

# Light-dependent chlorophyll f synthase is a highly diverse protein in photosystem II

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Citation Report

#	ARTICLE	IF	CITATIONS
1	Photosynthetic Versatility in the Genome of <i>Geitlerinema</i> sp. PCC 9228 (Formerly <i>Oscillatoria</i> ) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 747 Microbiology, 2016, 7, 1546.	1.5	37
2	A Proposal for Formation of Archaeal Stromatolites before the Advent of Oxygenic Photosynthesis. <i>Frontiers in Microbiology</i> , 2016, 7, 1784.	1.5	16
3	Network analysis of transcriptomics expands regulatory landscapes in <i>Synechococcus</i> sp. PCC 7002. <i>Nucleic Acids Research</i> , 2016, 44, 8810-8825.	6.5	26
4	Cyanobacteriochrome Photoreceptors Lacking the Canonical Cys Residue. <i>Biochemistry</i> , 2016, 55, 6981-6995.	1.2	34
5	Embracing Biological Solutions to the Sustainable Energy Challenge. <i>CheM</i> , 2017, 2, 20-51.	5.8	51
6	Light use efficiency for vegetables production in protected and indoor environments. <i>European Physical Journal Plus</i> , 2017, 132, 1.	1.2	65
7	Biochemistry of Chlorophyll Biosynthesis in Photosynthetic Prokaryotes. , 2017, , 67-122.		8
8	Light regulation of pigment and photosystem biosynthesis in cyanobacteria. <i>Current Opinion in Plant Biology</i> , 2017, 37, 24-33.	3.5	93
9	Phytochrome diversification in cyanobacteria and eukaryotic algae. <i>Current Opinion in Plant Biology</i> , 2017, 37, 87-93.	3.5	63
10	Impact of culture conditions on the chlorophyll content of microalgae for biotechnological applications. <i>World Journal of Microbiology and Biotechnology</i> , 2017, 33, 20.	1.7	170
11	A niche for cyanobacteria producing chlorophyll <i>f</i> within a microbial mat. <i>ISME Journal</i> , 2017, 11, 2368-2378.	4.4	62
12	Gaia and her microbiome. <i>FEMS Microbiology Ecology</i> , 2017, 93, fiw247.	1.3	29
13	The C21-formyl group in chlorophyll <i>f</i> originates from molecular oxygen. <i>Journal of Biological Chemistry</i> , 2017, 292, 19279-19289.	1.6	20
14	An algal photoenzyme converts fatty acids to hydrocarbons. <i>Science</i> , 2017, 357, 903-907.	6.0	317
15	Subcellular pigment distribution is altered under far-red light acclimation in cyanobacteria that contain chlorophyll <i>f</i> . <i>Photosynthesis Research</i> , 2017, 134, 183-192.	1.6	24
16	Far-red light photoacclimation (FaRLiP) in <i>Synechococcus</i> sp. PCC 7335. II.Characterization of phycobiliproteins produced during acclimation to far-red light. <i>Photosynthesis Research</i> , 2017, 131, 187-202.	1.6	75
17	Far-red light photoacclimation (FaRLiP) in <i>Synechococcus</i> sp. PCC 7335: I. Regulation of FaRLiP gene expression. <i>Photosynthesis Research</i> , 2017, 131, 173-186.	1.6	67
18	Diversity of Chlorophototrophic Bacteria Revealed in the Omics Era. <i>Annual Review of Plant Biology</i> , 2018, 69, 21-49.	8.6	94

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19	Far-red light photoadaptations in aquatic cyanobacteria. <i>Hydrobiologia</i> , 2018, 813, 1-17.	1.0	27
20	Leptolyngbya CCM 4, a cyanobacterium with far-red photoacclimation from Cuatro Ci�negas Basin, M�xico. <i>Photosynthetica</i> , 2018, 56, 342-353.	0.9	20
21	A physiological perspective on the origin and evolution of photosynthesis. <i>FEMS Microbiology Reviews</i> , 2018, 42, 205-231.	3.9	115
22	Living off the Sun: chlorophylls, bacteriochlorophylls and rhodopsins. <i>Photosynthetica</i> , 2018, 56, 11-43.	0.9	50
