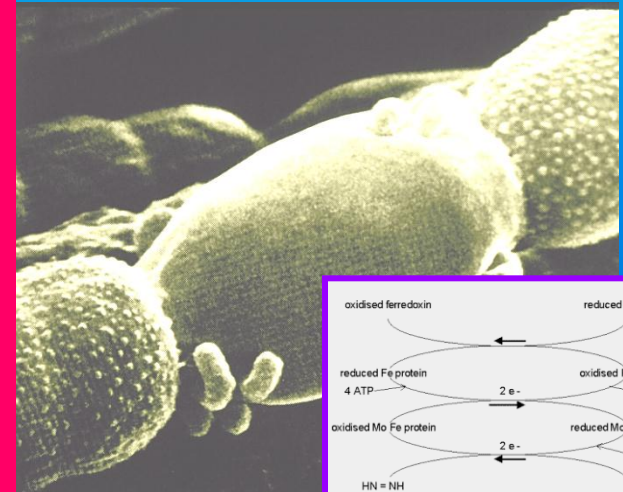
temp

✓ Toxicity



microcystin
LR complex

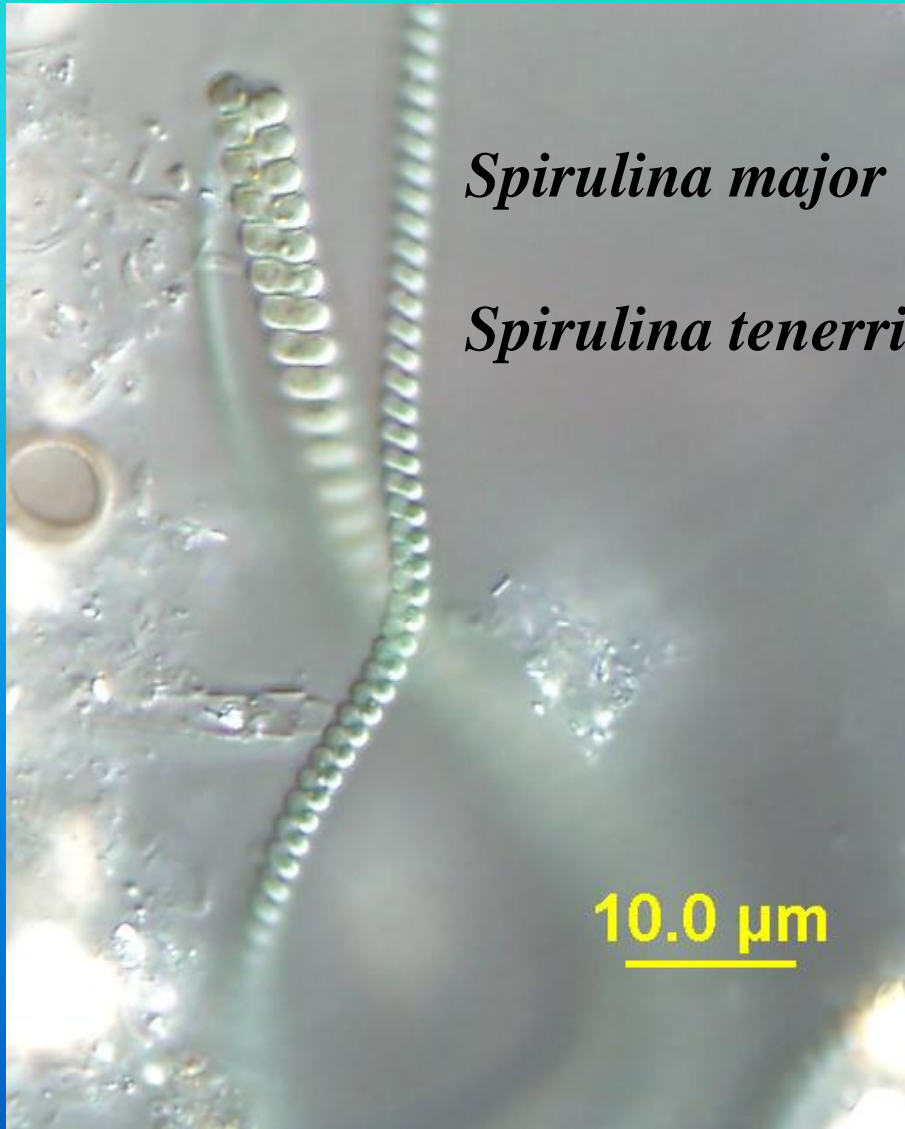
✓ Nitrogen Fixation



trace, P,
C, N,

Nutrient Storage

Ecological Strategies: ~~morphology for staying in the water column~~ - motility of benthic organisms



Ecological Strategies: motility of benthic organisms

Komvophoron rostratum

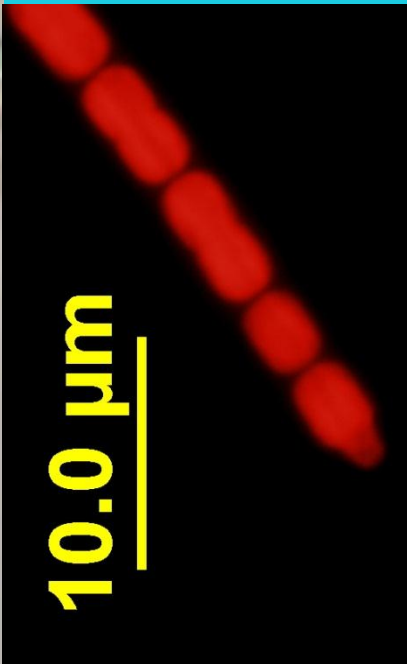


Komvophoron sp.



