



# RESOURCE CENTRE «CULTURE COLLECTION OF MICROORGANISMS»

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## CALU - Collection of Algae Leningrad University

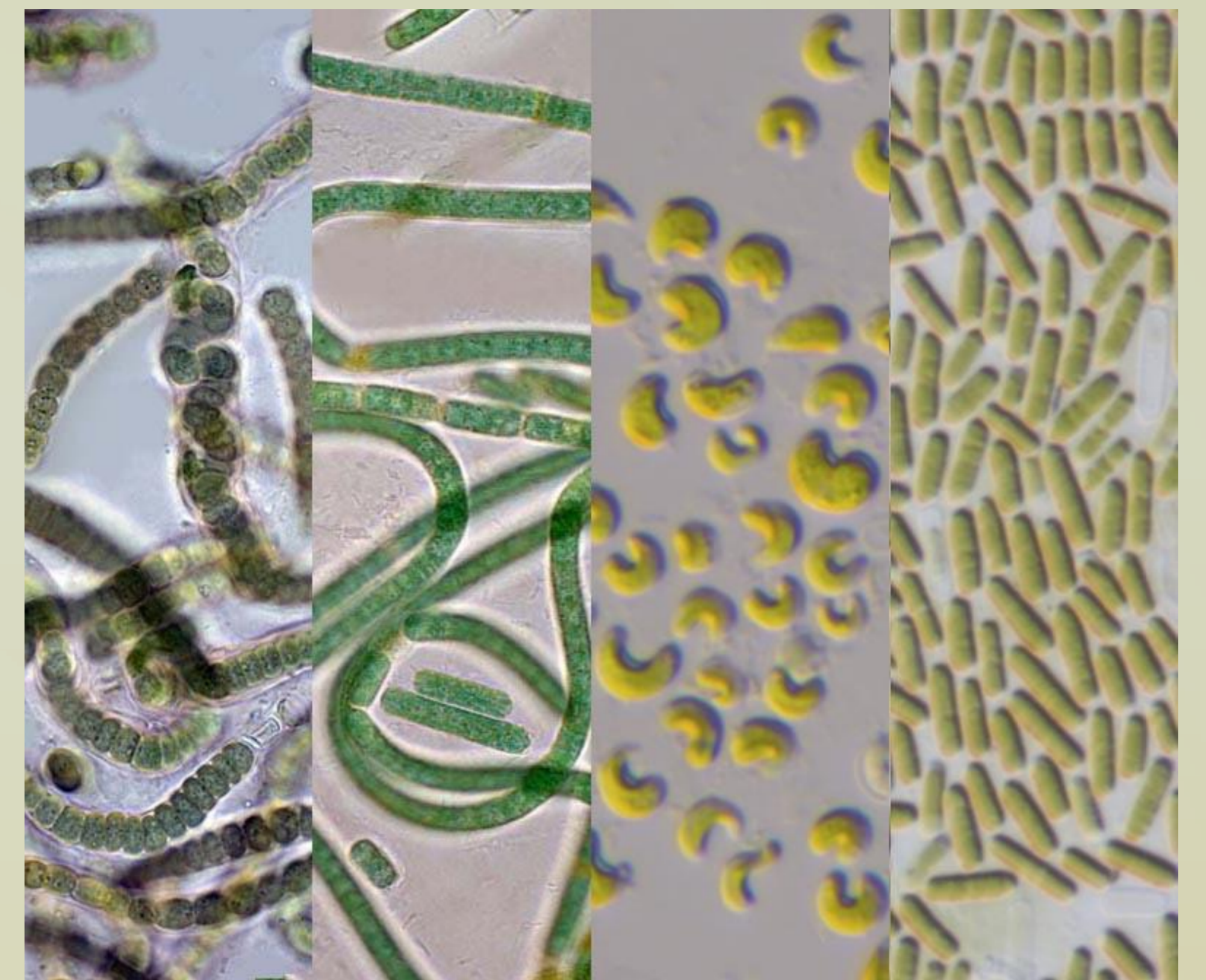
- consists of 446 strains of cyanobacteria, 468 strains of microalgae, 3 strains of endotrophic parasites of algae