24	Exoplanet Biosignatures: A Review of Remotely Detectable Signs of Life. <i>Astrobiology</i> , 2018, 18, 663-708.	1.5	328
25	Diel regulation of photosynthetic activity in the oceanic unicellular diazotrophic cyanobacterium <i>Crocospaera watsonii</i> WH8501. <i>Environmental Microbiology</i> , 2018, 20, 546-560.	1.8	25
26	Biomass from microalgae: the potential of domestication towards sustainable biofactories. <i>Microbial Cell Factories</i> , 2018, 17, 173.	1.9	200
27	Complementary chromatic and far-red photoacclimations in <i>Synechococcus</i> ATCC 29403 (PCC 7335). I: The phycobilisomes, a proteomic approach. <i>Photosynthesis Research</i> , 2018, 138, 39-56.	1.6	26
28	Enhancing photosynthesis in plants: the light reactions. <i>Essays in Biochemistry</i> , 2018, 62, 85-94.	2.1	90
29	Photosynthesis supported by a chlorophyll f-dependent, entropy-driven uphill energy transfer in <i>Halomicronema hongdechloris</i> cells adapted to far-red light. <i>Photosynthesis Research</i> , 2019, 139, 185-201.	1.6	59
30	Genetic Engineering, Synthetic Biology and the Light Reactions of Photosynthesis. <i>Plant Physiology</i> , 2019, 179, 778-793.	2.3	55
31	Photolyase-Like Catalytic Behavior of CeO <sub>2</sub> . <i>Nano Letters</i> , 2019, 19, 8270-8277.	4.5	70
32	Characterization of chlorophyll f synthase heterologously produced in <i>Synechococcus</i> sp. PCC 7002. <i>Photosynthesis Research</i> , 2019, 140, 77-92.	1.6	56
33	<i>Fischerella thermalis</i> : a model organism to study thermophilic diazotrophy, photosynthesis and multicellularity in cyanobacteria. <i>Extremophiles</i> , 2019, 23, 635-647.	0.9	29
34	Energy transfer from chlorophyll f to the trapping center in naturally occurring and engineered Photosystem I complexes. <i>Photosynthesis Research</i> , 2019, 141, 151-163.	1.6	47
35	Far-red light acclimation in diverse oxygenic photosynthetic organisms. <i>Photosynthesis Research</i> , 2019, 142, 349-359.	1.6	35
36	Fourier transform visible and infrared difference spectroscopy for the study of P700 in photosystem I from <i>Fischerella thermalis</i> PCC 7521 cells grown under white light and far-red light: Evidence that the A�1 cofactor is chlorophyll f. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2019, 1860, 452-460.	0.5	16
37	The trouble with oxygen: The ecophysiology of extant phototrophs and implications for the evolution of oxygenic photosynthesis. <i>Free Radical Biology and Medicine</i> , 2019, 140, 233-249.	1.3	38

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38	Light-Driven Kinetic Resolution of $\alpha$ -Functionalized Carboxylic Acids Enabled by an Engineered Fatty Acid Photodecarboxylase. <i>Angewandte Chemie</i> , 2019, 131, 8562-8566.	1.6	21
39	Aromaticity versus regioisomeric effect of $\beta^2$ -substituents in porphyrinoids. <i>Physical Chemistry Chemical Physics</i> , 2019, 21, 10152-10162.	1.3	24
40	Chlorophylls d and f: Synthesis, occurrence, light-harvesting, and pigment organization in chlorophyll-binding protein complexes. <i>Advances in Botanical Research</i> , 2019, , 121-139.	0.5	7
41	Light-Driven Kinetic Resolution of $\alpha$ -Functionalized Carboxylic Acids Enabled by an Engineered Fatty Acid Photodecarboxylase. <i>Angewandte Chemie - International Edition</i> , 2019, 58, 8474-8478.	7.2	77
42	Functional Expression of Gloeobacter Rhodopsin in PSI-Less Synechocystis sp. PCC6803. <i>Frontiers in Bioengineering and Biotechnology</i> , 2019, 7, 67.	2.0	7
