



# Photosynthesis

Related Antibodies

Photosynthesis --- PSII

Photosynthesis --- PSI

Photosynthesis --- Cytochrome b6/f Complex

Photosynthesis --- Chloroplast ATP Synthase

Photosynthesis --- Photosynthetic Electron Transport

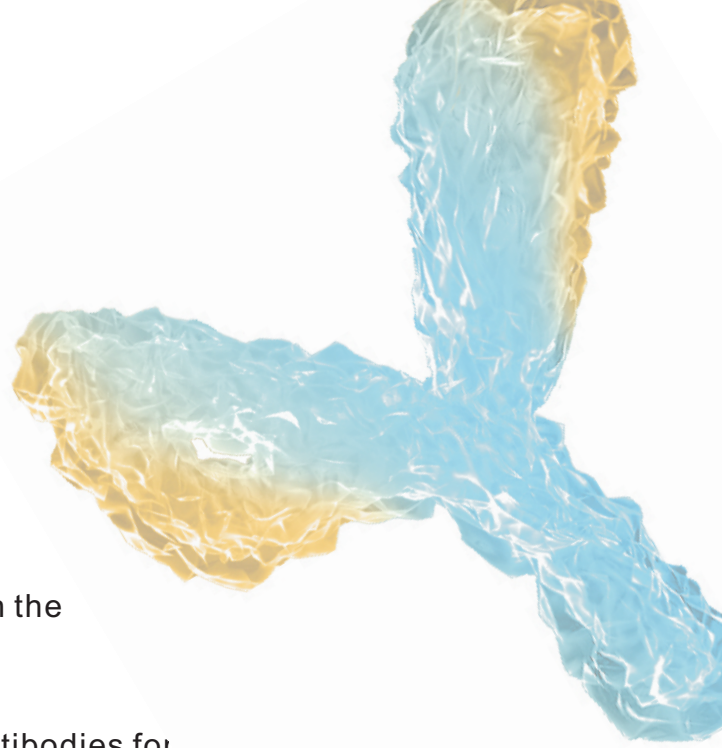
Photosynthesis --- Cyclic Electron Transport Around PSI