### Cyanobacteria

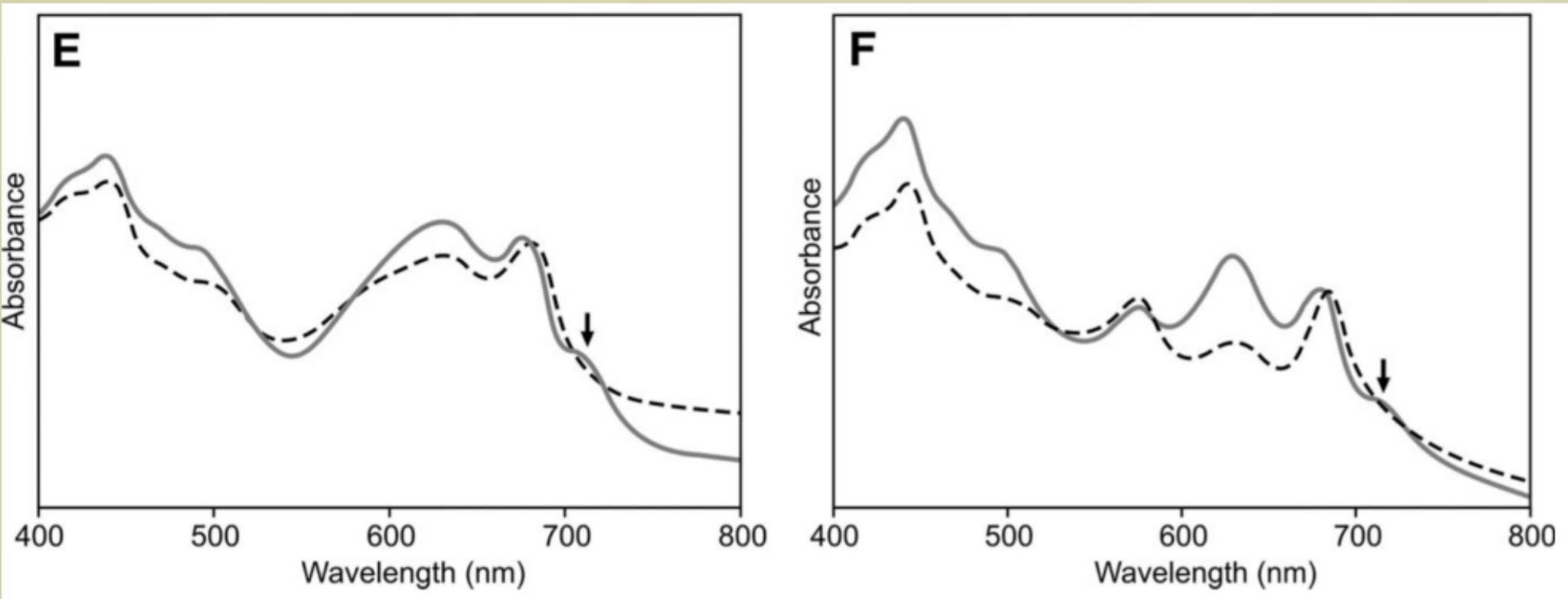
Subsection I Chroococcales 12 genera, 132 strains  
Subsection II Pleurocapsales 4 genera, 11 strains  
Subsection III Oscillatoriales 13 genera, 175 strains  
Subsection IV Nostocales 7 genera, 119 strains  
Subsection V Stigonematales 2 genera, 9 strains

### Microalgae

Phylum Chlorophyta:  
class Chlorophyceae 18 genera, 266 strains  
class Trebouxiophyceae 15 genera 182 strains  
class Ulvophyceae 2 genera, 4 strains  
Phylum Rhodophyta  
class Cyanidiophyceae 1 genus, 2 strains  
class Porphyridiophyceae 1 genus, 1 strain  
Phylum Ochrophyta  
class Xantophyceae 4 genera 5 strains  
Phylum Charophyta  
class Conjugatophyceae 2 genera 2 strains  
Phylum Bacillariophyta  
class Bacillariophyceae 2 genera 6 strains