43	On the use of oxygenic photosynthesis for the sustainable production of commodity chemicals. <i>Physiologia Plantarum</i> , 2019, 166, 413-427.	2.6	11
44	Biocatalysis Fueled by Light: On the Versatile Combination of Photocatalysis and Enzymes. <i>ChemBioChem</i> , 2019, 20, 1871-1897.	1.3	79
45	Genome and proteome of the chlorophyll f-producing cyanobacterium <i>Halomicronema hongdechloris</i> : adaptative proteomic shifts under different light conditions. <i>BMC Genomics</i> , 2019, 20, 207.	1.2	23
46	Photo-Biocatalysis: Biotransformations in the Presence of Light. <i>ACS Catalysis</i> , 2019, 9, 4115-4144.	5.5	219
47	Global Transcriptional Profiling of the Cyanobacterium <i>Chlorogloeopsis fritschii</i> PCC 9212 in Far-Red Light: Insights Into the Regulation of Chlorophyll d Synthesis. <i>Frontiers in Microbiology</i> , 2019, 10, 465.	1.5	28
48	Desert cyanobacteria under space and planetary simulations: a tool for searching for life beyond Earth and supporting human space exploration. <i>International Journal of Astrobiology</i> , 2019, 18, 483-489.	0.9	17
49	Current and possible approaches for improving photosynthetic efficiency. <i>Plant Science</i> , 2019, 280, 433-440.	1.7	29
50	Early Archean origin of Photosystem $\text{II}$ . <i>Geobiology</i> , 2019, 17, 127-150.	1.1	95
51	Combining retinal-based and chlorophyll-based (oxygenic) photosynthesis: Proteorhodopsin expression increases growth rate and fitness of a $\Delta$ PSI strain of <i>Synechocystis</i> sp. PCC6803. <i>Metabolic Engineering</i> , 2019, 52, 68-76.	3.6	14
52	Spectral signatures of five hydroxymethyl chlorophyll a derivatives chemically derived from chlorophyll b or chlorophyll f. <i>Photosynthesis Research</i> , 2019, 140, 115-127.	1.6	13
53	Aerobic Enzymes and Their Radical SAM Enzyme Counterparts in Tetrapyrrole Pathways. <i>Biochemistry</i> , 2019, 58, 85-93.	1.2	16
54	Evolution of light-independent protochlorophyllide oxidoreductase. <i>Protoplasma</i> , 2019, 256, 293-312.	1.0	23
55	Engineering cyanobacteria chassis cells toward more efficient photosynthesis. <i>Current Opinion in Biotechnology</i> , 2020, 62, 1-6.	3.3	48

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56	Extensive remodeling of the photosynthetic apparatus alters energy transfer among photosynthetic complexes when cyanobacteria acclimate to far-red light. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2020, 1861, 148064.	0.5	46
57	Biotechnological strategies for improved photosynthesis in a future of elevated atmospheric CO <sub>2</sub> . <i>Planta</i> , 2020, 251, 24.	1.6	13
58	Far-red light allophycocyanin subunits play a role in chlorophyll d accumulation in far-red light. <i>Photosynthesis Research</i> , 2020, 143, 81-95.	1.6	25
59	Thermal, electrochemical and photochemical reactions involving catalytically versatile ene reductase enzymes. <i>The Enzymes</i> , 2020, 47, 491-515.	0.7	2
60	Far-red absorption and light-use efficiency trade-offs in chlorophyll f photosynthesis. <i>Nature Plants</i> , 2020, 6, 1044-1053.	4.7	41
61	Far-red photons have equivalent efficiency to traditional photosynthetic photons: Implications for redefining photosynthetically active radiation. <i>Plant, Cell and Environment</i> , 2020, 43, 1259-1272.	2.8	129
62	Light-driven formation of manganese oxide by today's photosystem II supports evolutionarily ancient manganese-oxidizing photosynthesis. <i>Nature Communications</i> , 2020, 11, 6110.	5.8	34