Photosynthesis --- Antenna Proteins

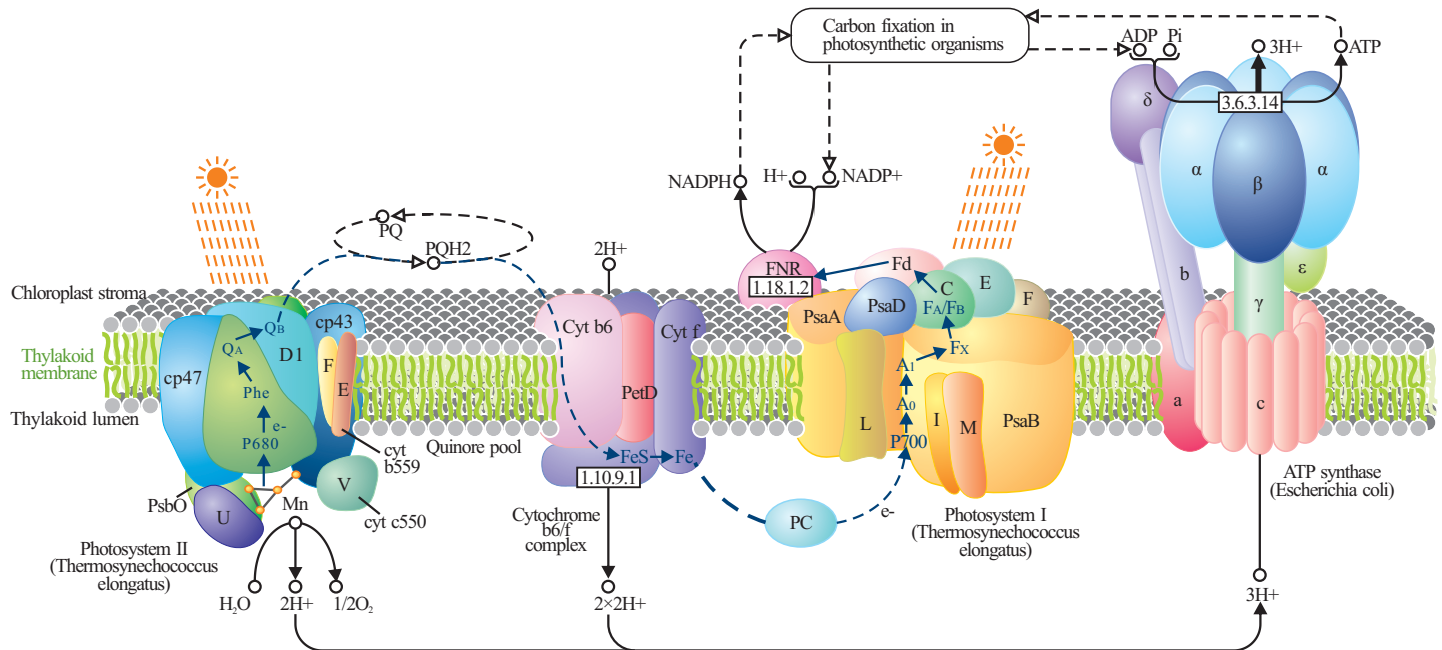


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Recently, PhytoAB Inc. has newly developed many antibodies for Photosynthesis research. All these antibodies are rabbit polyclonal antibodies purified by Protein A or antigen affinity, and can be widely used for Western blot , ELISA etc.



References

Science 303:1831-8 (2004)  
Nature 411:909-917 (2001)

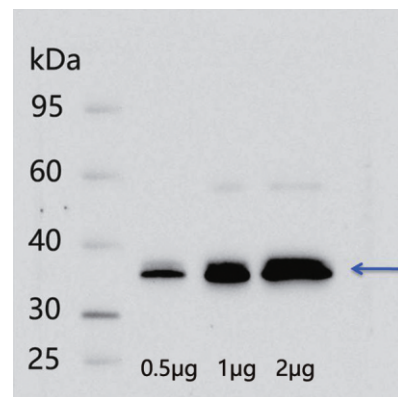
Proc Natl Acad Sci U S A 100:98-103 (2003)  
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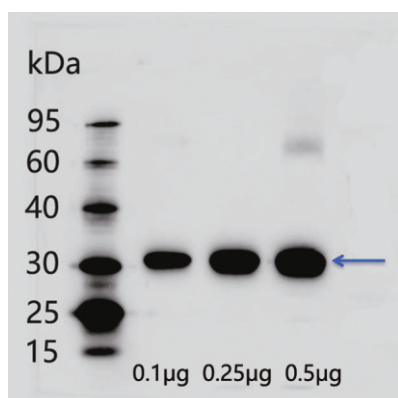
# Photosynthesis --- PSII

Photosystem II (PS II) is the first protein complex in the light-dependent reactions of oxygenic photosynthesis. It is located in the thylakoid membrane of plants, algae, and cyanobacteria. It uses light energy to oxidize two molecules of water into one molecule of molecular oxygen. Photosystem II optimally absorbs photons of a wavelength of 680 nm.

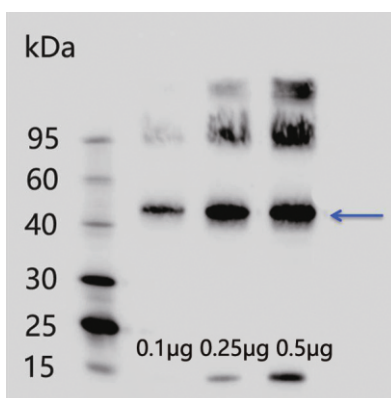
PSII is an integral membrane protein. The core of this membrane protein is formed by two subunits, D1 and D2. These two subunits span the membrane and are homologous to subunits L and M of the bacterial photosystem.