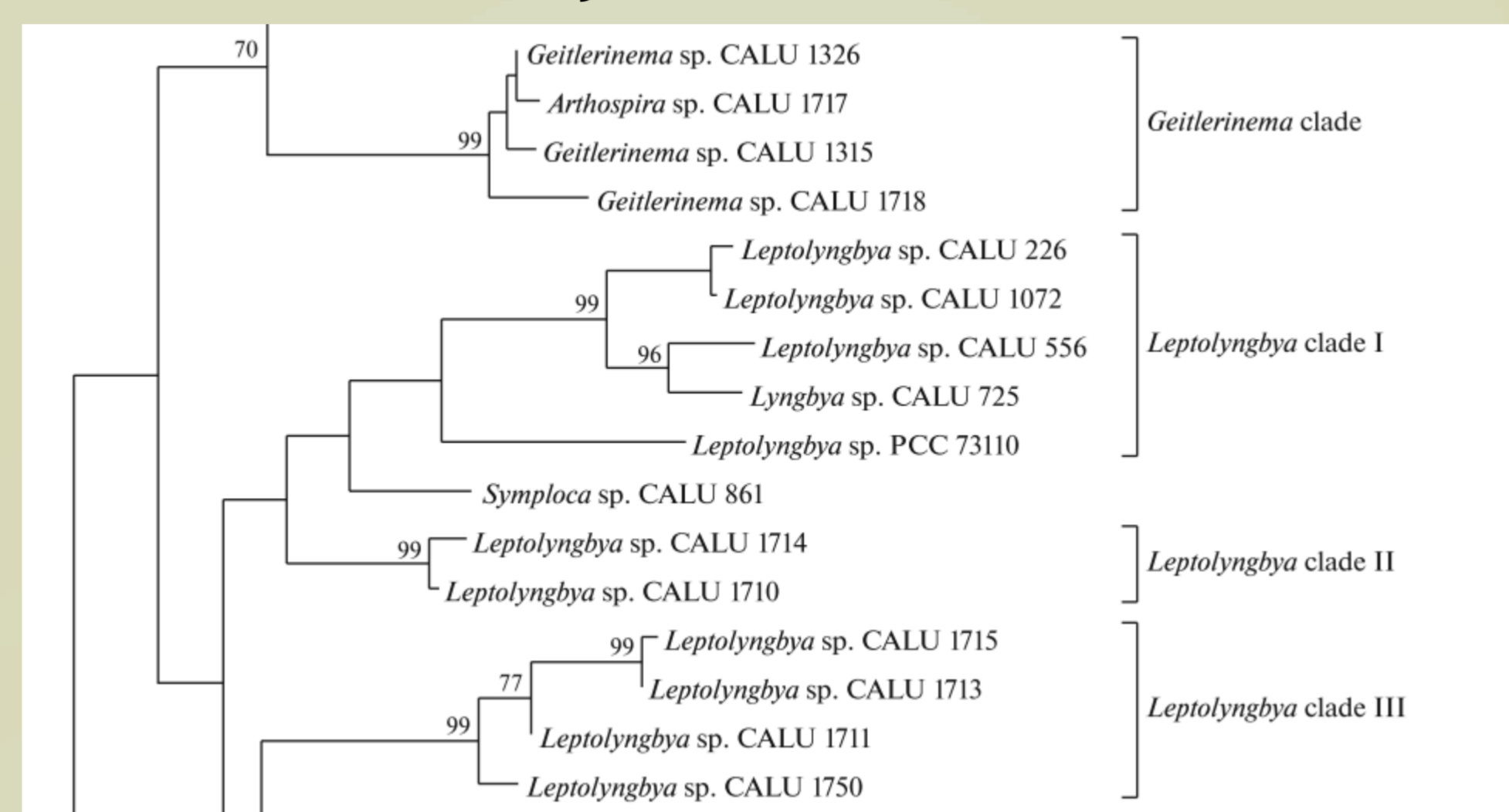


### The analysis of pigment composition of cyanobacteria



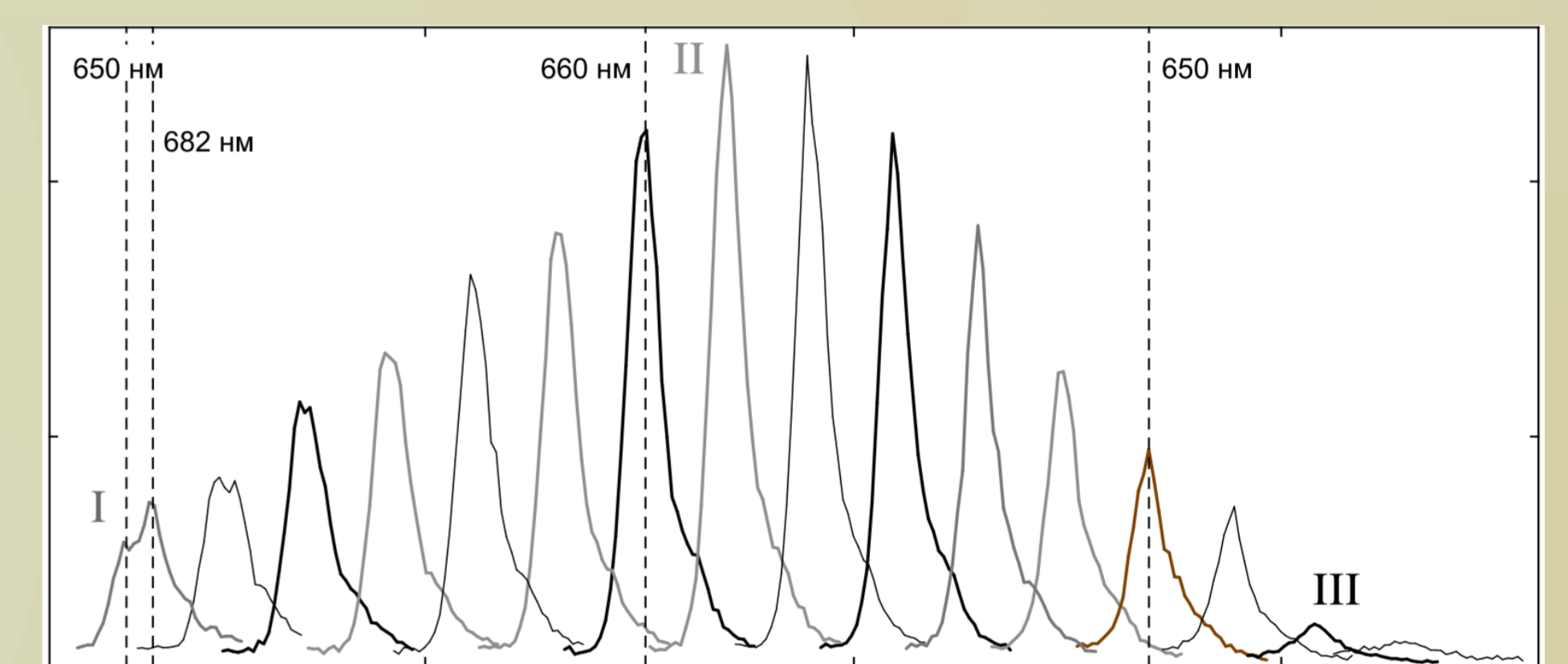
Light absorption spectra of *Chlorogloeopsis fritschii* CALU 759 and *Synechocystis* sp. CALU 1173 (dotted lines, white light-grown cells; continuous lines, far-red light-grown cells). S. Averina et al. Far-red light photoadaptations in aquatic cyanobacteria. *Hydrobiologia*.2018. DOI 10.1007/s10750-018-3519-x

### The development of new approaches to the identification of cyanobacteria



“Oscillatoriales” cyanobacteria rooted tree obtained via phylogeny analysis of 16S rRNA gene fragments (part of the tree). N. V. Velichko et al. Taxonomic Attribution of “Oscillatoriales” Strains within the Bacteriological System of Cyanobacteria: Identification Algorithm for Operational Genera *Microbiology* 2018 DOI: 10.1134/S0026261718030141

