

Actinorhodopsins: proteorhodopsin-like gene sequences in non-marine environments

Environmental Microbiology

10, 1039-1056

DOI: [10.1111/j.1462-2920.2007.01525.x](https://doi.org/10.1111/j.1462-2920.2007.01525.x)

Citation Report

#	ARTICLE	IF	CITATIONS
1	Genomics and functional genomics with haloarchaea. Archives of Microbiology, 2008, 190, 197-215.	2.2	42
2	Widespread distribution of proteorhodopsins in freshwater and brackish ecosystems. ISME Journal, 2008, 2, 656-662.	9.8	97
4	Proteorhodopsins: an array of physiological roles?. Nature Reviews Microbiology, 2008, 6, 488-494.	28.6	220
5	Involvement of Cell Surface Structures in Size-Independent Grazing Resistance of Freshwater <i>Actinobacteria</i> . Applied and Environmental Microbiology, 2009, 75, 4720-4726.	3.1	90
6	High Ratio of Bacteriochlorophyll Biosynthesis Genes to Chlorophyll Biosynthesis Genes in Bacteria of Humic Lakes. Applied and Environmental Microbiology, 2009, 75, 7221-7228.	3.1	23
7	Actinorhodopsin genes discovered in diverse freshwater habitats and among cultivated freshwater <i>Actinobacteria</i> . ISME Journal, 2009, 3, 726-737.	9.8	140
8	Diversity and abundance of freshwater <i>Actinobacteria</i> along environmental gradients in the brackish northern Baltic Sea. Environmental Microbiology, 2009, 11, 2042-2054.	3.8	73
9	Comparative analyses of actinobacterial genomic fragments from Lake Kinneret. Environmental Microbiology, 2009, 11, 3189-3200.	3.8	19
10	Description of seven candidate species affiliated with the phylum Actinobacteria, representing planktonic freshwater bacteria. International Journal of Systematic and Evolutionary Microbiology, 2009, 59, 112-117.	1.7	129
11	Reconstitution of <i>Gloeobacter violaceus</i> Rhodopsin with a Light-Harvesting Carotenoid Antenna. Biochemistry, 2009, 48, 10948-10955.	2.5	80
12	Contributions of anoxygenic and oxygenic phototrophy and chemolithotrophy to carbon and oxygen fluxes in aquatic environments. Aquatic Microbial Ecology, 2009, 56, 177-192.	1.8	154
13	The Photocycle and Proton Translocation Pathway in a Cyanobacterial Ion-Pumping Rhodopsin. Biophysical Journal, 2009, 96, 1471-1481.	0.5	100
14	Predicted bacteriorhodopsin from <i>Exiguobacterium sibiricum</i> is a functional proton pump. FEBS Letters, 2010, 584, 4193-4196.	2.8	62
15	The Light-Driven Proton Pump Proteorhodopsin Enhances Bacterial Survival during Tough Times. PLoS Biology, 2010, 8, e1000359.	5.6	124
17	Halophiles and Hypersaline Environments. , 2011, , .		17
18	Metagenomics of the Water Column in the Pristine Upper Course of the Amazon River. PLoS ONE, 2011, 6, e23785.	2.5	183
19	Enlightening the life sciences: the history of halobacterial and microbial rhodopsin research. FEMS Microbiology Reviews, 2011, 35, 1082-1099.	8.6	52
20	An integrative study of a meromictic lake ecosystem in Antarctica. ISME Journal, 2011, 5, 879-895.	9.8	204