63	Light-induced phycobilisome dynamics in <i>Halomicronema hongdechloris</i> . <i>Journal of Photochemistry and Photobiology A: Chemistry</i> , 2020, 403, 112838.	2.0	6
64	More than just a pair of blue genes: how cyanobacteria adapt to changes in their light environment. <i>Physiologia Plantarum</i> , 2020, 170, 7-9.	2.6	2
65	Opportunities and challenges for assigning cofactors in cryo-EM density maps of chlorophyll-containing proteins. <i>Communications Biology</i> , 2020, 3, 408.	2.0	21
66	Harvesting far-red light: Functional integration of chlorophyll f into Photosystem I complexes of <i>Synechococcus</i> sp. PCC 7002. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2020, 1861, 148206.	0.5	25
67	Global distribution of a chlorophyll <i>f</i> cyanobacterial marker. <i>ISME Journal</i> , 2020, 14, 2275-2287.	4.4	41
68	The diversity and distribution of D1 proteins in cyanobacteria. <i>Photosynthesis Research</i> , 2020, 145, 111-128.	1.6	21
69	Chlorophyll f synthesis by a super-rogue photosystem II complex. <i>Nature Plants</i> , 2020, 6, 238-244.	4.7	28
70	A Critical Review of Genome Editing and Synthetic Biology Applications in Metabolic Engineering of Microalgae and Cyanobacteria. <i>Biotechnology Journal</i> , 2020, 15, e1900228.	1.8	62
71	Structural basis for the adaptation and function of chlorophyll f in photosystem I. <i>Nature Communications</i> , 2020, 11, 238.	5.8	75
72	Light-activated nanozymes: catalytic mechanisms and applications. <i>Nanoscale</i> , 2020, 12, 2914-2923.	2.8	112
73	The structure of Photosystem I acclimated to far-red light illuminates an ecologically important acclimation process in photosynthesis. <i>Science Advances</i> , 2020, 6, eaay6415.	4.7	50

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74	Biosynthesis of the modified tetrapyrroles—the pigments of life. <i>Journal of Biological Chemistry</i> , 2020, 295, 6888-6925.	1.6	170
75	Tightening the Screws on PsbA in Cyanobacteria. <i>Trends in Genetics</i> , 2021, 37, 211-215.	2.9	4
76	Engineering biology approaches for food and nutrient production by cyanobacteria. <i>Current Opinion in Biotechnology</i> , 2021, 67, 1-6.	3.3	21
77	Granick revisited: Synthesizing evolutionary and ecological evidence for the late origin of bacteriochlorophyll via ghost lineages and horizontal gene transfer. <i>PLoS ONE</i> , 2021, 16, e0239248.	1.1	10
78	Light Harvesting Modulation in Photosynthetic Organisms. <i>Advances in Photosynthesis and Respiration</i> , 2021, , 223-246.	1.0	1
79	Red-Shifted and Red Chlorophylls in Photosystems: Entropy as a Driving Force for Uphill Energy Transfer?. <i>Advances in Photosynthesis and Respiration</i> , 2021, , 247-275.	1.0	2
80	Photosynthesis   Long Wavelength Pigments in Photosynthesis. , 2021, , 245-255.		2
81	Chlorophyll Species and Their Functions in the Photosynthetic Energy Conversion. <i>Advances in Photosynthesis and Respiration</i> , 2021, , 133-161.	1.0	1
83	Photocatalysis as the “master switch” of photomorphogenesis in early plant development. <i>Nature Plants</i> , 2021, 7, 268-276.	4.7	22
84	Enhanced Peroxidase-mimicking Activity of Plasmonic Gold-modified Mn <sub>3</sub> O <sub>4</sub> Nanocomposites through Photoexcited Hot Electron Transfer. <i>Chemistry - an Asian Journal</i> , 2021, 16, 1603-1607.	1.7	10
85	Time-resolved comparative molecular evolution of oxygenic photosynthesis. <i>Biochimica Et Biophysica Acta - Bioenergetics</i> , 2021, 1862, 148400.	0.5	44