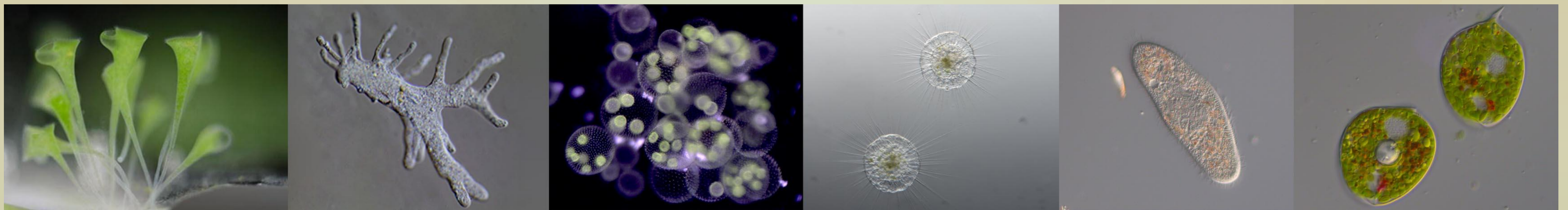
### The design of a method of estimation of cyanobacteria physiological state using confocal microspectroscopy



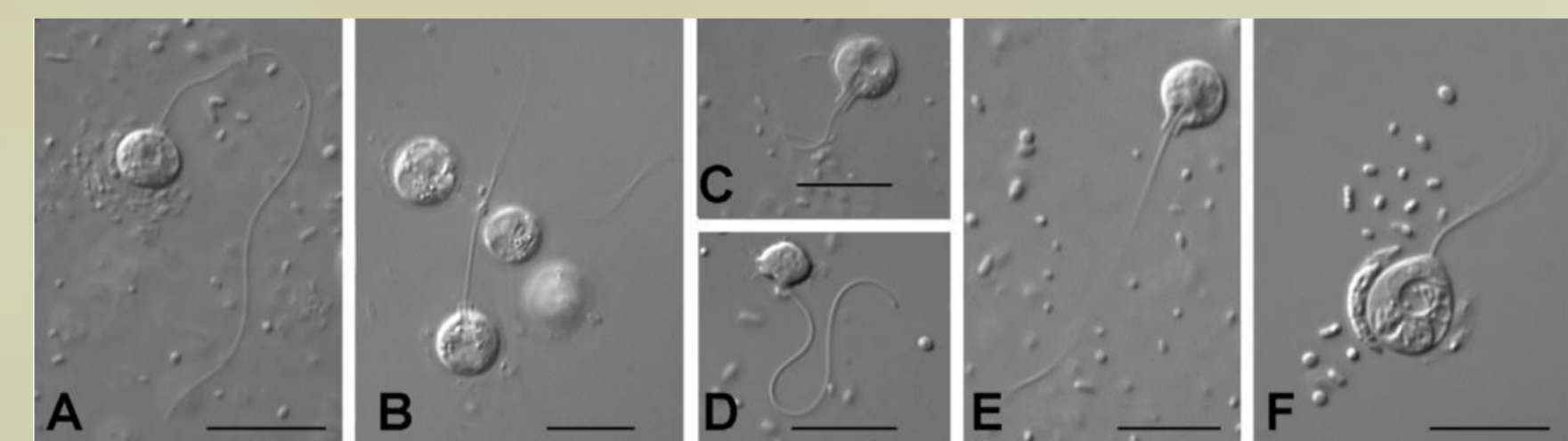
Changes in the fluorescence spectra of *Synechocystis* CALU 1336 in photodamaged cells. N.Y. Grigorieva. Spectroscopic methods of estimation of blue-green algae physiological state after weak external actions. *Oceanology* 2018 in press

## RC CCM - Resource Centre Culture Collection of Microorganisms

- include 520 clones of heterotrophic and 28 clones of autotrophic eukaryotic microorganisms. The major part of this collection are ciliates of the genus *Paramecium* (14 of the currently known species, beside “aurelia” group), including the strains, which contain pro- and eukaryotic symbionts in different cellular compartments. Some other species of free-living ciliates and proteus-like amoebae are also represented in the collection. Among the autotrophic organisms there are 2 species of *Euglenozoa*, 1 species of *Ochrophyta*, 1 species of *Cryptophyta*, 2 species of *Glaucophyta*, 13 species of *Chlorophyta*, 2 species of *Charophyta* and 6 species of *Dinophyta*.

