

Supporting Information for

Rhizobactin B is the preferred siderophore by a novel *Pseudomonas* isolate to obtain iron from dissolved organic matter in peatlands

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Table S1: *Pseudomonas* sp. FEN FEN genome was searched for TonB-dependent receptors, siderophore-related, iron-related, and heme-related protein families as well as genes encoding ECF sigma factors.

Table S1 *Pseudomonas* sp. FEN genome was searched for TonB-dependent receptors, siderophore-related, iron-related, and heme-related protein families, as well as genes, encoding ECF sigma factors (> 150 residues)

RAST n#	Residues n#	BLAST hit (Accession #)	<i>Pseudomonas</i>	Id (%)	Function (homolog)	Abb.	ECF	TonB
43	253	WP_052451033.1	<i>batumici</i>	97	Uroporphyrinogen-III C-methyltransferase	CobA		
98	143	WP_159897198.1	sp. LD120	86	Biopolymer transporter	ExbD		
99	212	MPQ66032.1	sp. MWU12-2323	97	MotA/TolQ/ExbB proton channel family protein			
183	729	RLJ53657.1	<i>asplenii</i>	94	Iron complex outermembrane receptor protein; catecholate-siderophore receptor	CirA		+
440	244	WP_103498954.1	<i>gingeri</i>	90	Putative heme iron utilization protein	HugZ		
690	736	WP_100941771.1	sp. QS1027	93	TonB-dependent iron receptor	CirA		+
778	342	WP_177093228.1	<i>gingeri</i>	95	Ferrochelatase	HemH		
944	707	WP_177124899.1	<i>gingeri</i>	94	TonB-dependent copper receptor			+
945	461	WP_152741573.1	sp. MWU12-2323	93	PepSY domain-containing protein			
946	263	WP_040063952.1	<i>batumici</i>	92	ABC-type cobalamin/Fe3+-siderophores transport system	FepC		
947	317	WP_121136378.1	<i>asplenii</i>	93	Metal-binding protein; ABC transporter substrate-binding protein	TroA		
948	337	WP_122482160.1	<i>viridiflava</i>	89	Iron ABC transporter permease			
982	209	WP_177101963.1	<i>gingeri</i>	96	Protein-methionine-sulfoxide reductase heme-binding subunit	MsrQ		

RAST n#	Residues n#	BLAST hit (Accession #)	<i>Pseudomonas</i>	Id (%)	Function (homolog)	Abb.	ECF	TonB
983	338	WP_040064185.1	<i>batumici</i>	97	Protein-methionine-sulfoxide reductase catalytic subunit	MsrP		
1065	155	WP_121135083.1	<i>asplenii</i>	97	Bacterioferritin; ferritin-like diiron-binding domain	Bfr		
1192	140	WP_040071270.1	<i>batumici</i>	95	Bacterioferritin, ferritin-like diiron-binding domain	Bfr		
1331	296	WP_177103618.1	<i>gingeri</i>	99	Protoheme IX farnesyltransferase	CtaB		
1337	394	WP_040070711.1	<i>batumici</i>	94	NO-inducible flavohemoprotein	HmpA		
1454	756	WP_040071009.1	<i>batumici</i>	93	TonB-dependent siderophore receptor	Fiu		+
1662	3222	WP_081492743.1	sp. M47T1	93	Adhesin			
1665	3222	WP_152740400.1	sp. MWU12-2323	85	Filamentous hemagglutinin N-terminal domain-containing protein			
1841	212	WP_040065757.1	<i>batumici</i>	95	Cytochrome c biogenesis heme-transporting ATPase	CcmA		
1842	223	WP_103499452.1	sp. MWU12-2323	99	Heme exporter protein	CcmB		
1843	252	WP_177094887.1	<i>gingeri</i>	96	Cytochrome c biogenesis protein	CcmC/CcsA		
1844	59	WP_040065763.1	<i>batumici</i>	100	Heme exporter protein	CcmD		
1845	152	WP_077045806.1	sp. KK4	98	Cytochrome c maturation protein	CcmE		
1846	663	WP_177145195.1	<i>gingeri</i>	98	Heme lyase CcmF/NrfE family subunit	CcmF		
1847	179	WP_152737035.1	sp. MWU12-2323	94	DsbE family thiol:disulfide interchange protein	CcmG		
1848	157	WP_040065772.1	<i>batumici</i>	93	Cytochrome c-type biogenesis protein CcmH	CcmL/CcmH		