Ecological Strategies: motility of benthic organisms

Komvophoron apiculatum

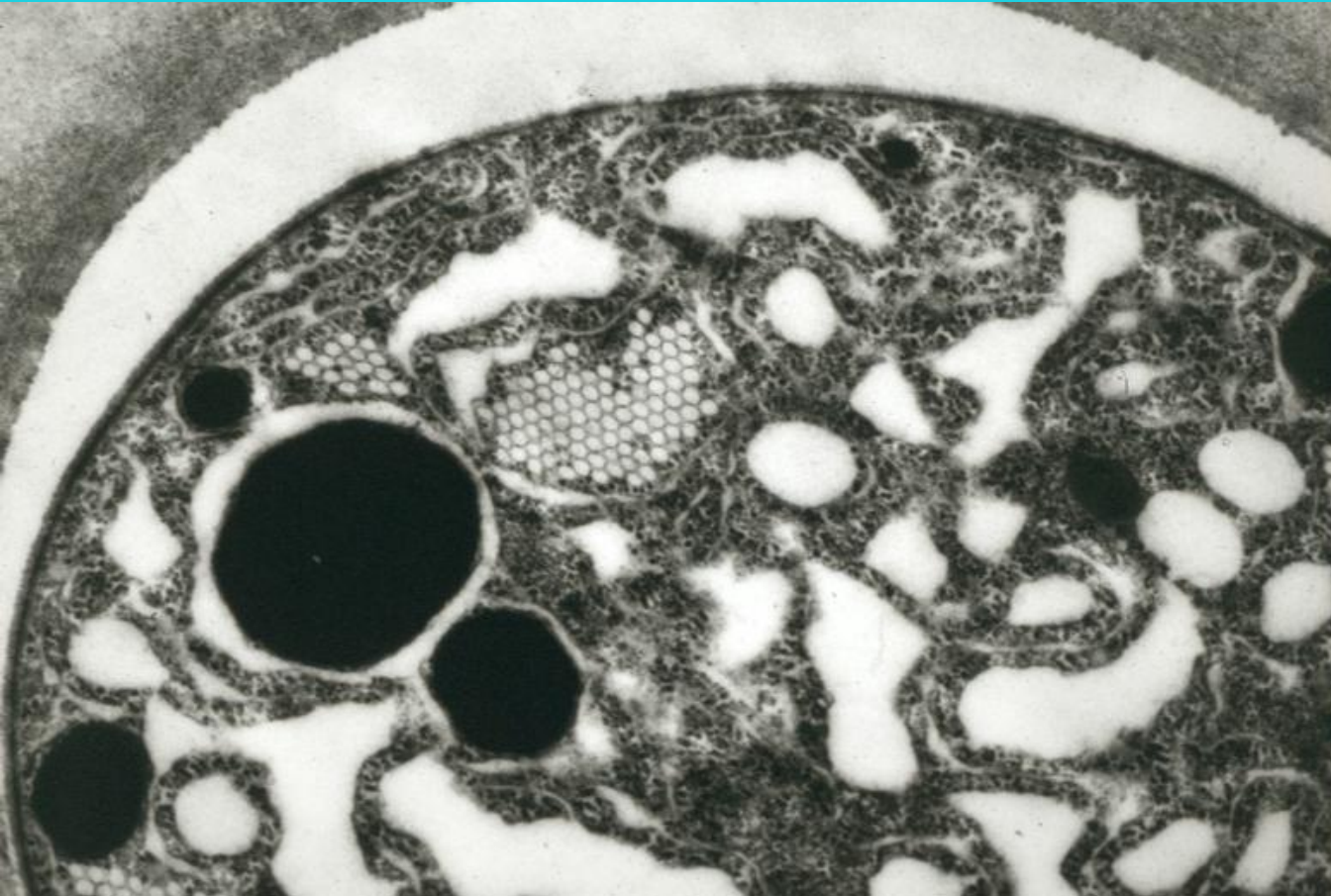


Phormidium articulatum



Ecological Strategies: Buoyancy Regulation

Gas Vesicles: *Buoyancy regulation and vertical migration*



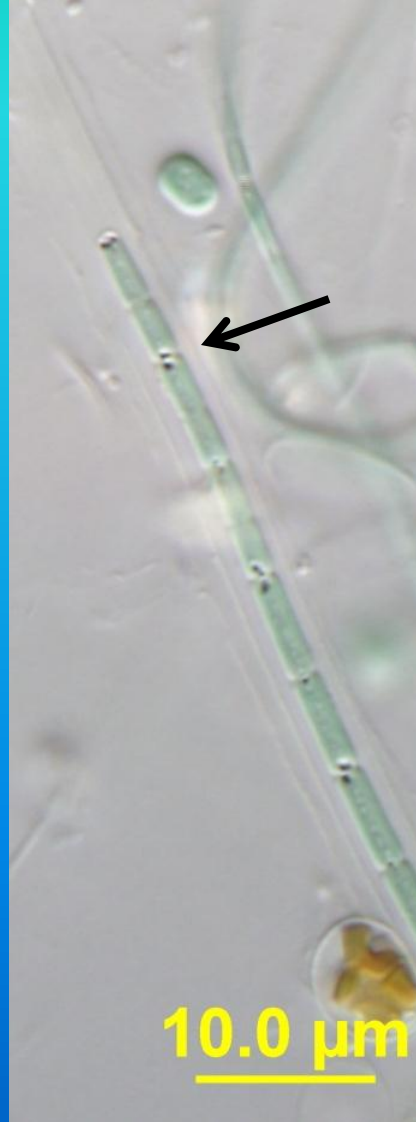
Low light 

$(C_6H_{12}O_6)_n$ 

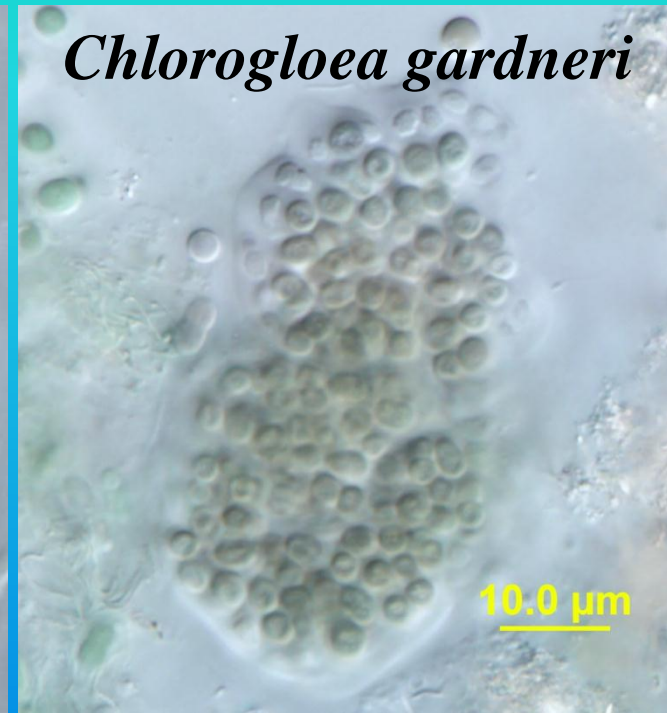
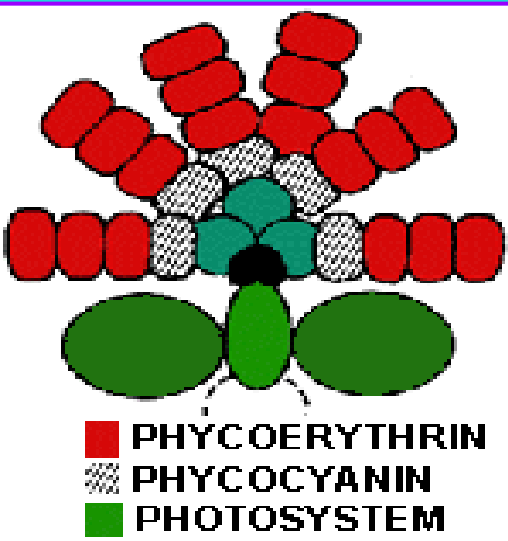
~~Nutrients scavenged whilst near lake sediments or thermocline~~

Ecological Strategies: Buoyancy Regulation

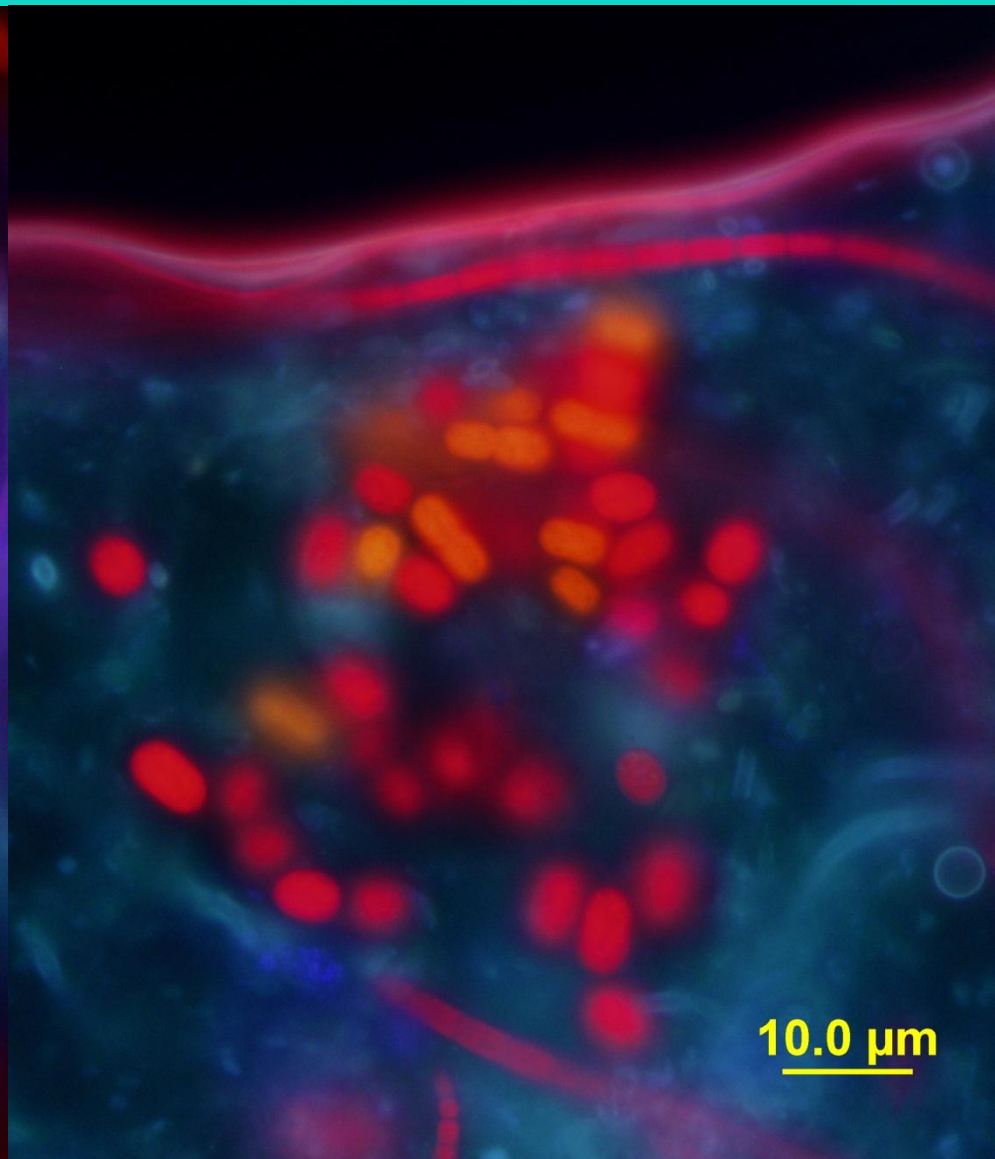
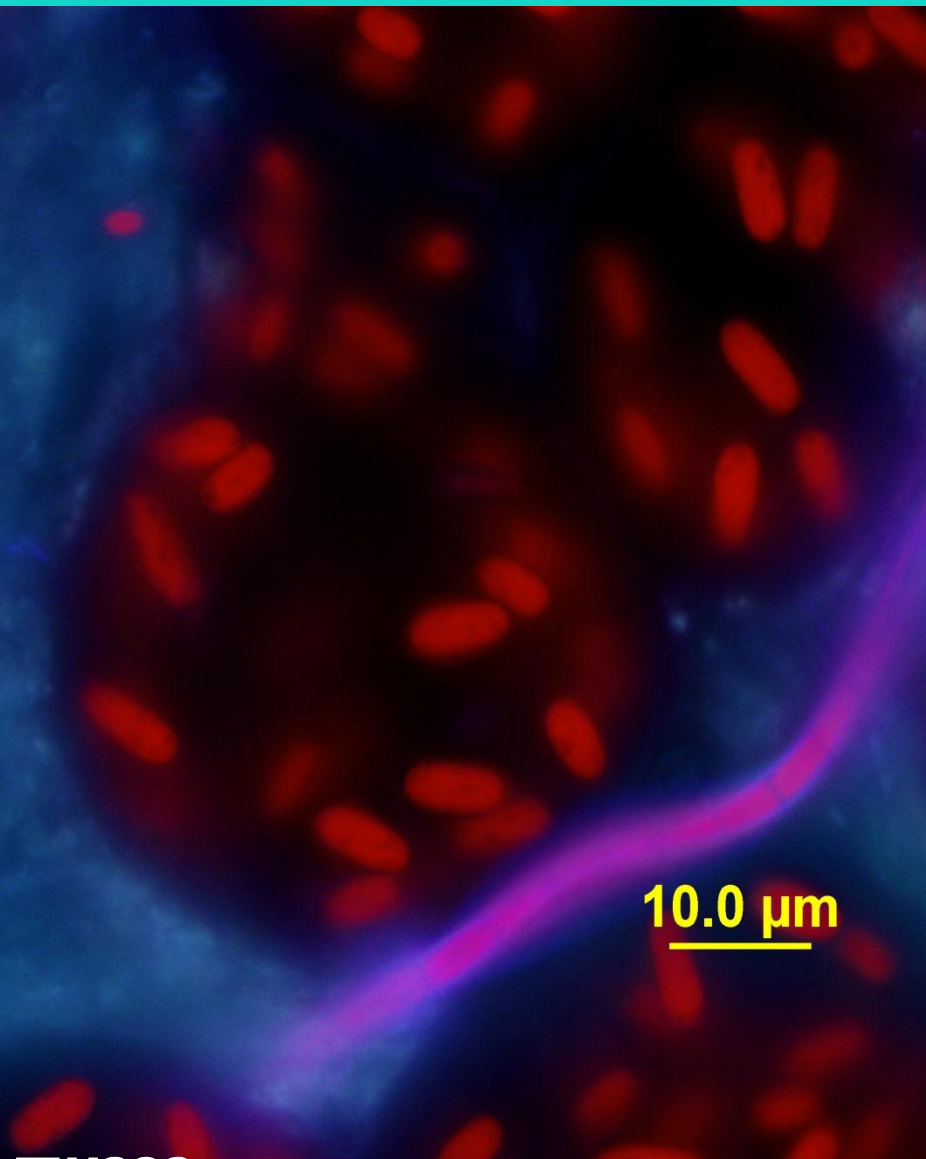
Schizothrix sp. with aerotopes