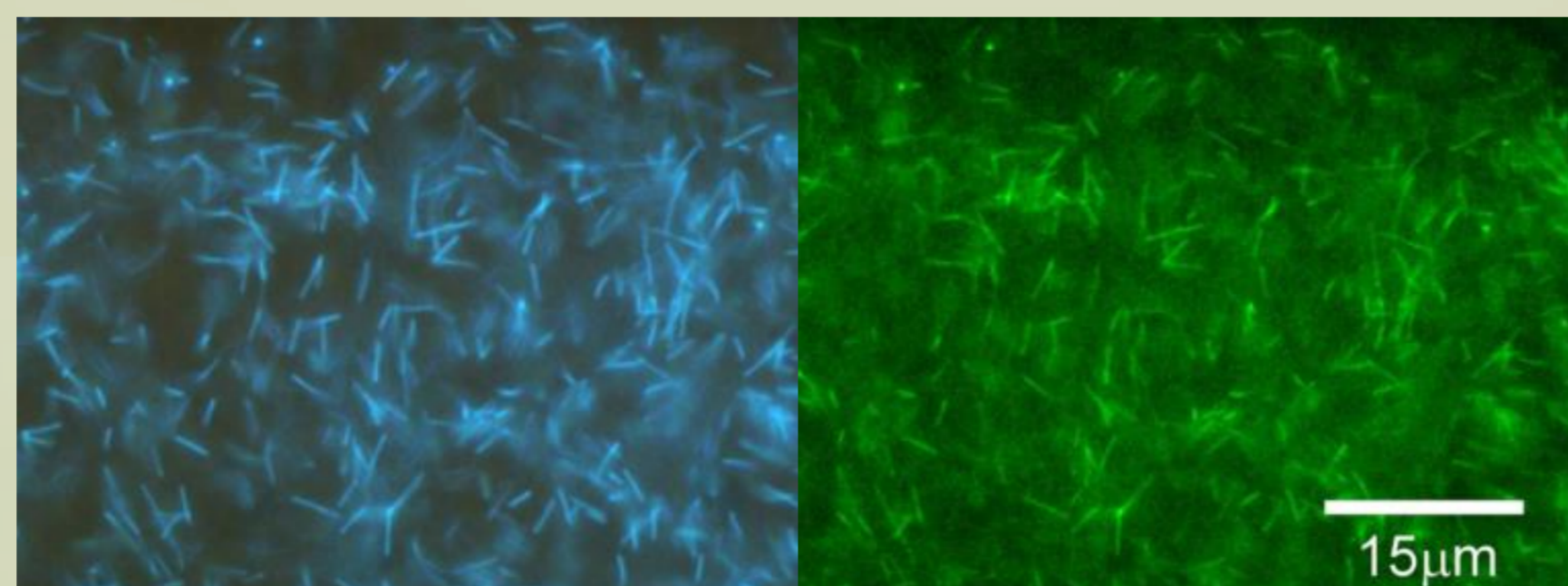


### Biodiversity, systematics and phylogeny of various groups of both pro- and eukaryotic microorganisms



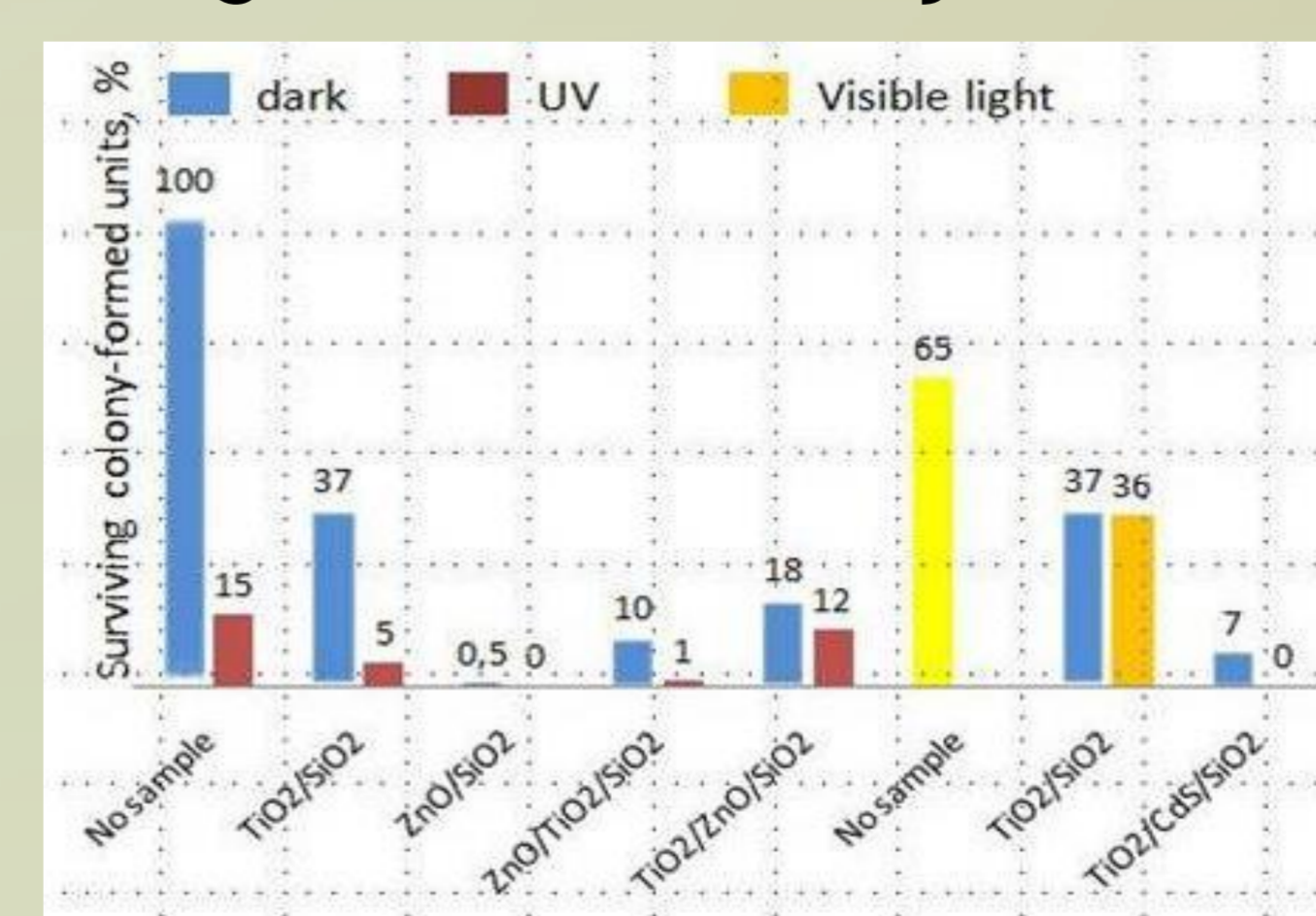
Light microscopy of *Phalansterium arcticum*. Shmakova L. et al. Morphology, biology and phylogeny of *Phalansterium arcticum* sp.n. (Amoebozoa, Varioseae), isolated from ancient Arctic permafrost. *Eur.J. Protistol.*2018 doi.10.1016/j.ejop.2018.02.002

### Studies of different symbiotic associations between pro- and eucaryotes



Microscopy images of fluorescent rods in vegetative *Pelomyxa palustris*. Gutierrez et al. Identification of *Pelomyxa palustris* Endosymbionts. *Protist* 2017. doi. /10.1016/j.protis.2017.06.001

### Methods of evaluation of antimicrobial activity of nanomaterials and evaluation of total toxicity of samples using different test objects



Antibacterial activity of photocatalyzes nanomaterials. M. V. Maevskaia et al. Photocatalytic properties of layered TiO<sub>2</sub>/CdS, TiO<sub>2</sub>/ZnO, ZnO/TiO<sub>2</sub> heterostructures. 6th International conference on semiconductor photochemistry (SP 6), Oldenburg, Germany. 2017

CCM provides facilities to investigate living organisms kept in the collections by different methods of light microscopy (bright-field, phase contrast, integrated modulation contrast, Nomarski contrast, fluorescent microscopy). Sample preparation for electron microscopy is possible as well as application of molecular techniques involving total DNA and RNA isolation, PCR amplification and preparation of amplicons for sequencing.

- Strains maintained in the Culture collection of microorganisms (CCM) and Culture collection of cyanobacteria, algae and algal parasites (CALU) are available to the customers for various applications.
- Various strains isolated by the researchers can be deposited in the Centre for prolonged maintenance

The Centre welcomes new projects that may benefit from the use of its equipment and/or collections.

Feel free to contact us if you are interested!

Contact during this Conference Dr. Ludmila Chistyakova, Director of the Centre.

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