Table S2. Number of genes important for resistance to antibiotics and environmental toxins in SH4 and related cyanobacterial strains. Taxa: 1, candidatus *S. spongiarum* SH4; 2, *Synechococcus* sp. RCC307; 3, *Synechococcus* sp. RS9917; 4, *Synechococcus* sp. WH 5701; 5, *Synechococcus* sp. CC9311; 6, *P. marinus* CCMP137; 7, *Cyanobium* sp. PCC 7001; 8, *C. gracile* PCC 6307.

Function	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Zinc resistance	0	1	0	0	1	0	0	1
Cobalt-zinc-cadmium resistance protein	0	1	2	1	2	0	1	1
Cobalt-zinc-cadmium resistance protein CzcD	0	0	0	2	1	0	2	1
Cobalt-zinc-cadmium resistance protein CzcA	0	1	0	0	1	0	0	1
Co/Zn/Cd efflux system membrane fusion protein	0	1	0	0	2	0	0	2
DNA-binding heavy metal response regulator	0	0	0	0	0	0	1	0
Transcriptional regulator, MerR family	1	1	0	3	0	0	3	4
Arsenical resistance operon repressor	0	1	1	1	0	0	1	1
Arsenate reductase (EC 1.20.4.1)	0	0	1	1	1	1	1	2
Arsenical-resistance protein ACR3	0	1	3	0	0	0	0	0
Periplasmic divalent cation tolerance protein cutA	1	1	1	1	0	1	1	1
Magnesium and cobalt efflux protein CorC	2	1	1	0	1	1	1	1
Copper-translocating P-type ATPase (EC 3.6.3.4)	0	0	0	0	0	0	0	1
Multicopper oxidase	0	1	1	1	1	0	2	1
CopG protein	0	0	1	0	1	0	1	1
DNA gyrase subunit A (EC 5.99.1.3)	2	2	2	2	2	2	2	2
DNA gyrase subunit B (EC 5.99.1.3)	1	1	1	1	1	1	1	1
Efflux pump LDE	0	0	0	0	0	0	0	1
Integron integrase	0	0	1	2	0	0	2	1
Multidrug resistance, tripartite systems	0	2	0	0	0	0	0	0
Acriflavin resistance protein	0	1	1	3	3	0	2	3
Vancomycin B-type resistance protein VanW	0	0	0	0	0	0	0	1
Undecaprenyl-phosphate N-acetylglucosaminyl 1-phosphate transferase (EC 2.7.8.-)	1	2	1	2	1	1	2	2
RNA polymerase sigma factor SigB	0	1	3	2	2	0	2	2
Beta-lactamase	0	1	1	3	1	1	2	2
Beta-lactamase class A	0	0	0	1	1	0	1	0
Beta-lactamase class C	0	0	0	0	0	1	1	0
Beta-lactamase (Cephalosporinase)	0	0	0	0	0	0	0	1
Negative regulator of beta-lactamase expression	0	2	1	2	1	0	1	1
Metal-dependent hydrolases of the beta-lactamase	0	0	0	0	0	0	0	1
In total	8	22	22	28	23	9	30	36