Ecological Strategies: complimentary pigments for maximizing photosynthesis



Ecological Strategies: complimentary pigments

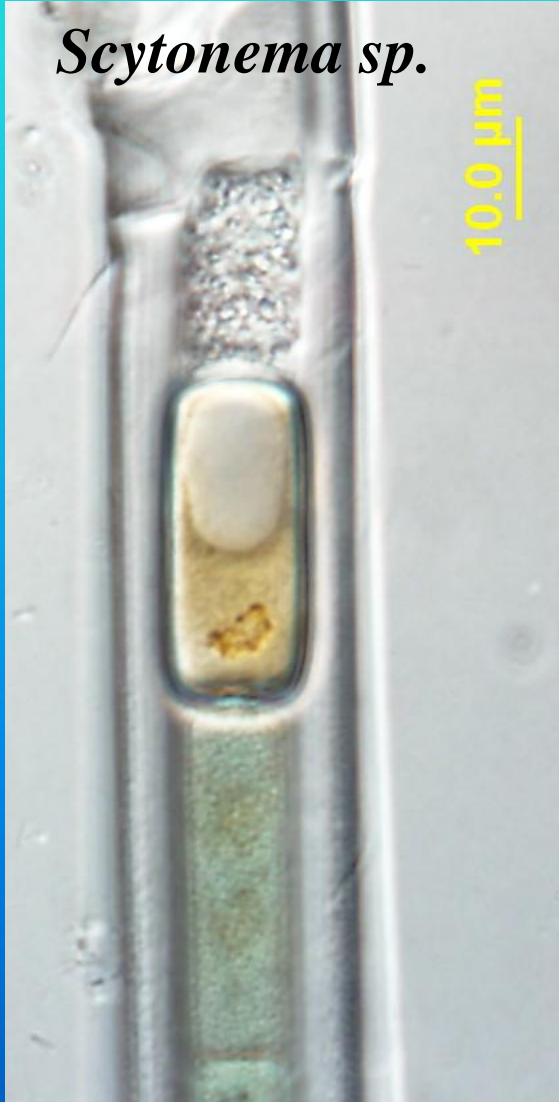


Ecological Strategies: make your own nitrogen source

Cylindrospermum sp.

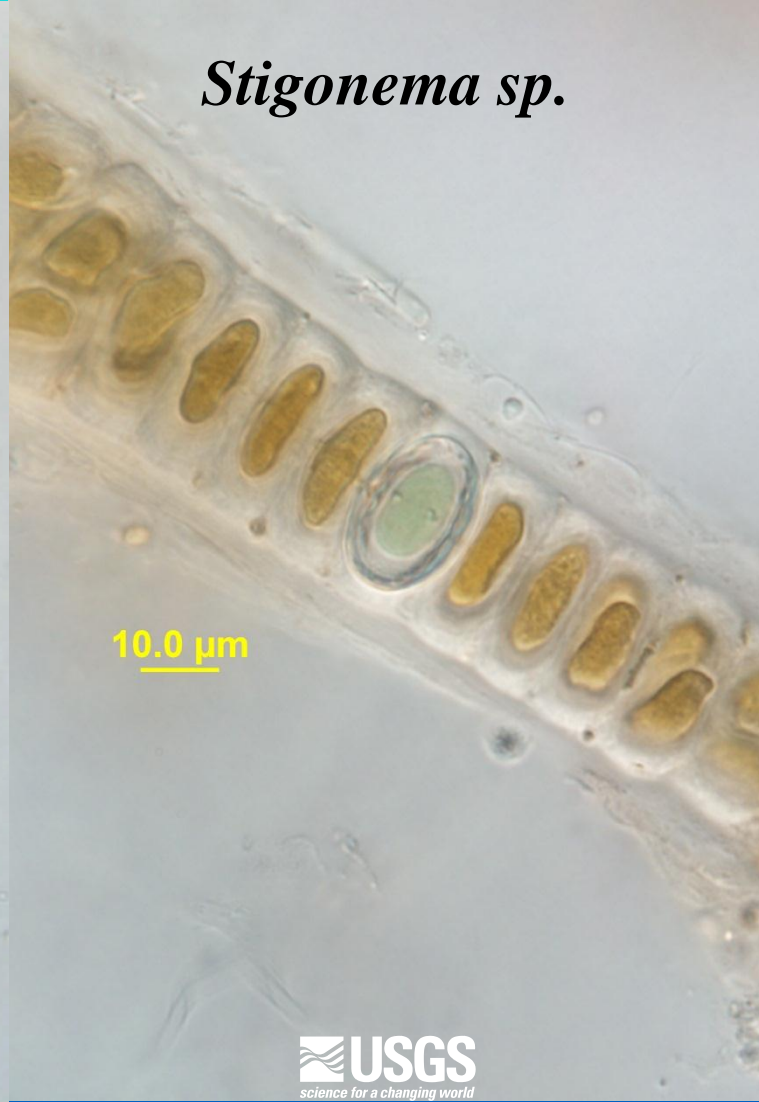
Scytonema sp.

10.0 μm



Stigonema sp.

10.0 μm



10.0 μm



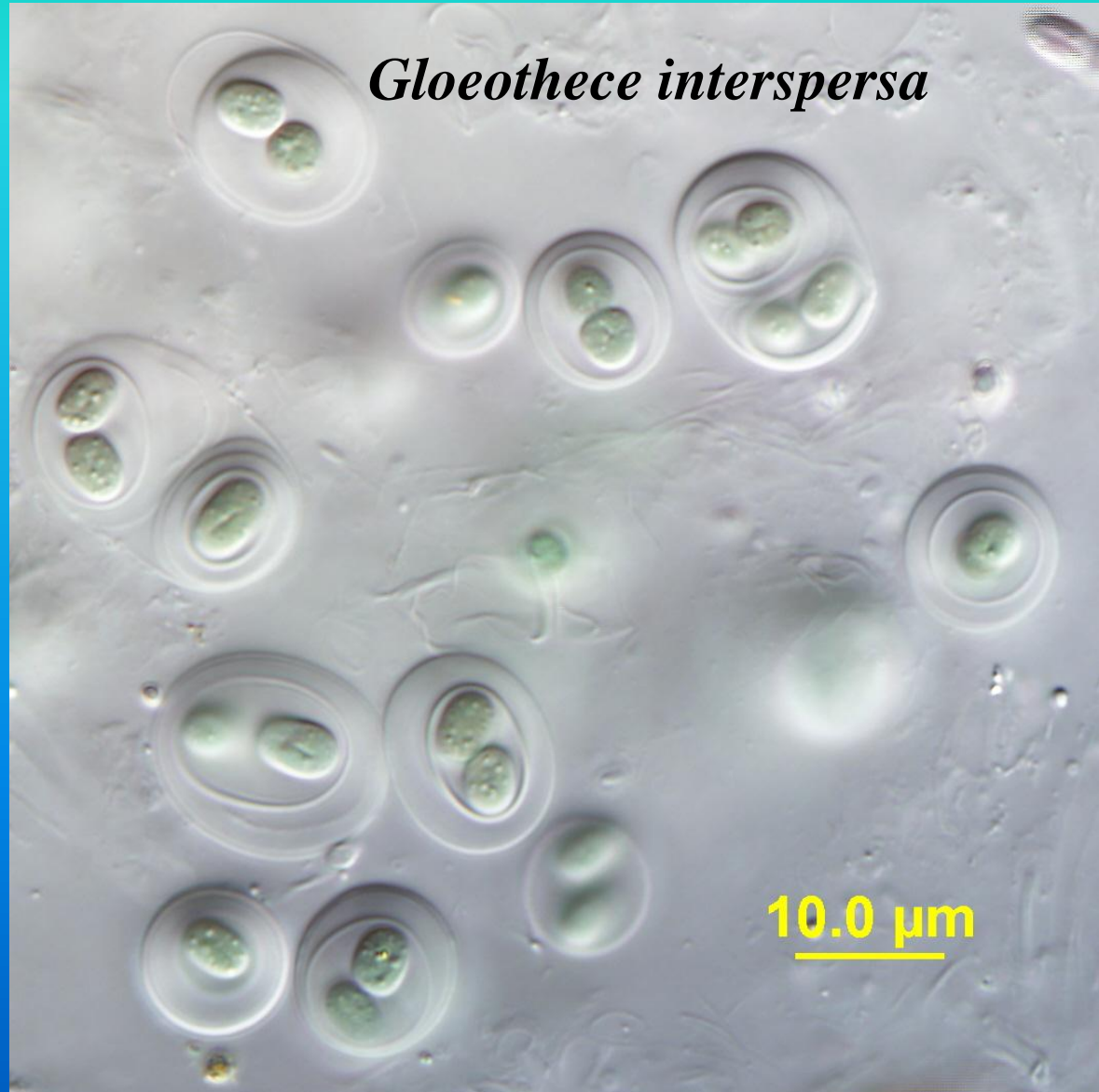
Ecological Strategies: desiccation tolerant (polysaccharide sheath)

Chroococcales



Chroococcus sp.