86	Photosynthesis research under climate change. <i>Photosynthesis Research</i> , 2021, 150, 5-19.	1.6	68
87	A novel thylakoid-less isolate fills a billion-year gap in the evolution of Cyanobacteria. <i>Current Biology</i> , 2021, 31, 2857-2867.e4.	1.8	30
88	Synthetic Biology Approaches To Enhance Microalgal Productivity. <i>Trends in Biotechnology</i> , 2021, 39, 1019-1036.	4.9	41
89	Breaking the Red Limit: Efficient Trapping of Long-Wavelength Excitations in Chlorophyll-f-Containing Photosystem I. <i>CheM</i> , 2021, 7, 155-173.	5.8	17
90	Perspectives on improving light distribution and light use efficiency in crop canopies. <i>Plant Physiology</i> , 2021, 185, 34-48.	2.3	50
93	Advances in the members and biosynthesis of chlorophyll family. <i>Photosynthetica</i> , 2019, 57, 974-984.	0.9	29
94	Non-a chlorophylls in cyanobacteria. <i>Photosynthetica</i> , 2019, 57, 1109-1118.	0.9	12

#	ARTICLE	IF	CITATIONS
95	Substantial near-infrared radiation-driven photosynthesis of chlorophyll f-containing cyanobacteria in a natural habitat. <i>ELife</i> , 2020, 9, .	2.8	29
96	Electrostatic profiling of photosynthetic pigments: implications for directed spectral tuning. <i>Physical Chemistry Chemical Physics</i> , 2021, 23, 24677-24684.	1.3	2
97	Potential of Producing Flavonoids Using Cyanobacteria As a Sustainable Chassis. <i>Journal of Agricultural and Food Chemistry</i> , 2021, 69, 12385-12401.	2.4	10
99	Mass Spectrometry of Chlorophylls from Phototrophic Prokaryotes. <i>Current Organic Chemistry</i> , 2018, 22, 877-884.	0.9	1
100	Optimization of Microalgae Photosynthetic Metabolism to Close the Gap with Potential Productivity. <i>Grand Challenges in Biology and Biotechnology</i> , 2019, , 223-248.	2.4	4
102	Redesigning the photosynthetic light reactions to enhance photosynthesis – the <i>PhotoRedesign</i> consortium. <i>Plant Journal</i> , 2022, 109, 23-34.	2.8	21
103	Photosynthetic Improvement of Industrial Microalgae for Biomass and Biofuel Production. , 2020, , 285-317.		0
104	Chlorophylls in Microalgae: Occurrence, Distribution, and Biosynthesis. , 2020, , 1-18.		6
105	Biosynthesis of Chlorophyll and Bilins in Algae. <i>Advances in Photosynthesis and Respiration</i> , 2020, , 83-103.	1.0	3
107	Complete Genome Sequencing of a Novel <i>Gloeobacter</i> Species from a Waterfall Cave in Mexico. <i>Genome Biology and Evolution</i> , 2021, 13, .	1.1	9
108	Applications of Synthetic Biotechnology on Carbon Neutrality Research: A Review on Electrically Driven Microbial and Enzyme Engineering. <i>Frontiers in Bioengineering and Biotechnology</i> , 2022, 10, 826008.	2.0	6
109	Chlorophyll f can replace chlorophyll a in the soluble antenna of dinoflagellates. <i>Photosynthesis Research</i> , 2022, 152, 13-22.	1.6	4
110	Light quality, oxygenic photosynthesis and more. <i>Photosynthetica</i> , 2022, 60, 25-58.	0.9	7
111	Insights into soybean with high photosynthetic efficiency. <i>Advances in Botanical Research</i> , 2022, , 121-151.	0.5	1
112	Effects of Light and Oxygen on Chlorophyll d Biosynthesis in a Marine Cyanobacterium <i>Acaryochloris marina</i> . <i>Plants</i> , 2022, 11, 915.	1.6	3
113	<i>Kovacikia minuta</i> sp. nov. (Leptolyngbyaceae, Cyanobacteria), a new freshwater chlorophyll f-producing cyanobacterium. <i>Journal of Phycology</i> , 2022, 58, 424-435.	1.0	5