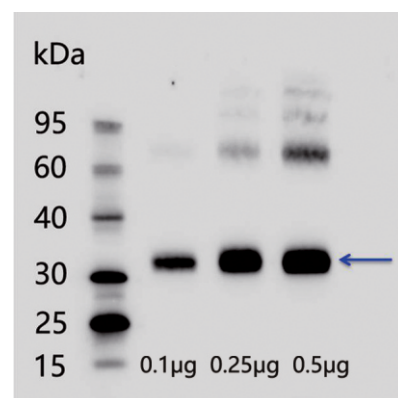
WB PsbO / PHY0094A



WB PsbA / PHY0057



WB PsbB / PHY0058A



WB PsbD / PHY0060

Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0057	PsbA Antibody	D1 subunit of Photosystem II, N-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0363	PsbA Antibody	D1 subunit of Photosystem II, N-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0103	PsbA Antibody	D1 subunit of Photosystem II, DE-loop	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0060	PsbD Antibody	D2 subunit of Photosystem II, C-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0090S	PsbD Antibody	D2 subunit of Photosystem II, N-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289
PHY0364S	PsbD Antibody	D2 subunit of Photosystem II, DE-loop	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289



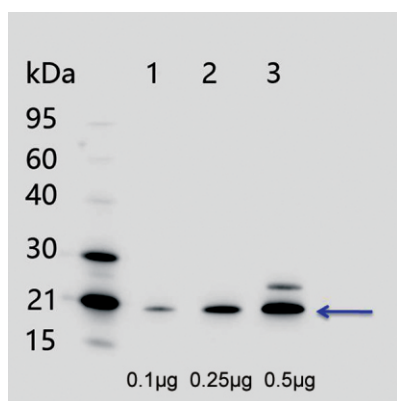
Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0323	PsbD Antibody	D2 subunit of Photosystem II, DE-loop	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0059A	PsbC Antibody	CP43 subunit of Photosystem II, E-loop	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0365	PsbC Antibody	CP43 subunit of Photosystem II, E-loop	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0318	PsbC Antibody	CP43 subunit of Photosystem II, E-loop	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0058A	PsbB Antibody	CP47 subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0319	PsbB Antibody	CP47 subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0124A	PsbE Antibody	PsbE subunit of Photosystem II, C-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0125A	PsbF Antibody	PsbF subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0131A	PsbH Antibody	PsbH subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0132A	PsbI Antibody	PsbI subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0094A	PsbO antibody	PsbO subunit of oxygen evolving complex of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0061S	PsbP Antibody	PsbP subunit of oxygen evolving complex of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289
PHY0081	PsbQ antibody	PsbQ subunit of oxygen evolving complex of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0110A	PsbR Antibody	PsbR subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0350	PsbTc Antibody	PsbTc subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0111	PsbW Antibody	PsbW subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0112	PsbX Antibody	PsbX subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0351S	PsbY Antibody	PsbY subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289
PHY0126A	PsbZ Antibody	PsbZ subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0476	PsbJ Antibody	PsbJ subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0477	PsbK Antibody	PsbK subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0478	PsbL Antibody	PsbL subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0479	PsbM Antibody	PsbM subunit of Photosystem II	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318



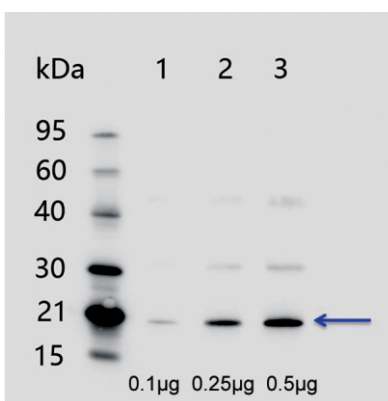


# PSII biogenesis factors and related proteins

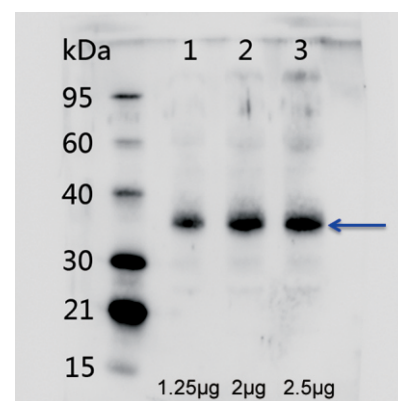
Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0062A	PsbS Antibody	PsbS protein	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0345	PsbS Antibody	PsbS protein	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0352S	Psb27 Antibody	Psb27 protein	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289
PHY0353	Psb28 Antibody	Psb28 protein	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0145	THF1 Antibody	Thylakoid membrane formation 1	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0480	LPA19 Antibody	Low PSII Accumulation 19	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0305	Psb33 Antibody	Photosystem B protein 33	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0326	HCF173 Antibody	High Chlorophyll Fluorescence 173	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0327	HCF244 Antibody	High Chlorophyll Fluorescence 244	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0481	LPA1 Antibody	Low PSII Accumulation 1	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0482	LQY1 Antibody	Low Quantum Yield of photosystem II 1	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0483	HHL1 Antibody	Hypersensitive to High Light 1	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0484	MPH1 Antibody	Maintenance of PSII under High light 1	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0485	PAM68 Antibody	Photosynthesis Affected Mutant 68	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0486	PsbN Antibody	PsbN protein	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318