20.0 μm



Gloeotheca interspersa

10.0 μm

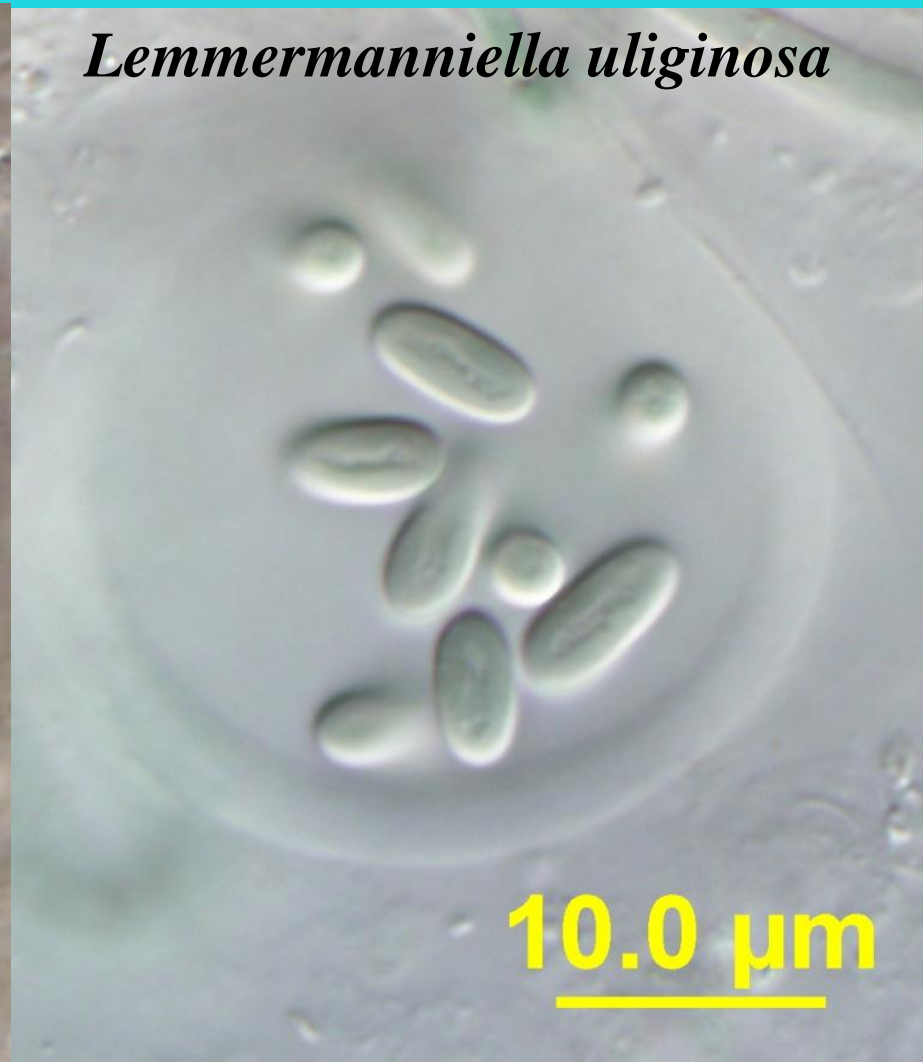
Ecological Strategies: desiccation tolerant

Chroococcales

Gloeothece opalothecata



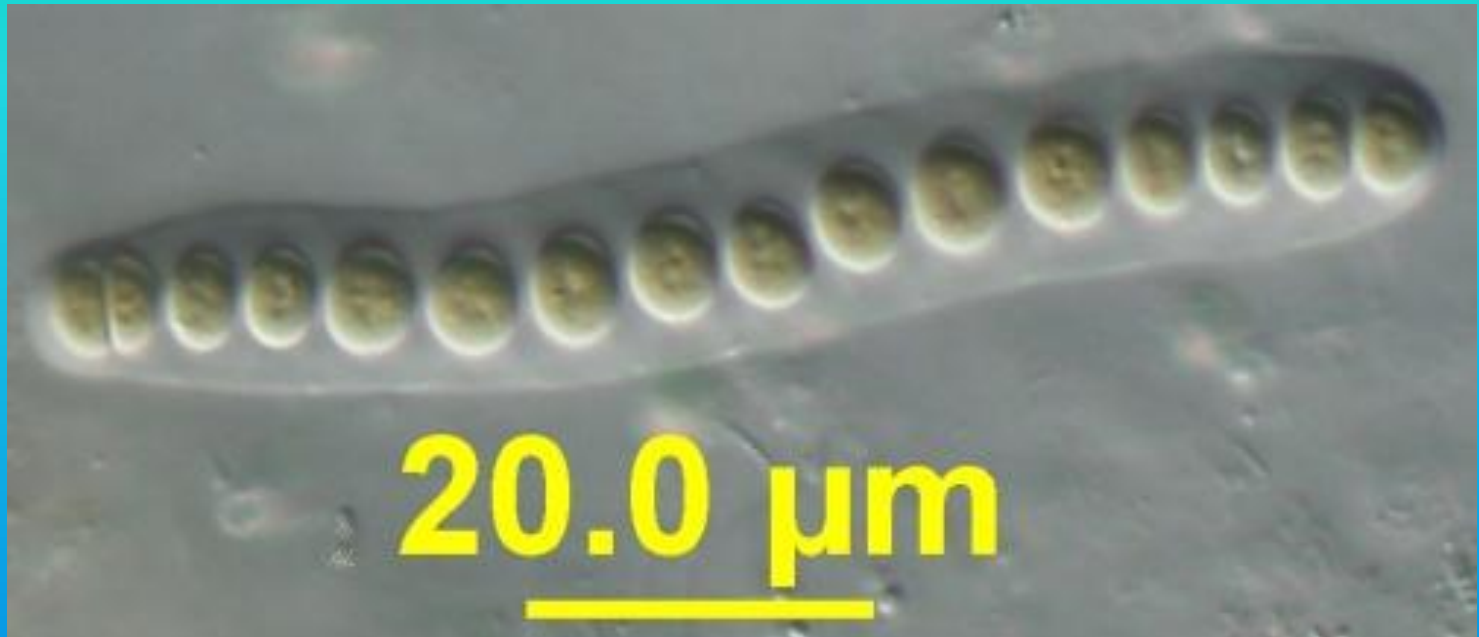
Lemmermanniella uliginosa



Ecological Strategies: desiccation tolerant

Johannesbaptistia pellucida

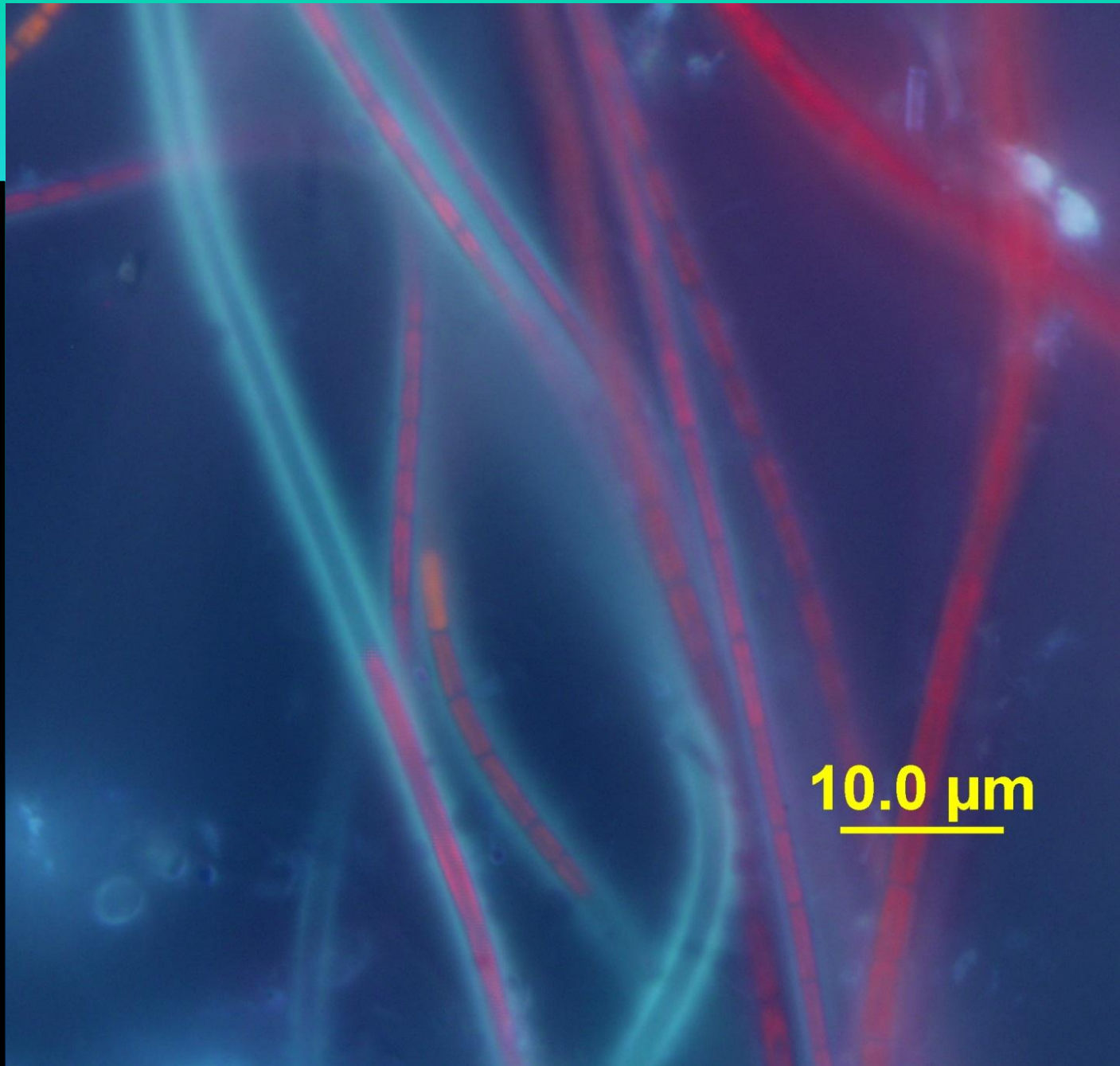
Chroococcales



Ecological Strategies: desiccation tolerant

Oscillatoriales

Schizothrix sp.