114	Acclimation of the photosynthetic apparatus to low light in a thermophilic <i>Synechococcus</i> sp. strain. <i>Photosynthesis Research</i> , 2022, 153, 21-42.	1.6	4
121	Changes in supramolecular organization of cyanobacterial thylakoid membrane complexes in response to far-red light photoacclimation. <i>Science Advances</i> , 2022, 8, eabj4437.	4.7	9

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122	The terminal enzymes of (bacterio)chlorophyll biosynthesis. Royal Society Open Science, 2022, 9, 211903.	1.1	10
123	A Cyanobacteria Enriched Layer of Shark Bay Stromatolites Reveals a New Acaryochloris Strain Living in Near Infrared Light. Microorganisms, 2022, 10, 1035.	1.6	1
126	Adaptation of Cyanobacteria to the Endolithic Light Spectrum in Hyper-Arid Deserts. Microorganisms, 2022, 10, 1198.	1.6	5
127	Molecular Evolution of Far-Red Light-Acclimated Photosystem II. Microorganisms, 2022, 10, 1270.	1.6	13
128	Use of Quartz Sand Columns to Study Far-Red Light Photoacclimation (FaRLiP) in Cyanobacteria. Applied and Environmental Microbiology, 2022, 88, .	1.4	4
129	Rieske Oxygenase Catalyzed C-H Bond Functionalization Reactions in Chlorophyll Biosynthesis. ACS Central Science, 2022, 8, 1393-1403.	5.3	11
131	Identification of far-red light acclimation in an endolithic Chroococcidiopsis strain and associated genomic features: Implications for oxygenic photosynthesis on exoplanets. Frontiers in Microbiology, 2022, 13, .	1.5	10
132	Biology of Desert Endolithic Habitats. Ecological Studies, 2022, , 111-132.	0.4	0
133	A Chloroplast-Localised Fluorescent Protein Enhances the Photosynthetic Action Spectrum in Green Algae. Microorganisms, 2022, 10, 1770.	1.6	3
134	Collision-induced dissociation as a mass spectrometric filter for rapid screening of tetrapyrrole derivatives and their chelated metal species in complex biological and environmental samples. Rapid Communications in Mass Spectrometry, 2023, 37, .	0.7	3
135	Photosynthetic modulation during the diurnal cycle in a unicellular diazotrophic cyanobacterium grown under nitrogen-replete and nitrogen-fixing conditions. Scientific Reports, 2022, 12, .	1.6	2
136	Compensatory Transcriptional Response of Fischerella thermalis to Thermal Damage of the Photosynthetic Electron Transfer Chain. Molecules, 2022, 27, 8515.	1.7	0
137	How to tune the absorption spectrum of chlorophylls to enable better use of the available solar spectrum. PeerJ Physical Chemistry, 2022, 4, e26.	0.0	2
138	Chlorophyll production in two new subaerial cyanobacteria of the family Oculatellaceae. Journal of Phycology, 2023, 59, 370-382.	1.0	2
139	Regulation of chlorophyll biosynthesis by light-dependent acetylation of NADPH:protochlorophyll oxidoreductase A in Arabidopsis. Plant Science, 2023, 330, 111641.	1.7	0
140	Multienzyme-Like Nanozymes: Regulation, Rational Design, and Application. Advanced Materials, 2024, 36, .	11.1	43
141	The Evolution and Evolvability of Photosystem II. Annual Review of Plant Biology, 2023, 74, 225-257.	8.6	13
142	Accumulation of cyanobacterial photosystem II containing the <i>psbD1</i> subunit is controlled by FtsH protease and the synthesis of the standard D1 protein. Plant and Cell Physiology, 2023, 64, .	1.5	0



#	ARTICLE	IF	CITATIONS
143	Whole-cell-catalyzed hydrogenation/deuteration of aryl halides with a genetically repurposed photodehalogenase. <i>Chem</i> , 2023, 9, 1897-1909.	5.8	4
146	Photoenzymatic Decarboxylation to Produce Hydrocarbon Fuels: A Critical Review. <i>Molecular Biotechnology</i> , 0, , .	1.3	0