WB PsbS / PHY0062A



WB PsbS / PHY0345

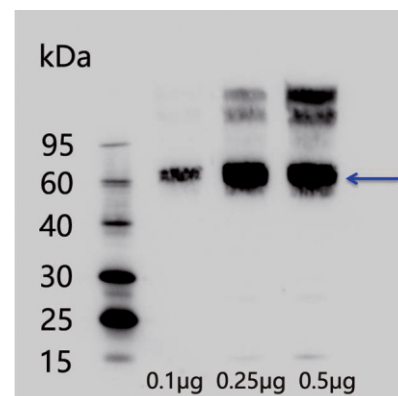


WB HCF244 / PHY0327

# Photosynthesis --- PSI

Photosystem I (PS I) is the second photosystem in the photosynthetic light reactions of algae, plants, and some bacteria. It is an integral membrane protein complex that uses light energy to mediate electron transfer from plastocyanin to ferredoxin. Photosystem I optimally absorbs photons of a wavelength of 700 nm.

Two main subunits of PS I, PsaA and PsaB, are closely related proteins involved in the binding of P700, A0 (chlorophyll), A1 (a phylloquinone), and Fx 4Fe-4S iron-sulphur centre.



WB PsaB / PHY0054A

Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0053	PsaA Antibody	PsaA subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0368	PsaA Antibody	PsaA subunit of Photosystem I, N-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0342	PsaA Antibody	PsaA subunit of Photosystem I, N-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0054A	PsaB Antibody	PsaB subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0055A	PsaC Antibody	PsaC subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0056	PsaD Antibody	PsaD subunit of Photosystem I, N-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0366	PsaD Antibody	PsaD subunit of Photosystem I, C-terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0343	PsaD Antibody	PsaD subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0162A	PsaE Antibody	PsaE subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0120S	PsaF Antibody	PsaF subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289
PHY0106S	PsaG Antibody	PsaG subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289
PHY0121A	PsaH Antibody	PsaH subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0107A	PsaK Antibody	PsaK subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0064	PsaL Antibody	PsaL subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0122	PsaL Antibody	PsaL subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0123A	PsaN Antibody	PsaN subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0108S	PsaO Antibody	PsaO subunit of Photosystem I	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289

## PSI biogenesis factors and related proteins

PHY0440	YCF3 Antibody	YCF3	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0441	YCF4 Antibody	YCF4	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0443	YCF37 Antibody	YCF37	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0287	PSA2 Antibody	Photosystem I assembly factor 2	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318

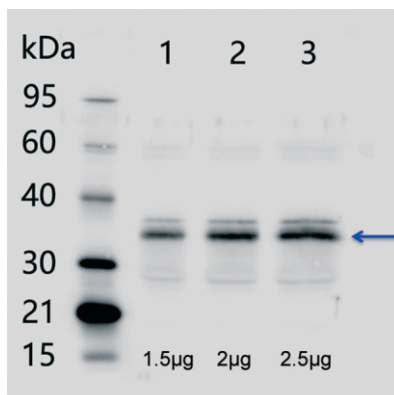
# Photosynthesis --- Cytochrome b6/f Complex

The cytochrome b6f complex is an enzyme found in the thylakoid membrane in chloroplasts of plants, cyanobacteria, and green algae, that catalyze the transfer of electrons from plastoquinol to plastocyanin.