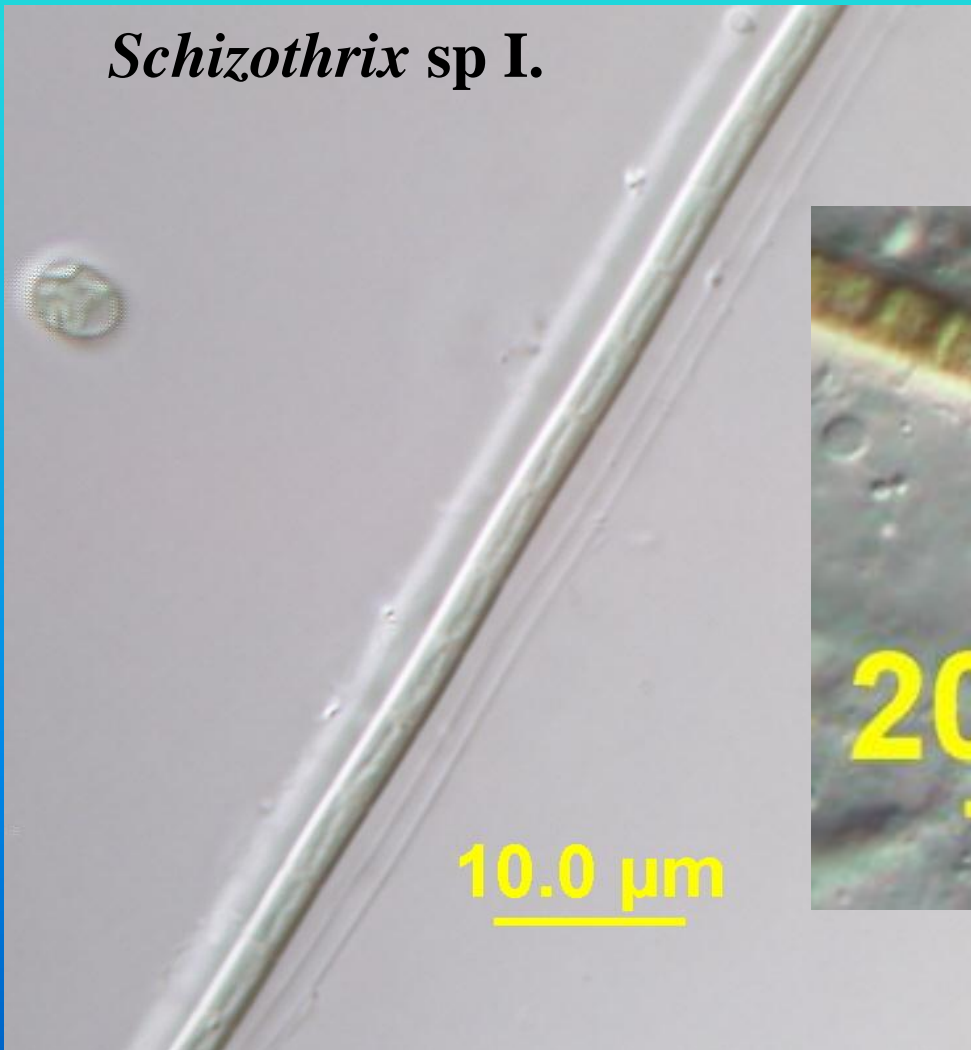


10.0 μm

Ecological Strategies: desiccation tolerant

Oscillatoriales

Schizothrix sp I.



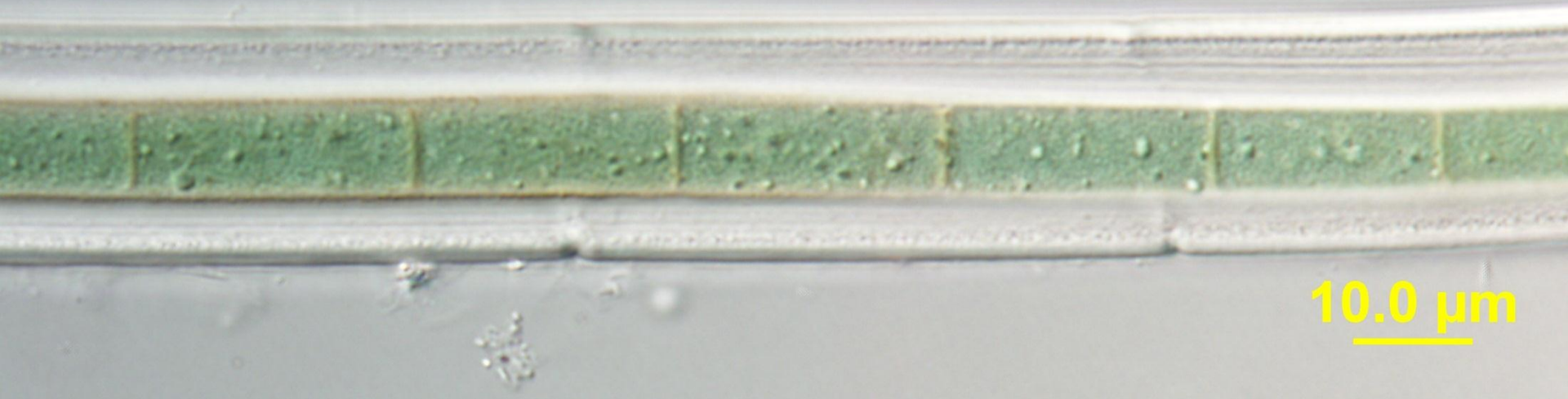
Lyngbya sp.



Ecological Strategies: desiccation tolerant

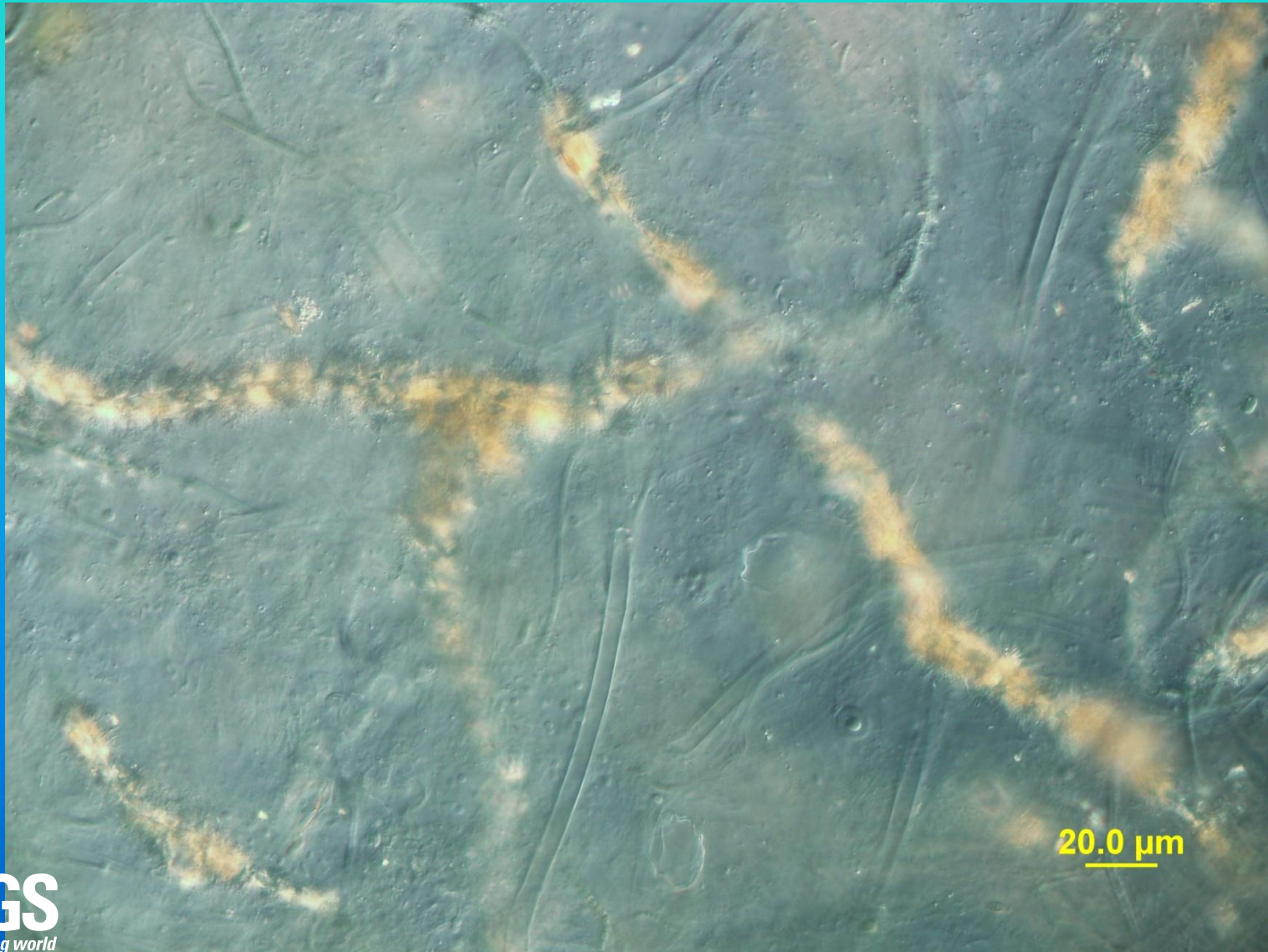
Nostocales

Scytonema sp.



10.0 μm

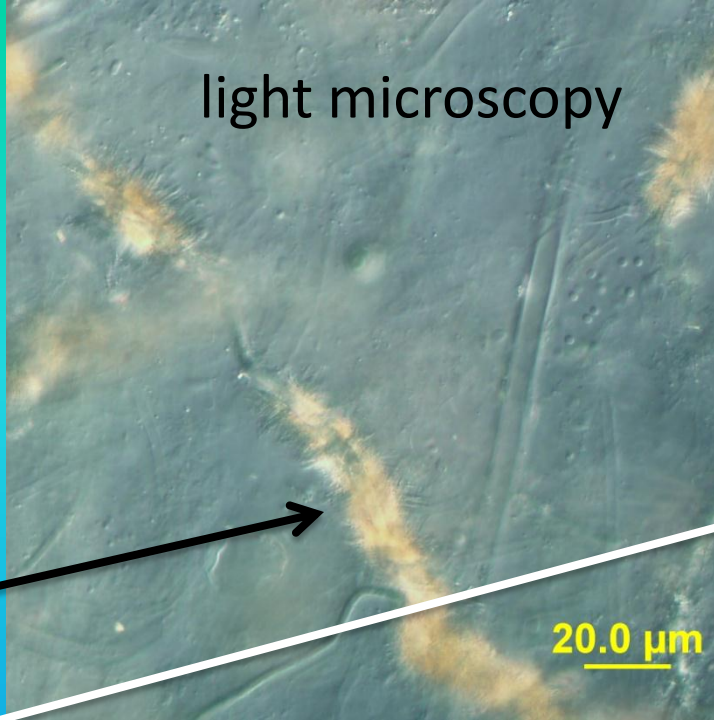
Ecological Strategy?: calcium carbonate precipitation



