

Supplementary Information

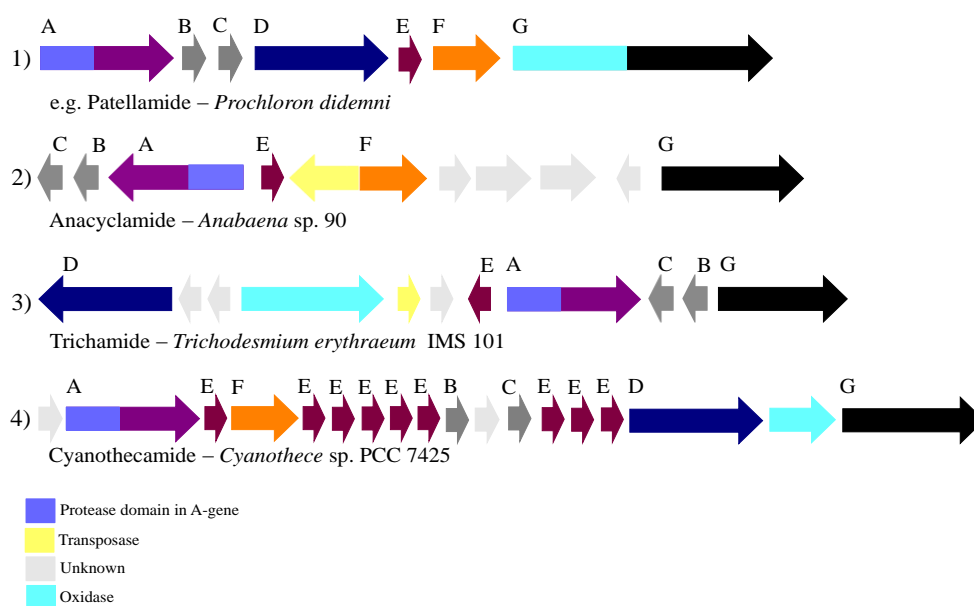
Table S1. Cyanobacterial isolates tested for the presence of cyanobactin *N*-terminal protease (A) gene.