#	ARTICLE	IF	CITATIONS
21	A Guide to the Natural History of Freshwater Lake Bacteria. <i>Microbiology and Molecular Biology Reviews</i> , 2011, 75, 14-49.	6.6	1,356
22	A Microbial Rhodopsin with a Unique Retinal Composition Shows Both Sensory Rhodopsin II and Bacteriorhodopsin-like Properties. <i>Journal of Biological Chemistry</i> , 2011, 286, 5967-5976.	3.4	62
23	Genome Sequence of <i>Candidatus Aquiluna</i> sp. Strain IMCC13023, a Marine Member of the Actinobacteria Isolated from an Arctic Fjord. <i>Journal of Bacteriology</i> , 2012, 194, 3550-3551.	2.2	66
24	High-throughput single-cell sequencing identifies photoheterotrophs and chemoautotrophs in freshwater bacterioplankton. <i>ISME Journal</i> , 2012, 6, 113-123.	9.8	168
25	Proteorhodopsin-Like Genes Present in Thermoacidophilic High-Mountain Microbial Communities. <i>Applied and Environmental Microbiology</i> , 2012, 78, 7813-7817.	3.1	13
26	Measuring Community Similarity with Phylogenetic Networks. <i>Molecular Biology and Evolution</i> , 2012, 29, 3947-3958.	8.9	21
27	Microbial rhodopsins on leaf surfaces of terrestrial plants. <i>Environmental Microbiology</i> , 2012, 14, 140-146.	3.8	78
28	Breaking a paradigm: cosmopolitan and abundant freshwater actinobacteria are low GC. <i>Environmental Microbiology Reports</i> , 2012, 4, 29-35.	2.4	66
29	Environmental actinorhodopsin expression revealed by a new <i>in situ</i> filtration and fixation sampler. <i>Environmental Microbiology Reports</i> , 2012, 4, 491-497.	2.4	18
30	Suboptimal light conditions negatively affect the heterotrophy of <i>Planktothrix rubescens</i> but are beneficial for accompanying <i>Limnohabitans</i> spp.. <i>Environmental Microbiology</i> , 2012, 14, 765-778.	3.8	9
31	Metagenomic insights into strategies of carbon conservation and unusual sulfur biogeochemistry in a hypersaline Antarctic lake. <i>ISME Journal</i> , 2013, 7, 1944-1961.	9.8	75
32	Characterization of the chimeric seven-transmembrane protein containing conserved region of helix C α -F of microbial rhodopsin from Ganges River. <i>Applied Microbiology and Biotechnology</i> , 2013, 97, 819-828.	3.6	12
33	The Phototrophic Way of Life. , 2013, , 203-257.		39
34	Proteorhodopsins: Widespread Microbial Light-Driven Proton Pumps. , 2013, , 280-285.		13
35	Bacterial and archaeal community structure in the surface microlayer of high mountain lakes examined under two atmospheric aerosol loading scenarios. <i>FEMS Microbiology Ecology</i> , 2013, 84, 387-397.	2.7	36
36	Diel gene expression profiles of a phosphorus limited mountain lake using metatranscriptomics. <i>Environmental Microbiology</i> , 2013, 15, 1190-1203.	3.8	41
37	Thermal and Spectroscopic Characterization of a Proton Pumping Rhodopsin from an Extreme Thermophile. <i>Journal of Biological Chemistry</i> , 2013, 288, 21581-21592.	3.4	55
38	Metagenomics uncovers a new group of low GC and ultra-small marine Actinobacteria. <i>Scientific Reports</i> , 2013, 3, 2471.	3.3	182

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39	Insights into Variability of Actinorhodopsin Genes of the LG1 Cluster in Two Different Freshwater Habitats. <i>PLoS ONE</i> , 2013, 8, e68542.	2.5	4
40	Comparative single-cell genomics reveals potential ecological niches for the freshwater actinobacteria lineage. <i>ISME Journal</i> , 2014, 8, 2503-2516.	9.8	137
41	Proteorhodopsin. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2014, 1837, 614-625.	1.0	96
42	Distribution of actinorhodopsin genes in Baltic Sea salinity gradients indicates adaptation of facultative freshwater photoheterotrophs to brackish waters. <i>Environmental Microbiology</i> , 2014, 16, 586-597.	3.8	19
43	Microbial and Animal Rhodopsins: Structures, Functions, and Molecular Mechanisms. <i>Chemical Reviews</i> , 2014, 114, 126-163.	47.7	897
44	Key roles for freshwater actinobacteria revealed by deep metagenomic sequencing. <i>Molecular Ecology</i> , 2014, 23, 6073-6090.	3.9	170
45	Eubacterial rhodopsins – Unique photosensors and diverse ion pumps. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2014, 1837, 553-561.	1.0	67
46	Auxotrophy and intrapopulation complementarity in the interactome of a cultivated freshwater model community. <i>Molecular Ecology</i> , 2015, 24, 4449-4459.	3.9	97
47	MicRhoDE: a curated database for the analysis of microbial rhodopsin diversity and evolution. <i>Database: the Journal of Biological Databases and Curation</i> , 2015, 2015, bav080.	3.0	43
48	Next-generation sequencing (NGS) for assessment of microbial water quality: current progress, challenges, and future opportunities. <i>Frontiers in Microbiology</i> , 2015, 6, 1027.	3.5	200
49	Winter diversity and expression of proteorhodopsin genes in a polar ocean. <i>ISME Journal</i> , 2015, 9, 1835-1845.	9.8	22
50	Characterization of an Unconventional Rhodopsin from the Freshwater Actinobacterium <i>Rhodoluna lacicola</i> . <i>Journal of Bacteriology</i> , 2015, 197, 2704-2712.	2.2	34
51	Genomes of Planktonic Acidimicrobiales: Widening Horizons for Marine Actinobacteria by Metagenomics. <i>MBio</i> , 2015, 6, .	4.1	88
52	A new group of eubacterial light-driven retinal-binding proton pumps with an unusual cytoplasmic proton donor. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2015, 1847, 1518-1529.	1.0	35
53	Using Total Internal Reflection Fluorescence Microscopy To Visualize Rhodopsin-Containing Cells. <i>Applied and Environmental Microbiology</i> , 2015, 81, 3442-3450.	3.1	12
54	Retinal-binding proteins mirror prokaryotic dynamics in multipond solar salterns. <i>Environmental Microbiology</i> , 2015, 17, 514-526.	3.8	3
55	Bacterial Diversity in Submarine Groundwater along the Coasts of the Yellow Sea. <i>Frontiers in Microbiology</i> , 2015, 6, 1519.	3.5	21
56	Diversity of Phototrophic Genes Suggests Multiple Bacteria May Be Able to Exploit Sunlight in Exposed Soils from the Sør Rondane Mountains, East Antarctica. <i>Frontiers in Microbiology</i> , 2016, 7, 2026.	3.5	20