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1849	400	WP_177060461.1	<i>gingeri</i>	91	c-type cytochrome biogenesis protein CcmI	CcmH/CcmI		
1918	72	WP_177125739.1	<i>gingeri</i>	93	cbb3-type cytochrome oxidase assembly protein	CcoS		
1919	817	WP_177145161.1	<i>gingeri</i>	96	Heavy metal translocating P-type ATPase metal-binding domain-containing protein			
1920	180	WP_177095016.1	<i>gingeri</i>	94	FixH family protein	FixH		
1921	472	WP_177140487.1	<i>gingeri</i>	95	Cytochrome c oxidase accessory protein	CcoG		
1922	325	WP_103032486.1	<i>gingeri</i>	96	Cytochrome-c oxidase, cbb3-type subunit III	CcoP		
1923	62	WP_065887892.1	sp. 31 R 17	93	CcoQ/FixQ family Cbb3-type cytochrome c oxidase assembly chaperone	CcoQ/FixQ		
1924	203	WP_025110367.1	sp. H1h	99	Cytochrome-c oxidase, cbb3-type subunit II	CcoO		
1925	481	WP_152737003.1	sp. MWU12-2323	99	Cytochrome-c oxidase, cbb3-type subunit I	CcoN		
1926	313	RBH55338.1	sp. MWU12-2324	94	Cytochrome-c oxidase, cbb3-type subunit III	CcoP		
1927	66	WP_040064645.1	<i>batumici</i>	91	Cytochrome cbb-3 oxidase	CcoQ		
1928	203	WP_177095029.1	<i>gingeri</i>	94	Cytochrome-c oxidase, cbb3-type subunit II	CcoO		
1929	475	WP_177105566.1	<i>gingeri</i>	97	Cytochrome-c oxidase, cbb3-type subunit I	CcoN		
2080	465	WP_177105245.1	<i>gingeri</i>	97	Uroporphyrinogen-III C-methyltransferase	CobA		
2180	705	WP_150615638.1	<i>fluorescens</i>	93	TonB-dependent siderophore receptor			+

RAST n#	Residues n#	BLAST hit (Accession #)	<i>Pseudomonas</i>	Id (%)	Function (homolog)	Abb.	ECF	TonB
2205	302	WP_038414296.1	<i>cremoricolorata</i>	90	Metal ABC transporter permease; ABC-type Mn2+/Zn2+ transport system, permease	ZnuB		
2206	227	WP_069076107.1	<i>fluorescens</i>	85	Metal ABC transporter ATP-binding protein in pyoverdine cluster			
2336	450	WP_124335016.1	<i>chlororaphis</i>	78	Coproporphyrinogen III oxidase, HemN C-terminal domain	HemN_C		
2337	463	WP_077430437.1	sp. C9	88	Oxygen-independent coproporphyrinogen III oxidase	HemN		
2339	280	WP_052964445.1	<i>syringae</i>	81	Uroporphyrinogen-III C-methyltransferase	CobA		
2340	393	WP_129444728.1	ACM7	87	Heme d1 biosynthesis radical SAM protein	NirJ		
2341	168	WP_123722304.1	<i>lini</i>	89	Lrp/AsnC family transcriptional regulator			
2342	148	WP_150804542.1	<i>fluorescens</i>	83	Lrp/AsnC family transcriptional regulator			
2343	173	WP_008075026.1	sp. GM79	77	Lrp/AsnC family transcriptional regulator; DNA-binding transcriptional regulator			
2344	153	KTC33597.1	sp. ABAC61	83	AsnC family transcriptional regulator			
2345	393	WP_111454566.1	sp. URMO17WK12:I6	88	Protein NirF; cytochrome D1 heme domain	NirF		
2794	173	RBH56222.1	sp. MWU13-2860	92	RNA polymerase sigma factor		+	
2795	322	WP_121134120.1	<i>asplenii</i>	92	FecR domain-containing protein	FecR		
2796	861	WP_100944418.1	sp. QS1027	90	TonB-dependent receptor; Outer membrane receptor protein, Fe transport	CirA		+