Carbonate precipitation

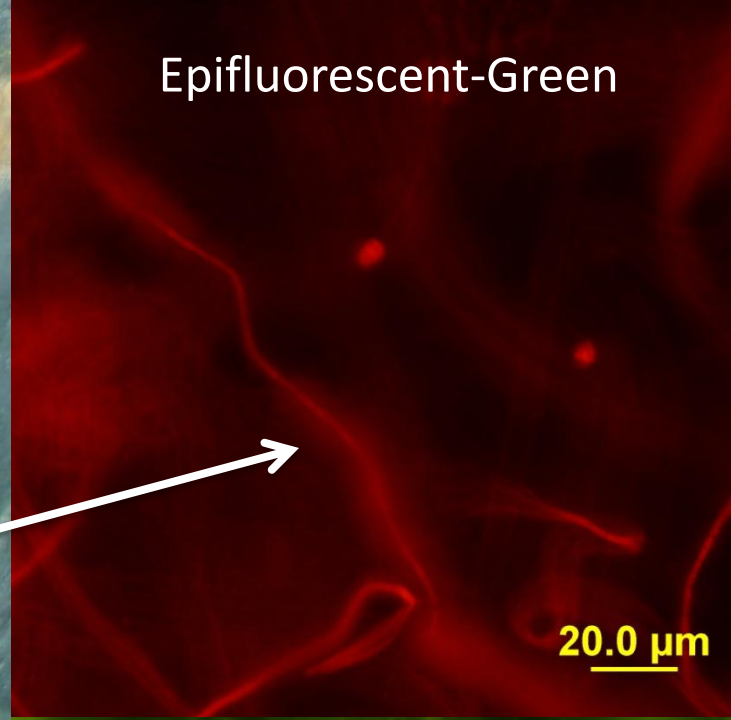
calcium carbonate precipitation mediated by cyanobacteria

light microscopy



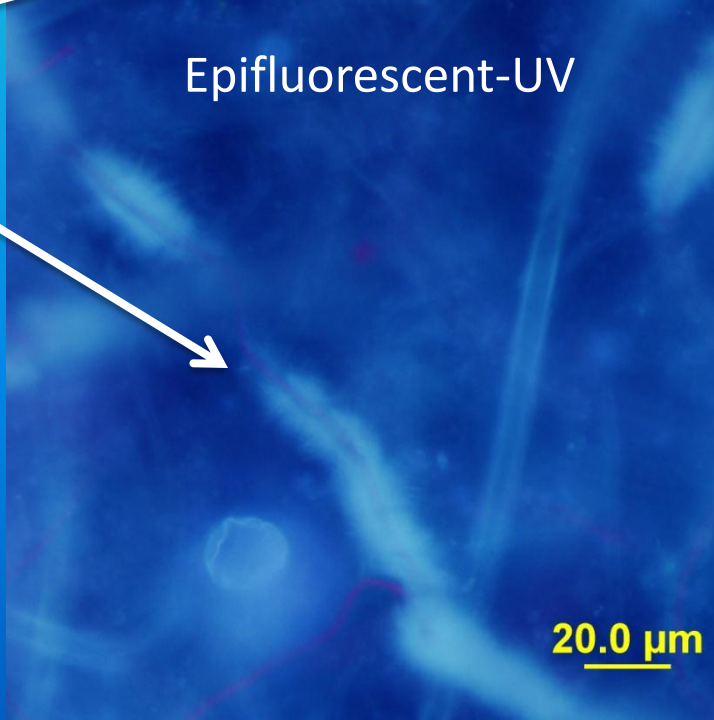
20.0 μm

Epifluorescent-Green



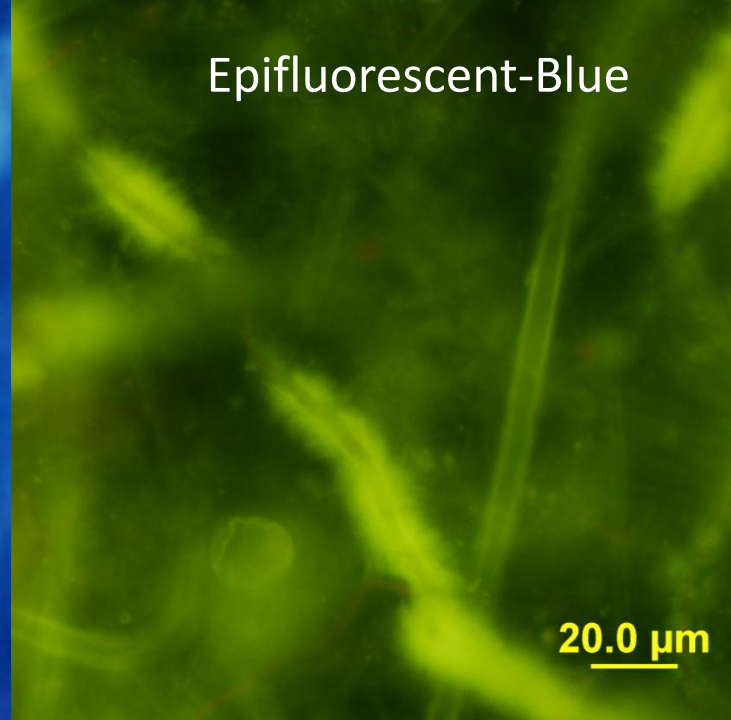
20.0 μm

Epifluorescent-UV



20.0 μm

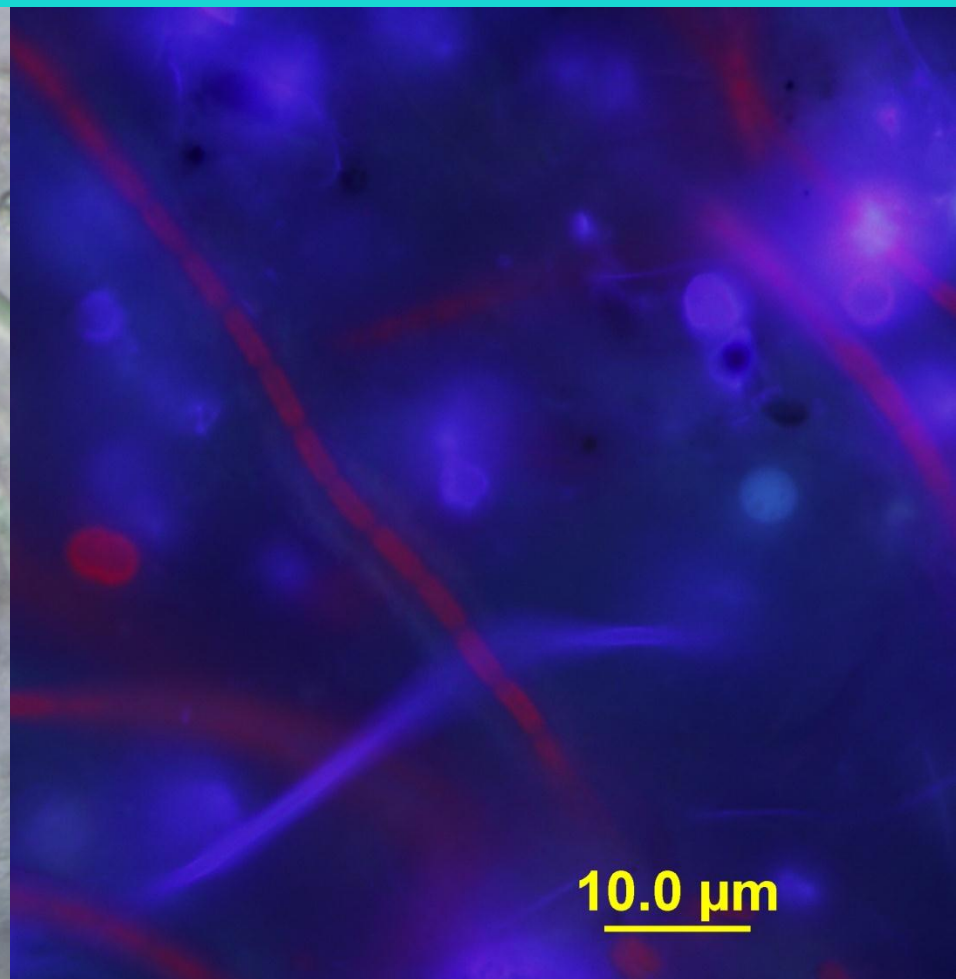
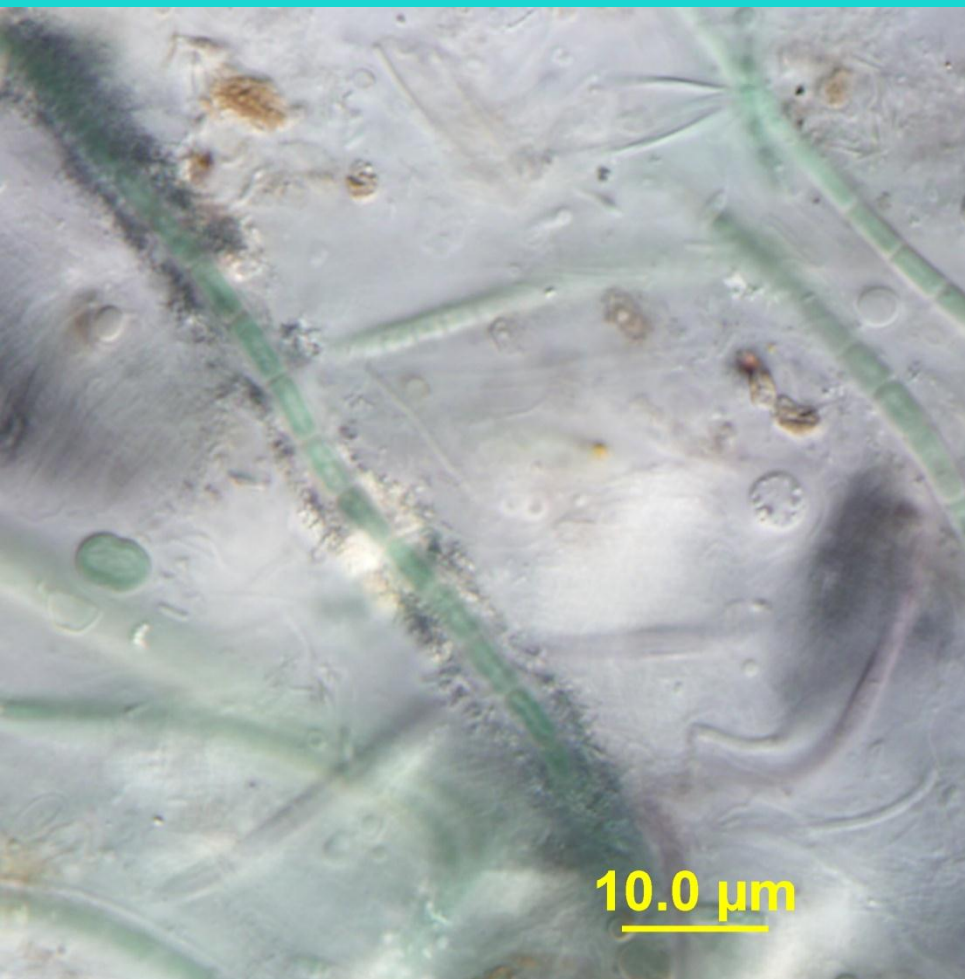
Epifluorescent-Blue