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57	Photochemical characterization of actinorhodopsin and its functional existence in the natural host. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2016, 1857, 1900-1908.	1.0	17
58	Marine Bacterial and Archaeal Ion-Pumping Rhodopsins: Genetic Diversity, Physiology, and Ecology. <i>Microbiology and Molecular Biology Reviews</i> , 2016, 80, 929-954.	6.6	173
59	Study of Prokaryotes and Viruses in Aquatic Ecosystems by Metagenetic and Metagenomic Approaches. , 2016, , 245-254.		2
60	Biochemical Analysis of Microbial Rhodopsins. <i>Current Protocols in Microbiology</i> , 2016, 41, 1F.4.1-1F.4.18.	6.5	6
61	Microbial Rhodopsins: Diversity, Mechanisms, and Optogenetic Applications. <i>Annual Review of Biochemistry</i> , 2017, 86, 845-872.	11.1	271
62	Metabolic Network Analysis and Metatranscriptomics Reveal Auxotrophies and Nutrient Sources of the Cosmopolitan Freshwater Microbial Lineage <i>acL</i> . <i>MSystems</i> , 2017, 2, .	3.8	21
63	Wetland management using microbial indicators. <i>Ecological Engineering</i> , 2017, 108, 456-476.	3.6	54
64	Isolation and characterization of aerobic anoxygenic phototrophs from exposed soils from the SÄr Rondane Mountains, East Antarctica. <i>Systematic and Applied Microbiology</i> , 2017, 40, 357-369.	2.8	69
65	Proteomic Characterization of <i>Armillaria mellea</i> Reveals Oxidative Stress Response Mechanisms and Altered Secondary Metabolism Profiles. <i>Microorganisms</i> , 2017, 5, 60.	3.6	12
66	Microbial Rhodopsins. <i>Sub-Cellular Biochemistry</i> , 2018, 87, 19-56.	2.4	39
67	Distribution and Diversity of Rhodopsin-Producing Microbes in the Chesapeake Bay. <i>Applied and Environmental Microbiology</i> , 2018, 84, .	3.1	24
68	<i>acL</i> Actinobacteria Assemble a Functional Actinorhodopsin with Natively Synthesized Retinal. <i>Applied and Environmental Microbiology</i> , 2018, 84, .	3.1	15
69	Oligomeric states of microbial rhodopsins determined by high-speed atomic force microscopy and circular dichroic spectroscopy. <i>Scientific Reports</i> , 2018, 8, 8262.	3.3	76
70	Evolution of Phototrophy in the Chloroflexi Phylum Driven by Horizontal Gene Transfer. <i>Frontiers in Microbiology</i> , 2018, 9, 260.	3.5	143
71	Depth distribution of microbial diversity in lakes. , 2019, , 225-262.		1
72	Functional importance of the oligomer formation of the cyanobacterial H ⁺ pump <i>Gloeobacter</i> rhodopsin. <i>Scientific Reports</i> , 2019, 9, 10711.	3.3	17
73	FÄ©ry Infrared Spectrometer for Single-Shot Analysis of Protein Dynamics. <i>Journal of Physical Chemistry Letters</i> , 2019, 10, 7672-7677.	4.6	10
74	Bacterial community structure in a sympagic habitat expanding with global warming: brackish ice brine at 85â€°90 Å°N. <i>ISME Journal</i> , 2019, 13, 316-333.	9.8	18