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2797	203	WP_177123997.1	<i>gingeri</i>	91	Biliverdin-producing heme oxygenase	HemO		
2846	474	WP_040070318.1	<i>batumici</i>	92	c-type cytochrome; Diheme oxidoreductase, putative peroxidase			
2876	73	WP_040070349.1	<i>batumici</i>	96	Bacterioferritin-associated ferredoxin	Bfd		
2877	157	RBH56294.1	sp. MWU13-2860	97	Bacterioferritin; Ferritin-ike Diiron-binding domain	Bfr		
2882	350	WP_177123974.1	<i>gingeri</i>	91	ATP-binding cassette domain-containing protein; ABC-type Fe ³⁺ /spermidine/putrescine transport systems, ATPase component			
3102	617	WP_040067449.1	<i>batumici</i>	91	IucA/IucC family siderophore biosynthesis protein			
3105	172	WP_040067443.1	<i>batumici</i>	91	sigma-70 family RNA polymerase sigma factor		+	
3106	326	WP_040067441.1	<i>batumici</i>	84	FecR family protein; Periplasmic ferric-dicitrate binding protein	FecR		
3107	811	WP_040067439.1	<i>batumici</i>	90	TonB-dependent siderophore receptor			+
3108	397	WP_040067438.1	<i>batumici</i>	92	ABC transporter substrate-binding protein; ferrichrome/ferrioxamine B periplasmic transporter	TroA superfamily		
3109	354	WP_131063491.1	sp. BGI-2	91	Iron ABC transporter permease; ABC-type Fe ³⁺ -siderophore transport system, permease component			
3188	339	WP_017129082.1	<i>gingeri</i>	95	Iron ABC transporter substrate-binding protein			
3189	538	WP_177102669.1	<i>gingeri</i>	95	ABC transporter permease subunit			

RAST n#	Residues n#	BLAST hit (Accession #)	<i>Pseudomonas</i>	Id (%)	Function (homolog)	Abb.	ECF	TonB
3190	359	WP_121141315.1	<i>asplenii</i>	93	ABC transporter ATP-binding protein; ABC-type Fe3+/spermidine/putrescine transport system, ATPase component			
3238	325	WP_103499260.1	<i>gingeri</i>	99	Porphobilinogen synthase			
3253	2212	WP_177098858.1	<i>gingeri</i>	91	Hemagglutinin repeat-containing protein			
3254	173	WP_121139294.1	<i>asplenii</i>	91	Toxin-activating lysine-acyltransferase	HlyC		
3495	553	WP_177143682.1	<i>gingeri</i>	98	Nitrite/sulfite reductase			
3600	134	WP_150573043.1	<i>fluorescens</i>	88	Biopolymer transporter	ExbD		
3601	242	WP_079303192.1	sp. Ep R1	96	MotA/TolQ/ExbB proton channel family protein	ExbB/TolQ		
3616	711	WP_152740345.1	sp. MWU12-2323	94	TonB-dependent receptor			+
3640	816	WP_100939323.1	sp. QS1027	94	TonB-dependent receptor; ligand-binding site			+
3748	83	WP_177130255.1	<i>gingeri</i>	95	Hemagglutinin repeat-containing protein			
3750	4313	WP_177141005.1	<i>gingeri</i>	88	Hemagglutinin repeat-containing protein			
3942	142	WP_177101709.1	<i>gingeri</i>	98	Biopolymer transporter			
3943	615	WP_177145530.1	<i>gingeri</i>	93	DUF2341 domain-containing protein			
3978	281	WP_177145518.1	<i>gingeri</i>	95	FTR1 family protein; high affinity ferrous iron permease	FTR1/Fip1/EfeU		
3979	398	WP_040067323.1	<i>batumici</i>	90	Iron uptake system protein; ferrous iron transporter periplasmic, cupredoxin-like domain	EfeO		

RAST n#	Residues n#	BLAST hit (Accession #)	<i>Pseudomonas</i>	Id (%)	Function (homolog)	Abb.	ECF	TonB
3980	439	WP_177101670.1	<i>batumici</i>	93	Deferochelatase/oxidase	EfeB		
3981	275	WP_152738845.1	sp. MWU12-2323	97	Iron uptake system protein; ferrous iron transporter periplasmic, cupredoxin-like domain	EfeO		
4019	317	WP_100941090.1	sp. QS1027	90	DUF4880 domain-containing protein	FecR		
4020	183	WP_177098074.1	<i>gingeri</i>	98	sigma-70 family RNA polymerase sigma factor		+	
4067	568	WP_040069813.1	<i>batumici</i>	92	Cyclic peptide export ABC transporter			
4088	151	WP_040070281.1	<i>batumici</i>	91	Biliverdin-producing heme oxygenase; heme ligand			
4095	267	WP_121134120.1	<i>asplenii</i>	93	FecR domain-containing protein	FecR		
4116	99	WP_121134120.1	<i>asplenii</i>	82	FecR domain-containing protein	FecR		
4117	78	WP_084615120.1	<i>batumici</i>	93	FecR domain-containing protein	FecR		
4118	81	WP_177143386.1	<i>gingeri</i>	96	FecR domain-containing protein	FecR		
4121	63	WP_177143386.1	<i>gingeri</i>	97	FecR domain-containing protein	FecR		
4122	240	WP_121134120.1	<i>asplenii</i>	89	FecR domain-containing protein	FecR		
4123	173	RBH56222.1	sp. MWU13-2860	92	RNA polymerase sigma factor		+	
4138	177	WP_177103950.1	<i>gingeri</i>	89	FecR domain-containing protein	FecR		
3944	543	WP_178129836.1	sp. MWU12-2323	96	ShlB/FhaC/HecB family hemolysin secretion/activation protein			