20.0 μm

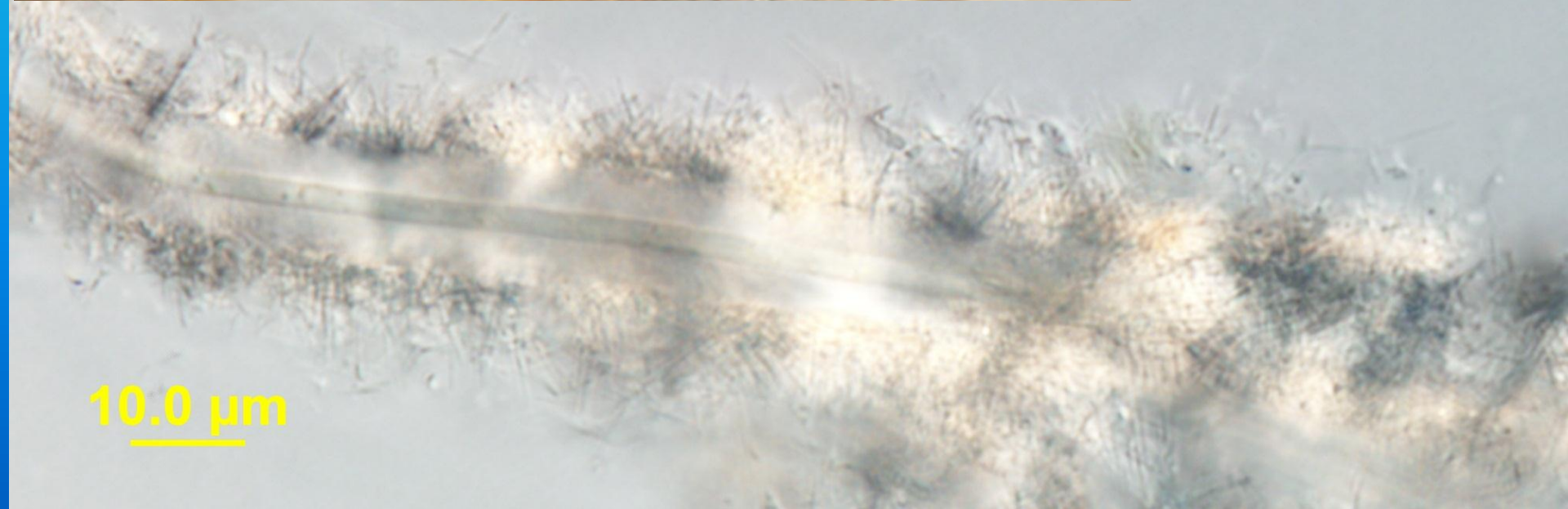
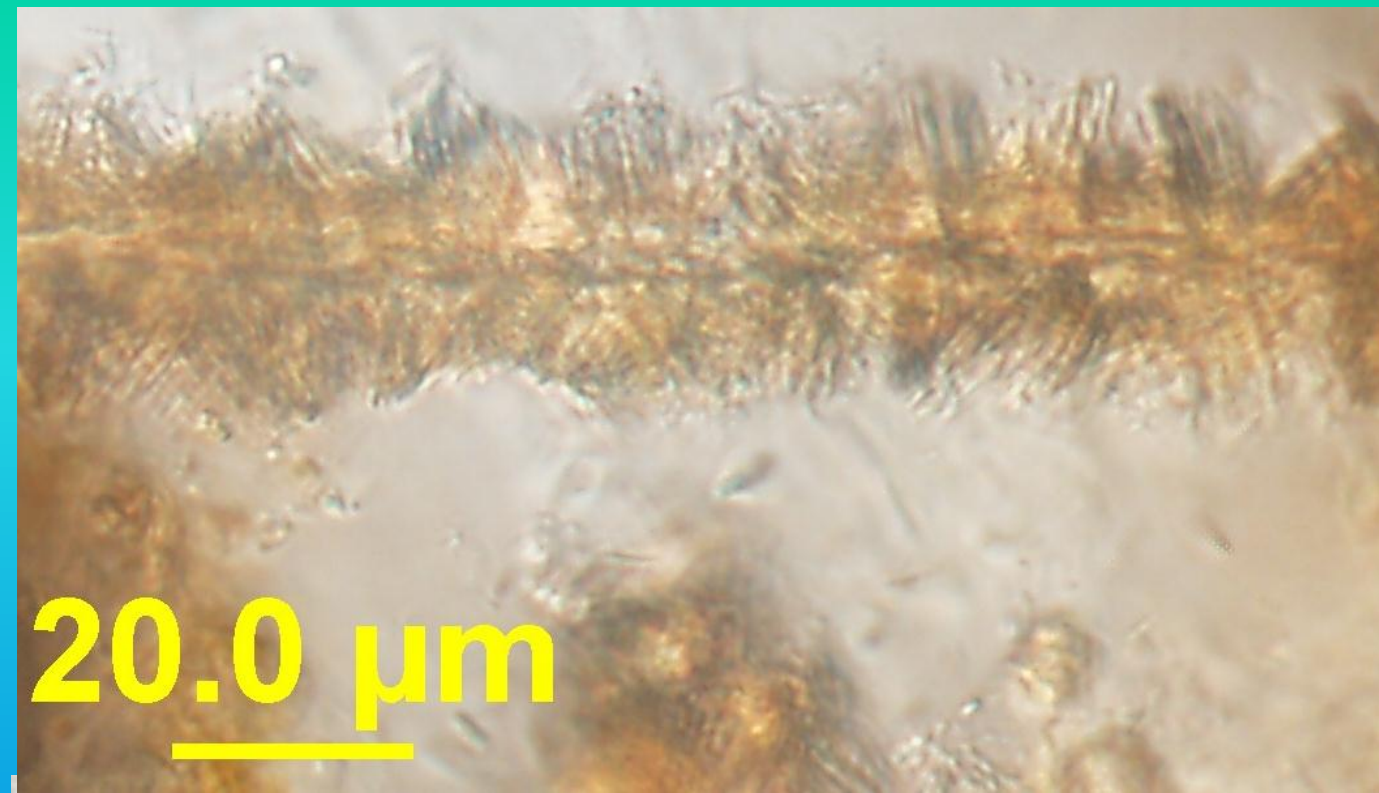
Carbonate precipitation

Schizothrix sp. II



**Carbonate
precipitation**

Schizothrix sp.



Carbonate precipitation

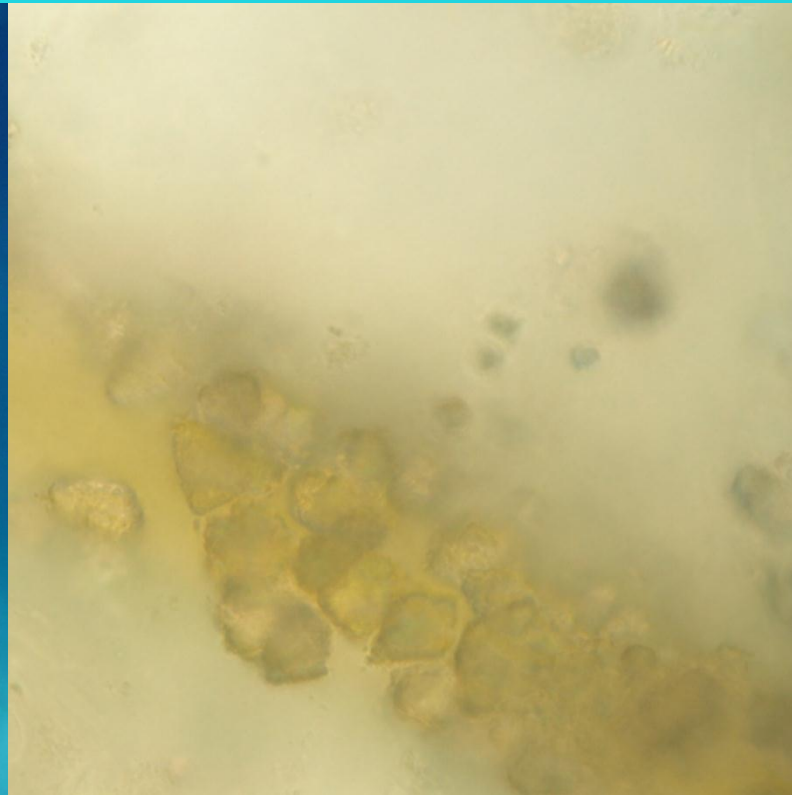


Carbonate precipitation

UV

Scytonema sp.