#	ARTICLE	IF	CITATIONS
75	Photochemical characterization of flavobacterial rhodopsin: The importance of the helix E region for heat stability. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2020, 1861, 148092.	1.0	2
77	Divergent responses of taxonomic and predicted functional profiles of bacterioplankton to reservoir impoundment. <i>Environmental Research</i> , 2020, 182, 109083.	7.5	8
78	The Ecuadorian Microbiome Project: a plea to strengthen microbial genomic research. <i>Neotropical Biodiversity</i> , 2021, 7, 223-237.	0.5	5
79	Carbon fixation and rhodopsin systems in microbial mats from hypersaline lakes Brava and Tebenquiche, Salar de Atacama, Chile. <i>PLoS ONE</i> , 2021, 16, e0246656.	2.5	12
80	Environmental Features of Freshwater Planktonic Actinobacteria. <i>Contemporary Problems of Ecology</i> , 2021, 14, 158-170.	0.7	13
81	Diversity of Aerobic Anoxygenic Phototrophs and Rhodopsin-Containing Bacteria in the Surface Microlayer, Water Column and Epilithic Biofilms of Lake Baikal. <i>Microorganisms</i> , 2021, 9, 842.	3.6	8
82	Assembly of Natively Synthesized Dual Chromophores Into Functional Actinorhodopsin. <i>Frontiers in Microbiology</i> , 2021, 12, 652328.	3.5	10
83	<i>Aquiluna borgnonia</i> gen. nov., sp. nov., a member of a Microbacteriaceae lineage of freshwater bacteria with small genome sizes. <i>International Journal of Systematic and Evolutionary Microbiology</i> , 2021, 71, .	1.7	16
84	Rethinking microbial infallibility in the metagenomics era. <i>FEMS Microbiology Ecology</i> , 2021, 97, .	2.7	6
85	Functional Mechanism of Proton Pump-Type Rhodopsins Found in Various Microorganisms as a Potential Effective Tool in Optogenetics. <i>Biochemistry</i> , 0, , .	1.2	0
86	Genomic signatures of Lake Erie bacteria suggest interaction in the <i>Microcystis</i> phycosphere. <i>PLoS ONE</i> , 2021, 16, e0257017.	2.5	28
87	Xanthorhodopsin. , 2011, , 319-340.		4
89	Proton-Pumping Microbial Rhodopsins â€“ Ubiquitous Structurally Simple Helpers of Respiration and Photosynthesis. <i>Advances in Photosynthesis and Respiration</i> , 2014, , 1-20.	1.0	2
90	Functional evolution of photochemical energy transformations in oxygen-producing organisms. <i>Functional Plant Biology</i> , 2009, 36, 505.	2.1	41
92	Elements, biochemicals, and structures of microbes. , 2011, , 19-34.		1
93	Microbial primary production and phototrophy. , 2011, , 55-78.		2
94	Degradation of organic material. , 2011, , 79-98.		3
95	Microbial growth, biomass production, and controls. , 2011, , 99-116.		3

#	ARTICLE	IF	CITATIONS
96	Ecology of viruses. , 2011, , 137-156.		1
98	Transport and Sensory Rhodopsins in Microorganisms. , 2012, , 1173-1193.		8
99	Functional Green-Tuned Proteorhodopsin from Modern Stromatolites. PLoS ONE, 2016, 11, e0154962.	2.5	19
100	Unique and highly variable bacterial communities inhabiting the surface microlayer of an oligotrophic lake. Aquatic Microbial Ecology, 2017, 79, 115-125.	1.8	16
101	Genomes and metagenomes of microbes and viruses. , 2011, , 177-194.		0
102	Symbiosis and microbes. , 2011, , 257-276.		0
103	Community structure of microbes in natural environments. , 2011, , 157-176.		0
104	Physical-chemical environment of microbes. , 2011, , 35-54.		0
105	Introduction to geomicrobiology. , 2011, , 237-256.		0
106	Predation and protists. , 2011, , 117-136.		0
108	Processes in anoxic environments. , 2011, , 195-216.		0
109	The nitrogen cycle. , 2011, , 217-236.		0
110	Rivers, Metagenomics of. , 2014, , 1-7.		0
113	Omega Rhodopsins: A Versatile Class of Microbial Rhodopsins. Journal of Microbiology and Biotechnology, 2020, 30, 633-641.	2.1	2
114	Photoheterotrophy by aerobic anoxygenic bacteria modulates carbon fluxes in a freshwater lake. ISME Journal, 2022, 16, 1046-1054.	9.8	15
115	The impact of heterotrophic bacteria on recalcitrant dissolved organic carbon formation in a typical karstic river. Science of the Total Environment, 2022, 815, 152576.	8.0	15
116	Comparative Genomic Analyses of the Genus Nesterenkonia Unravels the Genomic Adaptation to Polar Extreme Environments. Microorganisms, 2022, 10, 233.	3.6	10
131	Ion-pumping microbial rhodopsin protein classification by machine learning approach. BMC Bioinformatics, 2023, 24, .	2.6	0

#	ARTICLE	IF	CITATIONS
132	Diversity, distribution, and expression of opsin genes in freshwater lakes. <i>Molecular Ecology</i> , 2023, 32, 2798-2817.	3.9	1
135	Pelagic Bacteria, Archaea, and Viruses. , 2024, , 705-757.		1
136	Automatic Rhodopsin Modeling with Multiple Protonation Microstates. <i>Journal of Physical Chemistry A</i> , 0, , .	2.5	0