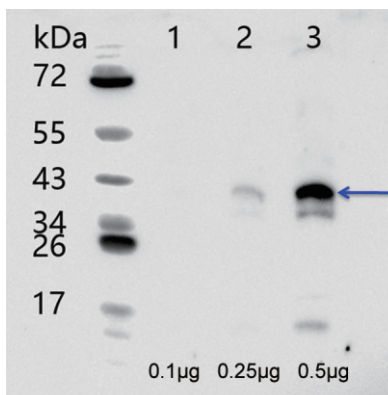
The cytochrome b6f complex is a dimer, with each monomer composed of eight subunits.

In photosynthesis, the cytochrome b6f complex functions to mediate the transfer of electrons between the two photosynthetic reaction center complexes, from Photosystem II to Photosystem I, while transferring protons from the chloroplast stroma across the thylakoid membrane into the lumen.

Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0023	PetA Antibody	Cytochrome f subunit of Cyt b6/f complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0321	PetA Antibody	Cytochrome f	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0020S	PetB Antibody	Cytochrome b6 subunit of Cyt b6/f complex, N terminal	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289
PHY0163A	PetC Antibody	Rieske FeS center of Cyt b6/f complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0354	PetD Antibody	Subunit IV of Cyt b6/f complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318



WB PetA / PHY0321



WB PetA / PHY0023

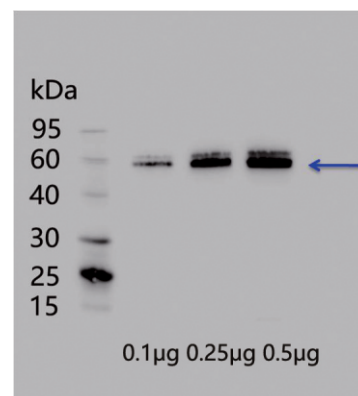




# Photosynthesis --- Chloroplast ATP Synthase

F-type ATPase also known as F-ATPase or ATP synthase, is an ATPase found in bacterial plasma membranes, in mitochondrial inner membranes and in chloroplast thylakoid membranes.

The ATP synthase of the chloroplast is called the CF<sub>1</sub>-CF<sub>0</sub> complex where C stands for chloroplast and F<sub>1</sub> and F<sub>0</sub> relate to the homologous ATP synthase of the mitochondria. The mitochondrial and the chloroplast ATP synthase are essentially identical with similar subunits and subunit stoichiometries.



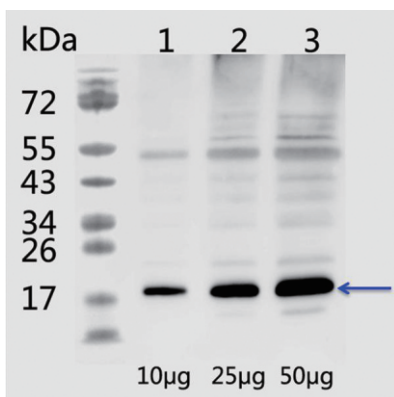
WB AtpB / PHY0312

Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0010	AtpA Antibody	Alpha subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0311	AtpA Antibody	Alpha subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0011A	AtpB Antibody	Beta subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0312	AtpB Antibody	Beta subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0161	AtpC Antibody	Gamma subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0313	AtpC Antibody	Gamma subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0207	AtpD Antibody	Delta subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0314	AtpD Antibody	Delta subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0315	AtpE Antibody	Epsilon subunit of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0316	AtpF Antibody	CF <sub>0</sub> I subunits of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0170	AtpG Antibody	CF <sub>0</sub> II subunits of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0114	AtpH Antibody	CF <sub>0</sub> III subunits of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0357	AtpI Antibody	CF <sub>0</sub> IV subunits of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0359	ATPC2 Antibody	Gamma subunit 2 of chloroplast ATP synthase	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318