DIC

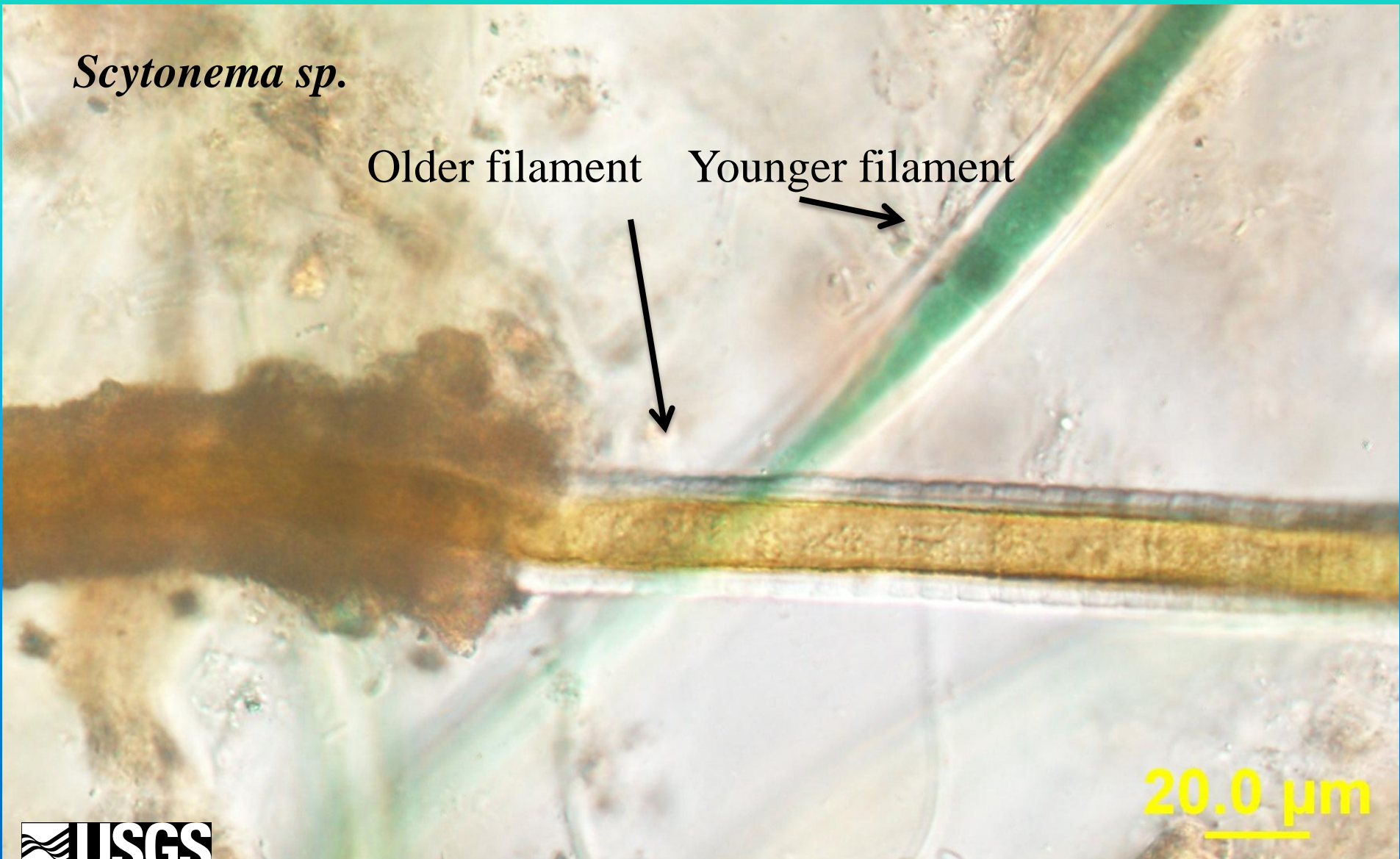


Carbonate precipitation

Scytonema sp.

Older filament

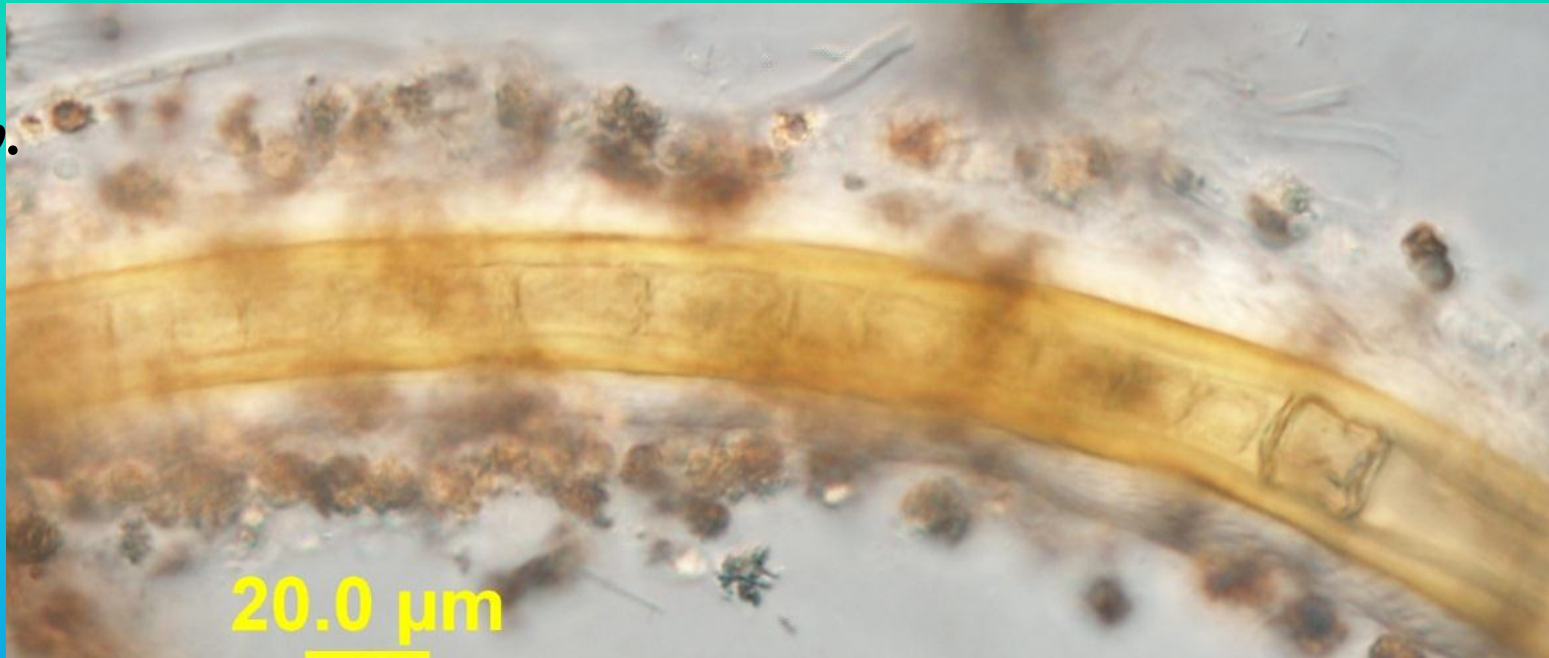
Younger filament



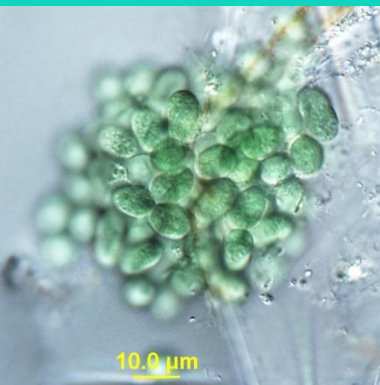
20.0 μm

Carbonate precipitation

Scytonema sp.



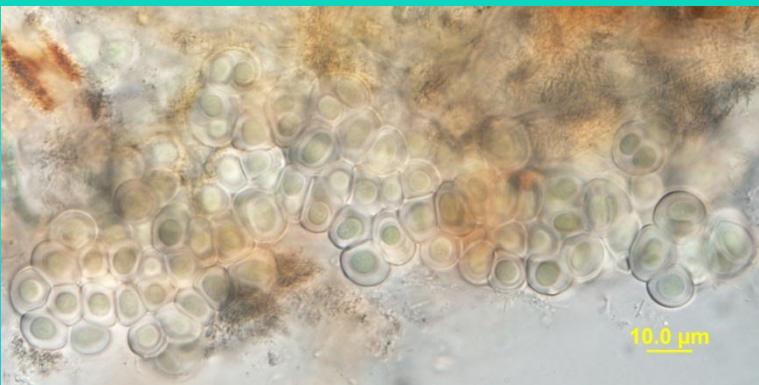
More species



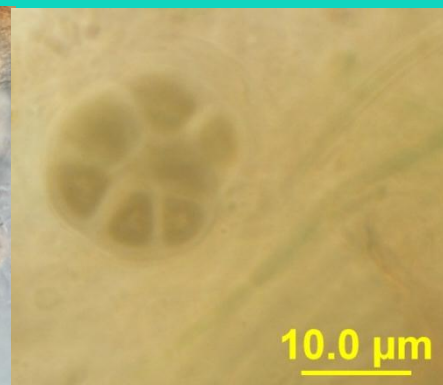
Aphanothece



Eucapsis



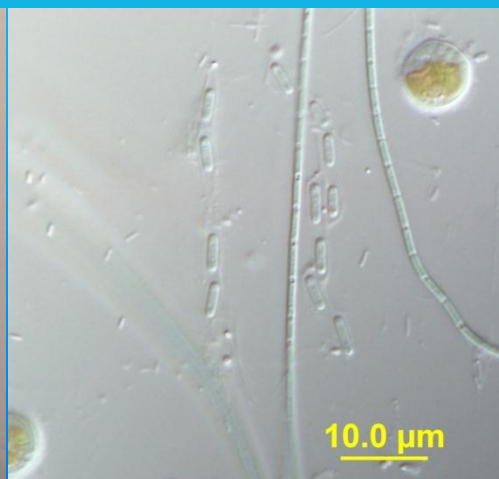
Gloeothece membranacea



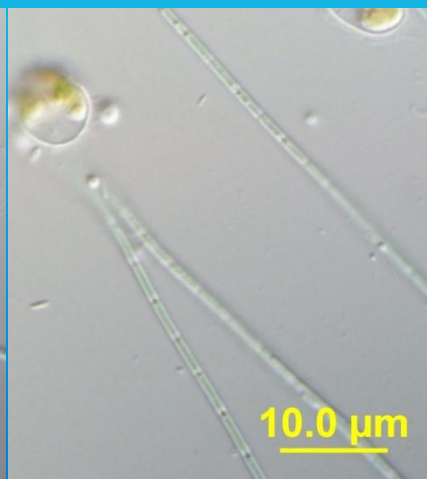
Gloeocapsopsis



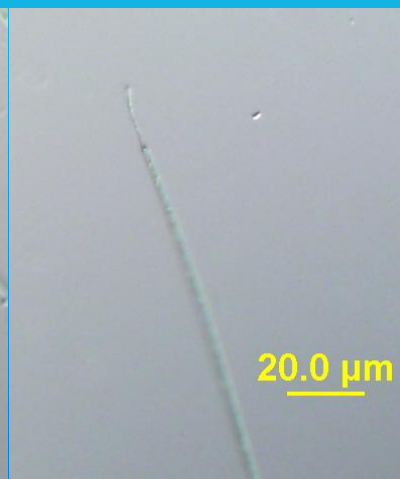
Leptolyngbya
cf. perelegans
+ *L. eliskae*



Bacularia



Geitlerinema
amphibium



Geitlerinema

Thank You!



20.0 μm