Order	Isolates ^a	Habitat ^b	Origin ^c	
Chroococcales	<i>Cyanobium</i> sp. LEGE 06012	M	Beach, Foz do Arelho, Portugal	
	<i>Cyanobium</i> sp. LEGE 06098	M	Beach, Martinhal, Portugal	
	<i>Cyanobium</i> sp. LEGE 06127	M	Beach, Burgau, Portugal	
	<i>Cyanobium</i> sp. LEGE 06134	M	Beach, Moledo, Portugal	
	<i>Cyanobium</i> sp. LEGE 06137	M	Beach, Lavadores, Portugal	
	<i>Cyanobium</i> sp. LEGE 06138	M	Beach, Aguda, Portugal	
	<i>Cyanobium</i> sp. LEGE 06140	M	Beach, Aguda, Portugal	
	<i>Cyanobium</i> sp. LEGE 07153	M	Beach, Martinhal, Portugal	
	<i>Cyanobium</i> sp. LEGE 07183	M	Beach, Olhos de Água, Portugal	
	cf. <i>Gloeocapsa</i> sp. LEGE 06192	M	Beach, Burgau, Portugal	
	<i>Microcystis aeruginosa</i> LEGE 08355	F	Reservoir, Torrão dam, Portugal	
	<i>Microcystis aeruginosa</i> LEGE 91095	F	Reservoir, Torrão dam, Portugal	
	<i>Microcystis aeruginosa</i> LEGE 91338	F	Coastal lagoon, Barrinha de Mira, Portugal	
	<i>Microcystis aeruginosa</i> LEGE 91344	F	Pond, Lagoa dos Teixoeiros, Portugal	
	<i>Microcystis aeruginosa</i> LEGE 91347	F	Reservoir, Bemposta dam, Portugal	
	<i>Microcystis aeruginosa</i> LEGE 91351	F	Pond, Lagoa das Braças, Portugal	
	<i>Microcystis aeruginosa</i> LMECYA 1	F	Reservoir, Montargil dam, Portugal	
	<i>Microcystis</i> sp. AM VIVO A	F	Tâmega river, Portugal	
	<i>Microcystis</i> sp. IZANCYA 45	F	Pond, Lagoa da Vela, Portugal	
	<i>Microcystis</i> sp. LEGE 00258	F	Marco de Canaveses, Portugal	
	<i>Microcystis</i> sp. LEGE 03282	F	Reservoir, Montargil dam, Portugal	
	<i>Microcystis</i> sp. LEGE 08328	F	Lake, Zumpango, Mexico	
	<i>Microcystis</i> sp. LEGE 08329	F	Man-made channel, Cuemanco, Mexico	
	<i>Microcystis</i> sp. LEGE 08330	F	Artificial lake, Chapultepec, Mexico	
	<i>Microcystis</i> sp. LEGE 08331	F	Man-made channel, Cuemanco, Mexico	
	<i>Microcystis</i> sp. LEGE 08332	F	Man-made channel, Cuemanco, Mexico	
	<i>Synechococcus nidulans</i> LEGE 06156	M	Beach, Burgau, Portugal	
	<i>Synechococcus nidulans</i> LEGE 07186	M	Beach, Martinhal, Portugal	
	<i>Synechococcus</i> sp. LEGE 06006	M	Beach, São Pedro de Moel, Portugal	
	<i>Synechococcus</i> sp. LEGE 06026	M	Beach, Empa, Portugal	
	<i>Synechococcus</i> sp. LEGE 06139	M	Beach, Aguda, Portugal	
	<i>Synechocystis salina</i> LEGE 07173	M	Beach, Olhos de Água, Portugal	
	<i>Synechocystis</i> sp. LEGE 00037	M	Beach, Moledo, Portugal	
	<i>Synechocystis</i> sp. LEGE 07211	F	WWTP, Febros river, Portugal	
	Pleurocapsales	<i>Chroococcidiopsis</i> sp. LEGE 06147	M	Beach, Moledo, Portugal
		<i>Chroococcidiopsis</i> sp. LEGE 06174	M	Beach, Aguda, Portugal
		<i>Chroococcopsis</i> sp. LEGE 07161	M	Beach, Martinhal, Portugal
		<i>Chroococcopsis</i> sp. LEGE 07187	M	Beach, Moledo, Portugal
		<i>Hyella</i> sp. LEGE 07179	M	Beach, Moledo, Portugal
	Oscillatoriales	<i>Leptolyngbya mycoidea</i> LEGE 06108	M	Beach, Luz, Portugal
<i>Leptolyngbya mycoidea</i> LEGE 06118		M	Beach, Luz, Portugal	
<i>Leptolyngbya mycoidea</i> LEGE 07157		M	Beach, Lavadores, Portugal	
<i>Leptolyngbya saxicola</i> LEGE 06133		M	Beach, Moledo, Portugal	