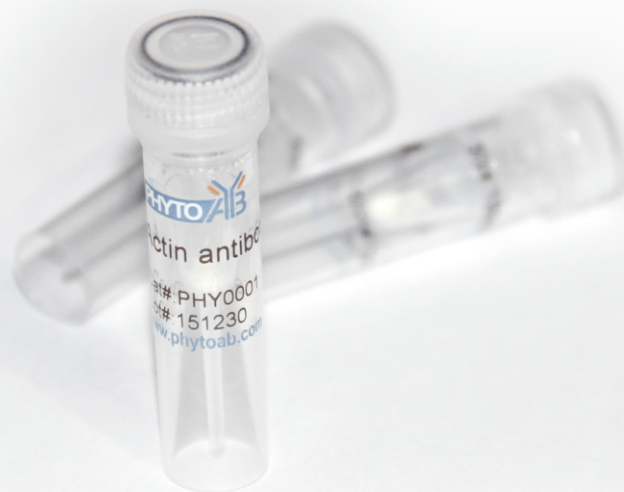
# Photosynthesis --- Photosynthetic Electron Transport

Electron transport process occurs in the thylakoid membranes of chloroplasts during photosynthesis. Both Photosystems I and II are utilized to split water to get electrons. Electron transport helps establish a proton gradient that powers ATP production and also stores energy in the reduced coenzyme NADPH. This energy is used to power the Calvin Cycle to produce sugar and other carbohydrates.

Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0099	PC Antibody	Plastocyanin	<i>Spinacia oleracea</i>	WB, ELISA	150 ug	318
PHY0356	Cyt c6 Antibody	Cytochrome c6, chloroplastic	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0355	FD1 Antibody	Ferredoxin-1, chloroplastic	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0360	FNR2 Antibody	Ferredoxin--NADP reductase 2, chloroplastic	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318

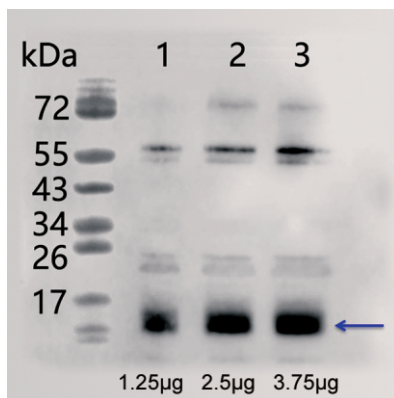


WB FD1 / PHY0355

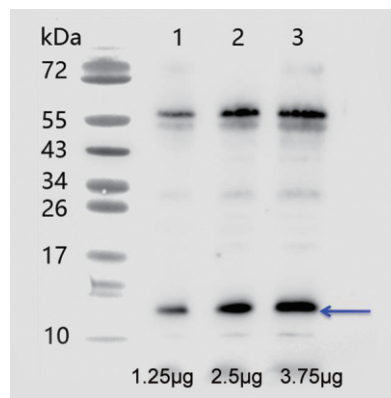


# Photosynthesis --- Cyclic Electron Transport Around PSI

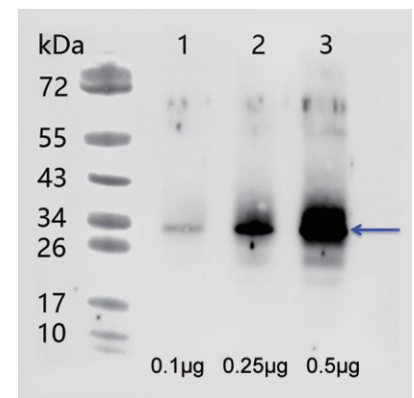
Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0332	NdhI Antibody	Subunit I of the NDH complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0333	NdhJ Antibody	Subunit J of the NDH complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0334	NdhM Antibody	Subunit M of the NDH complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0335	NdhN Antibody	Subunit N of the NDH complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0336	NdhO Antibody	Subunit O of the NDH complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0307	NdhV Antibody	Subunit V of the NDH complex	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0340	PGR5 Antibody	Proton gradient regulation 5	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0234S	PGRL1A Antibody	PGR5-like protein 1A, chloroplastic	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	289
PHY0341	PGRL1 Antibody	PGR5-Like 1	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318