RAST n#	Residues n#	BLAST hit (Accession #)	<i>Pseudomonas</i>	Id (%)	Function (homolog)	Abb.	ECF	TonB
4557	1604	WP_152740400.1	sp. MWU12-2323	90	Filamentous hemagglutinin N-terminal domain-containing protein			
4558	274	WP_177141023.1	<i>gingeri</i>	74	Hemagglutinin repeat-containing protein			
4638	213	WP_152740400.1	sp. MWU12-2323	62	Filamentous hemagglutinin N-terminal domain-containing protein			
4639	113	WP_177104149.1	<i>gingeri</i>	72	Filamentous hemagglutinin N-terminal domain-containing protein			
4680	285	WP_124421089.1	sp. R2-60-08W	66	Iron ABC transporter permease			
4681	103	WP_017130562.1	<i>agarici</i>	67	Iron ABC transporter permease; ABC-type Fe ³⁺ transport system, permease component	FbpB		
4683	211	WP_161905978.1	sp. L13	54	ABC transporter permease subunit			
5085	307	WP_040062961.1	<i>batumici</i>	97	Oxygen-dependent coproporphyrinogen oxidase; coproporphyrinogen III oxidase	HemF		
5123	249	WP_121135748.1	<i>asplenii</i>	94	SURF1 family protein; cytochrome c oxidase (complex IV)			
5125	360	RBH58670.1	sp. MWU13-2860	98	Heme A synthase; Cytochrome oxidase assembly protein	Cox15-CtaA		
5126	300	WP_100939995.1	sp. QS1027	98	Protoheme IX farnesyltransferase	CtaB		
5265	334	WP_152736737.1	sp. MWU12-2323	95	Extracellular solute-binding protein			
5266	536	WP_121135415.1	<i>asplenii</i>	96	Iron ABC transporter permease; ABC-type Fe ³⁺ transport system, permease component			

RAST n#	Residues n#	BLAST hit (Accession #)	<i>Pseudomonas</i>	Id (%)	Function (homolog)	Abb.	ECF	TonB
5321	359	RBH53541.1	sp. MWU13-2860	95	Putative 2-aminoethylphosphonate ABC transporter ATP-binding protein	PhnT		
5322	575	WP_040071539.1	<i>batumici</i>	95	Putative 2-aminoethylphosphonate ABC transporter permease subunit	PhnU		
5323	341	WP_121135351.1	<i>asplenii</i>	97	Putative 2-aminoethylphosphonate ABC transporter substrate-binding protein	PhnS		
5369	401	WP_121135314.1	<i>asplenii</i>	98	Radical SAM family heme chaperone HemW; HemN family oxidoreductase	HemW		
5606	143	WP_121135101.1	<i>asplenii</i>	97	Protoporphyrinogen oxidase	HemJ		
5612	209	WP_177101963.1	<i>gingeri</i>	96	Protein-methionine-sulfoxide reductase heme-binding subunit	MsrQ		
5684	136	WP_040064097.1	<i>batumici</i>	96	Ferric iron uptake transcriptional regulator			
5891	356	WP_040063677.1	<i>batumici</i>	99	Uroporphyrinogen decarboxylase	HemE		
6129	338	WP_177094115.1	<i>gingeri</i>	99	Porphobilinogen synthase	HemB		
6145	408	WP_040071647.1	<i>batumici</i>	95	Heme biosynthesis protein	HemY		
6146	376	WP_177145349.1	<i>gingeri</i>	94	Uroporphyrinogen-III C-methyltransferase			
6147	256	WP_177145348.1	<i>gingeri</i>	93	Uroporphyrinogen-III synthase			
6148	314	WP_177094092.1	<i>gingeri</i>	97	Hydroxymethylbilane synthase	HemC		