	<i>Leptolyngbya saxicola</i> LEGE 07132	M	Beach, Luz, Portugal
	<i>Leptolyngbya saxicola</i> LEGE 07170	M	Beach, Olhos de Água, Portugal
	<i>Leptolyngbya</i> sp. LEGE 06009	M	Beach, Foz do Arelho, Portugal
	<i>Leptolyngbya</i> sp. LEGE 06188	M	Beach, Lavadores, Portugal
	<i>Leptolyngbya</i> sp. LEGE 06362	F	WWTP, Febros river, Portugal
	<i>Nodosilinea nodulosa</i> LEGE 06152	M	Beach, Lavadores, Portugal
	<i>Nodosilinea</i> sp. LEGE 06120	M	Beach, Luz, Portugal
	<i>Oscillatoria limnetica</i> LEGE 00237	F	WTP, Mort água, Portugal
	<i>Oscillatoria</i> sp. LEGE 03272	F	Coastal lagoon, Lagoa dos Salgados, Portugal
	<i>Oscillatoria</i> sp. LEGE 05292	F	Freshwater aquarium
	<i>Phormidium</i> sp. LEGE 06078	E	Douro estuary, Portugal
	<i>Phormidium</i> sp. LEGE 06204	F	WWTP, Febros river, Portugal
	<i>Phormidium</i> sp. LEGE 06363	F	WWTP, Febros river, Portugal
	<i>Phormidium</i> sp. LEGE 07215	F	WWTP, Febros river, Portugal
	<i>Planktothrix</i> sp. LEGE 07227	F	WWTP, Febros river, Portugal
	<i>Planktothrix</i> sp. LEGE 08334	F	Lake, Zumpango, Mexico
	<i>Planktothrix</i> sp. LEGE 08335	F	Lake, Zumpango, Mexico
	<i>Plectonema</i> cf. <i>radiosum</i> LEGE 06114	M	Beach, Luz, Portugal
	<i>Pseudanabaena</i> cf. <i>curta</i> LEGE 07169	M	Beach, Aguda, Portugal
	<i>Pseudanabaena</i> cf. <i>frigida</i> LEGE 06119	M	Beach, Burgau, Portugal
	<i>Pseudanabaena</i> cf. <i>frigida</i> LEGE 06144	M	Beach, Burgau, Portugal
	<i>Pseudanabaena</i> sp. LEGE 06116	M	Beach, Martinhal, Portugal
	<i>Romeria</i> sp. LEGE 06013	M	Beach, Arelho, Portugal
	<i>Schizothrix</i> aff. <i>septentrionalis</i> LEGE 07164	M	Beach, Moledo, Portugal
	Unidentified <i>Pseudanabaenaceae</i> LEGE 06148	M	Beach, Moledo, Portugal
Nostocales	<i>Anabaena</i> cf. <i>cylindrica</i> LEGE 00235	F	Reservoir, Maranhão dam, Portugal
	<i>Anabaena</i> sp. LEGE 00240	F	Reservoir, Maranhão dam, Portugal
	<i>Anabaena</i> sp. LEGE 04288	F	Marco de Canaveses, Portugal
	<i>Aphanizomenon gracile</i> LMECYA 40	F	Crato, Portugal
	<i>Aphanizomenon</i> (= <i>Cuspidothrix</i>) <i>issatchenkoi</i> LMECYA 31	F	Reservoir, Montargil dam, Portugal
	<i>Aphanizomenon</i> sp. LEGE 00251	F	T água, Portugal
	<i>Aphanizomenon</i> sp. LEGE 00238	F	Reservoir, Maranhão dam, Portugal
	<i>Calothrix</i> sp. LEGE 06100	M	Beach, Lavadores, Portugal
	<i>Calothrix</i> sp. LEGE 06122	M	Beach, S. Bartolomeu do Mar, Portugal
	<i>Calothrix</i> sp. LEGE 07177	M	Beach, Martinhal, Portugal
	<i>Cuspidothrix</i> sp. LEGE 03284	F	Montargil, Portugal
	<i>Cylindrospermopsis raciborskii</i> LEGE 97047	F	Queensland, Australia
	<i>Cylindrospermopsis raciborskii</i> LEGE 99045	F	Reservoir, Portugal
	<i>Nodularia</i> sp. LEGE 06071	E	Vouga estuary, Portugal
	<i>Nostoc</i> sp. LEGE 06150	M	Beach, S. Bartolomeu do Mar, Portugal
	<i>Rivularia</i> sp. LEGE 07159	M	Beach, Burgau, Portugal
	<i>Scytonema</i> sp. LEGE 07182	M	Beach, Moledo, Portugal
	<i>Sphaerospermopsis</i> sp. LEGE 00249	F	Reservoir, Maranhão dam, Portugal

^a Strain in bold refers to positive control used in PCR reactions; strains underlined refer to lost cultures (*i.e.*, gDNA from lyophilized biomass); ^b M—marine, F—freshwater, E—estuarine; ^c WWTP—Wastewater Treatment Plant, WTP—Water Treatment Plant.

Figure S1. Schematic diagrams of representative cyanobactin gene clusters. (1) Example of the arrangement of a canonical cyanobactin gene cluster, *pat*, featuring the set of genes present in these pathways. A and G genes, coding for two proteases; E-gene, precursor peptide; B and C genes, coding for short conserved hypothetical proteins of unknown function. D and F genes, as well as an oxidase domain (in G-gene) lead, respectively, to heterocyclization, prenylation and oxidation of the resulting peptides; (2) Anacyclamide gene cluster, representing the genetic organization of cyanobactin pathways, lacking heterocyclases and oxidases; (3) Trichamide gene cluster, enlightening the presence of the oxidase domain in a separate open reading frame; (4) Cyanothecamide gene cluster, revealing the existence of more than one precursor peptide gene. (Adapted from [1]).



References

1. Donia, M.S.; Schmidt, E.W. Linking chemistry and genetics in the growing cyanobactin natural products family. *Chem. Biol.* **2011**, *18*, 508–519.

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