WB NdhI / PHY0332



WB NdhJ / PHY0333

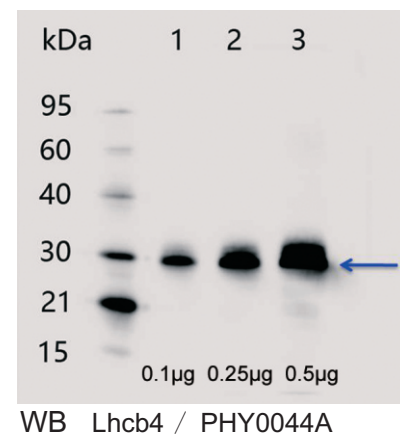


WB PGRL1 / PHY0341

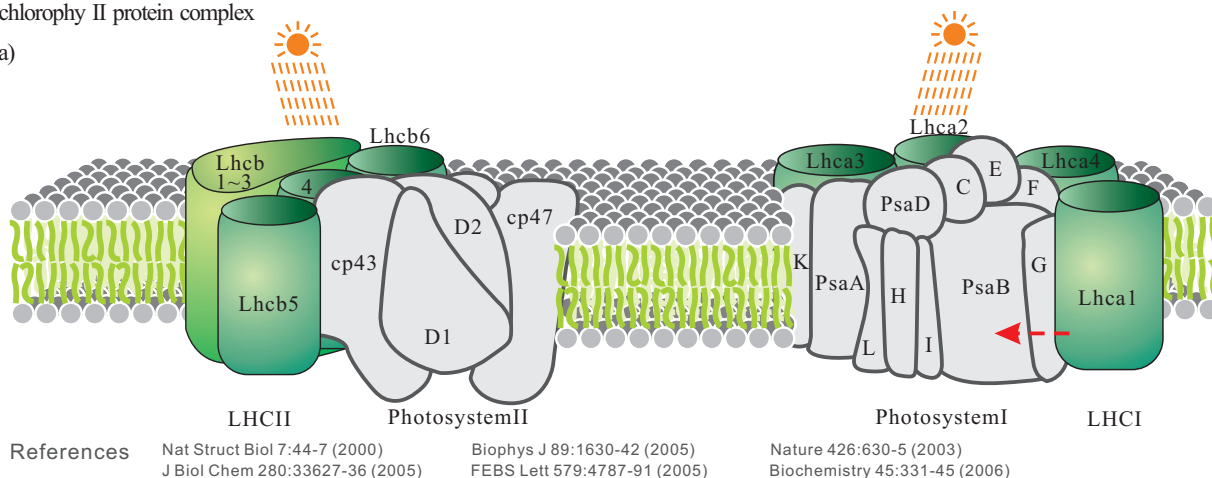


# Photosynthesis --- Antenna Proteins

The chlorophyll-binding subunits of photosystems I and II are internal antenna light-harvesting proteins of oxygenic photosynthesis. The antenna proteins that exist in phycobilisomes in cyanobacteria and light-harvesting chlorophyll protein complexes in green plants act as peripheral antenna systems, enabling more efficient absorption of light energy.



Light-harvesting chlorophyll II protein complex  
(Plant, Green alga)



Cat No.	Abbreviation	Product Name	Species	Applications	Size	Price(\$)
PHY0043	Lhca1 Antibody	Lhca1 protein of LHCI	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0082	Lhca2 Antibody	Lhca2 protein of LHCI	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0083	Lhca3 Antibody	Lhca3 protein of LHCI	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0084	Lhca4 Antibody	Lhca4 protein of LHCI	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0116	Lhca5 Antibody	Lhca5 protein of LHCI	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0470	Lhca6 Antibody	Lhca6 protein of LHCI	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0085	Major Lhcb/ Lhcb1;2;3 Antibody	Major Lhcb/ Lhcb1;2;3 protein of LHCII	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0487	Lhcb1 Antibody	Lhcb1 protein of LHCII	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0086	Lhcb2 Antibody	Lhcb2 protein of LHCII	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0087	Lhcb3 Antibody	Lhcb3 protein of LHCII	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0044A	Lhcb4 Antibody	Lhcb4 protein of LHCII	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	388
PHY0088	Lhcb5 Antibody	Lhcb5 protein of LHCII	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0089	Lhcb6 Antibody	Lhcb6 protein of LHCII	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318
PHY0471	Lhcb7 Antibody	Lhcb7 protein of LHCII	<i>Arabidopsis thaliana</i>	WB, ELISA	150 ug	318