

# CYANOCOST – ES 1105 Action

Cyanobacterial blooms and toxins in water resources:  
Occurrence, impacts and management

Short Term Scientific Mission (STSM)

## Creation of AACC (Åbo Akademi Culture Collection)

### Objectives

Creation of culture collection named AACC (Åbo Akademi Culture Collection) that represents an important way of biodiversity preservation of a specific region, but also it offers the possibility of target selection and use of microorganisms in various fields of science and technology.

### Methodology

**Sampling** on sites where cyanobacterial growth has been observed:  
lakes Köyliönjärvi, Pyhäjärvi, Vähäjärvi; Åland Islands:  
lakes Nätö Hemviken, Brantsböle Träsk, Baltic Sea.

**Isolation** of individual cells, filaments and colonies by:  
-successive multiplication on solid and liquid media,  
-separation using a micropipette.

**Purification:**  
-each culture was spread onto 3 universal growth media  
to test bacterial and fungal growth.

**Identification and determination**  
-performed by microscopy work.

**Cultivation of biomass**  
-in media with and without nitrogen  
-at room temperature  
-illumination with 20 W PowerGlo fluorescent lamps  
-light cycle 16 h light - 8 h dark.

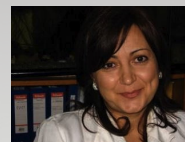
**Preservation**  
Recommended methods for preservation of axenic cyanobacterial culture is lyophilization and cryopreservation as the most reliable and safest way of culture preservation for a long period of time.

**Database creation** will make all information related to cyanobacterial cultures available and affordable to individuals and institutions who want to benefit from the collection.

### Results

AACC counts 52 strains isolated from water and terrestrial ecosystems. With the identification of strains to the genus level, it was found that all isolated strains belong to 17 genera: *Chroococcus*, *Merismopedia*, *Cylindrospermum*, *Woronichinia*, *Geitlerinema*, *Gleocapsa*, *Microcystis*, *Oscillatoria*, *Phormidium*, *Aphanizomenon*, *Anabaena*, *Nostoc*, *Rivularia*, *Calothrix*, *Tolypothrix* and *Scytonema*.

### Researcher



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### Host Organization

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No	CultivarID	Cultivated species	Medium cultivated	ELISA MCRN OD <sub>680</sub>	ELISA MCRN log <sub>10</sub>	Atomic force microscopy (AFM)	Atomic force microscopy (AFM)	Atomic force microscopy (AFM)
1	05001	Chroococcus dimidiatus	FD-SK-liquid					
2	05001	Merismopedia merismopoda	ZN-N <sub>2</sub> -artificial					
3	05005	Chroococcus dimidiatus	FD-SK-liquid					
4	05001	Phormidium tenue	artificial liquid					
5	05003	Cylindrospermum sp.	ZN-N <sub>2</sub> -artificial					
6	05004	Cylindrospermum sp.	artificial liquid					
7	05005	Cylindrospermum sp.	ZN-N <sub>2</sub> -artificial					
8	05007	Woronichinia sp.	artificial liquid					
9	05008	Woronichinia sp.	ZN-N <sub>2</sub> -artificial					
10	05070	Phormidium tenue	ZN-N <sub>2</sub> -artificial					
11	05072	Phormidium tenue	ZN-N <sub>2</sub> -artificial					
12	05073	Phormidium tenue	ZN-N <sub>2</sub> -artificial					
13	05074	Phormidium tenue	ZN-N <sub>2</sub> -artificial					
14	05076	Phormidium tenue	artificial liquid					
15	05079	Spirulina subulata	ZN-N <sub>2</sub> -artificial					
16	05080	Spirulina subulata	artificial liquid					
17	05081	Spirulina subulata	ZN-N <sub>2</sub> -artificial					
18	05082	Spirulina subulata	artificial liquid					
19	AC	Microcystis aeruginosa	BD 11N <sub>2</sub>	1.0400				
20	D	Anabaena sp.	BD 11N <sub>2</sub>	0.2		96.0	14.1	1.0
21	H	Anabaena sp.	BD 11N <sub>2</sub>	0.16		10.0	14.1	0.0
22	L2	Phormidium sp.	BD 11N <sub>2</sub>	0.28		11.0	73.0	40.1
23	01	Chroococcus sp.	BD 11 N <sub>2</sub>	0.5		0	87	7.0
24	06	Gleocapsa sp.	BD 11N <sub>2</sub>	0.2		0	3.4	5.5
25	06	Chroococcus dimidiatus	BD 11N <sub>2</sub>	0.16		18.0	42.0	0
26	08	Anabaena sp.	BD 11N <sub>2</sub>	0.16		10.0	97	5.2
28	0	Anabaena sp.	BD 11N <sub>2</sub>	0.18		1.3	21	14.7
29	00	Anabaena sp.	BD 11N <sub>2</sub>			1.3	18.0	5.5
30	210	Anabaena sp.	BD 11N <sub>2</sub>	0.31		0.0		
31	200	Anabaena sp.	BD 11N <sub>2</sub>	0.18		0.0	14.1	0
32	01	Anabaena sp.	BD 11N <sub>2</sub>	0.2		10.0	97	2.5
33	04	Nostoc sp.	BD 11N <sub>2</sub>	0.2		0.7	10.0	0.0
34	14	Nostoc sp.	BD 11N <sub>2</sub>	0.18		0	0	5.5
35	4	Anabaena sp.	BD 11N <sub>2</sub>	0.19		0.16		
36	7	Nostoc sp.	BD 11N <sub>2</sub>	0.2		0	22.0	18.4
37	K2	Phormidium sp.	BD 11N <sub>2</sub>			0	27.0	5.5
38	00	Phormidium sp.	BD 11N <sub>2</sub>	0.13		0.2		
39	0K2	Phormidium sp.	BD 11N <sub>2</sub>	0		2.5	28	11.2
40	001	Nostoc sp.	BD 11N <sub>2</sub>		0.2	0.0		
41	001	Nostoc sp.	BD 11N <sub>2</sub>			7.0		
42	001	Nostoc sp.	BD 11N <sub>2</sub>					
43	00	Nostoc sp.	BD 11N <sub>2</sub>					
44	L22	Nostoc sp.	BD 11N <sub>2</sub>					
45	00	Anabaena sp.	BD 11N <sub>2</sub>			0.0		
46	00	Chroococcus dimidiatus	BD 11N <sub>2</sub>			0.0		
47	00	Nostoc sp.	BD 11N <sub>2</sub>			0.0		
48	00	Nostoc sp.	BD 11N <sub>2</sub>	0.2		0.0	0.0	10.0
49	00	Chroococcus dimidiatus	BD 11N <sub>2</sub>	0.15		0	0	2.0
50	00	Nostoc sp.	BD 11N <sub>2</sub>			0.0	0	0.0
51	00	Nostoc sp.	BD 11N <sub>2</sub>	0.19	0.17	2.0	97	0.2



COST is supported by the EU RTD Framework Programme



ESF provides the COST Office through a European Commission contract