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Product no AS05 084A

PsbA | D1 protein of PSII, C-terminal (affinity purified)

Product information

Background
The psbA gene has been cloned from many species of plants, green algae, and cyanobacteria. The psbA gene is located in the chloroplast genome and encodes for the D1 protein, a core component of Photosystem II. PsbA/D1 is rapidly cycled under illumination in all oxygenic photobionts. Tracking PsbA pools using the Global PsbA antibody can show the functional content of Photosystem II in a wide range of samples. Alternative names: 32 kDa thylakoid membrane protein, photosystem II protein D1

Immunogen
KLH-conjugated synthetic peptide derived from available plant, algal and cyanobacterial PsbA sequences, including *Arabidopsis thaliana* UniProt: A4QJR4, TAIR: AtCg00020 , *Oryza sativa* P0C434, *Populus alba* Q14FH6, *Physcomitrella patens* Q6YXN7, *Chlamydomonas reinhardtii* P07753, *Synechocystis* sp. P14660 and many others

Host
Rabbit

Clonality
Polyclonal

Purity
Affinity purified serum

Format
Lyophilized in PBS pH 7.4

Quantity
50 µg

Reconstitution
For reconstitution add 50 µl of sterile water

Storage
Store lyophilized/reconstituted at -20°C; once reconstituted make aliquots to avoid repeated freeze-thaw cycles. Please, remember to spin tubes briefly prior to opening them to avoid any losses that might occur from lyophilized material adhering to the cap or sides of the tubes.

Tested applications
Western blot (WB)

Related products
AS01 016S | PsbA protein standard for a quantitative western blot
AS05 084PRE | PsbA | D1 protein of PSII, C-terminal , pre-immune serum
AS11 1786 | Anti-PsbA N-terminal, rabbit antibodies
AS10 704 | Anti-PsbA | D1 protein of PSII, DE-loop, rabbit antibodies
AS13 2669 | Anti-PsbA | D1 protein of PSII, phosphorylated, rabbit antibodies
AS05 084A-HRP | Anti-PsbA | D1 protein of PSII, rabbit antibodies, directly conjugated to HRP (no need for a secondary antibody to be used)

Plant and algal protein extraction buffer

Additional information
Due to biology of PsbA (D1) protein a number of degradation products can apprear in a sample and may be observed when using anti-PsbA antibodies, including products having apparent molecular weights of 24kDa and 16kDa. D1 degradation is a complex set of events and the products observed can be influenced by both the extraction procedure and the physiology of the cells prior to harvest. Third, cross-linking may occur between D1 and cytochrome b559, shifting the protein higher in the gel. In cyanobacteria (PCC7942), three different bands were competed out by preincubating the antibody with the PsbA free peptide, indicating that all bands are indeed PsbA and its precursors or breakdown products. Competition assays were also performed with spinach and *Chlamydomonas*, confirming the identity of PsbA bands.

Anti-PsbA antibodies will not detect D2 protein, as the peptide used to generate PsbA antibodies has no homology to the D2 sequence.

Application information

Recommended dilution
1 : 15 000 (WB)

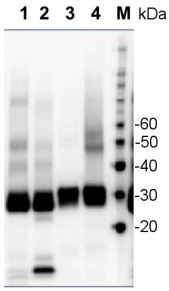
Expected | apparent MW
38 | 28-30 kDa

Confirmed reactivity
Anabaena 7120, *Arabidopsis thaliana, Artemisia annua, Arundo sp., Chlamydomonas reinhardtii, Colobanthus quitensis Kunt Bartl, Craterostigma sp., Coscinodiscus wailesii, Cynara cardunculus* var *altilis, Ditylum brightwellii, Glycine max, Hordeum vulgare, Lindernia sp., Miscanthus x giganteus, Marchantia polymorpha* (liverwort), *Nicotiana*

	*benthamiana,Panicum miliaceum, Panax ginseng, Panicum maximum, Paulinella chromatophora (*amoeba*), Pinus strobus, Physcomitrella patens, Prochlorococcus sp. (*surface and deep water ecotype*), Synechococcus sp.* PCC 7942*, Spirodela polyrhiza, Symbiodinium sp., Zea mays*
Predicted reactivity	Algae (brown and red), *Brassica napus*, Conifers, *Cyanobacteria,* Dictos*, Manihot esculenta, Medicago sativa, Nannochloropsis* sp.*, Pisum sativum, Triticum aestivum,* cellular [compartment marker] of thylakoid membrane. Species of your interest not listed? Contact us
Not reactive in	No confirmed exceptions from predicted reactivity are currently known.
Additional information	The antibody is appropriate for detecting both, 24 kDa or the 10 kDa C-terminal fragments, whichever is generated under given treatment conditions. In our analysis we have seen both, ca. 24 kDa and ca. 10 kDa fragments from different samples, depending on treatments and isolation procedures. Rabbit anti-PsbA antibody can detect more than one band of PsbA protein, e.g. precursor and mature protein as compare to the hen anti-PsbA antibodies AS01 016. This antibody will detect the phosphorylated form of D1 as an alternate band to the main band on a high resolution gel. The antibody will bind to cross-linked proteins: D1/D2, D1/cyt b559, D1/CP43. For high resolution images, please visit the specific product page at www.agrisera.com
Selected references	Sorrentino et al. (2018). Performance of three cardoon cultivars in an industrial heavy metal-contaminated soil: Effects on morphology, cytology and photosynthesis. J Hazard Mater. 2018 Jun 5;351:131-137. doi: 10.1016/j.jhazmat.2018.02.044. Kanazawa et al. (2017). Chloroplast ATP Synthase Modulation of the Thylakoid Proton Motive Force: Implications for Photosystem I and Photosystem II Photoprotection. Front Plant Sci. 2017 May 3;8:719. doi: 10.3389/fpls.2017.00719. Li et al. (2016). A Hard Day's Night: Diatoms Continue Recycling Photosystem II in the Dark. Front. Mar. Sci., 08 November 2016

For high resolution images, please visit the specific product page at www.agrisera.com

Application example



2 µg of total protein from samples such as *Arabidopsis thaliana* leaf **(1)** , *Hordeum vulgare* leaf **(2)**, *Chlamydomonas reinhardtii* total cell **(3)**, *Synechococcus* sp. PCC7942 total cell **(4)**, were extracted with Protein Extraction Buffer PEB (AS08 300). Samples were diluted with 1X sample buffer (NuPAGE LDS sample buffer (Invitrogen) supplemented with 50 mM DTT and heat at 70°C for 5 min and keept on ice before loading. Protein samples were separated on 4-12% Bolt Plus gels, LDS-PAGE and blotted for 70 minutes to PVDF using tank transfer. Blots were blocked immediately following transfer in 2% blocking reagent or 5% non-fat milk dissolved in 20 mM Tris, 137 mM sodium chloride pH 7.6 with 0.1% (v/v) Tween-20 (TBS-T) for 1h at room temperature with agitation. Blots were incubated in the primary antibody at a dilution of 1: 10 000 (in blocking reagent) for 1h at room temperature with agitation. The antibody solution was decanted and the blot was rinsed briefly twice, and then washed 1x15 min and 3x5 min with TBS-T at room temperature with agitation. Blots were incubated in secondary antibody (anti-rabbit IgG horse radish peroxidase conjugated, recommended secondary antibody AS09 602, Agrisera) diluted to 1:25 000 in blocking reagent for 1h at room temperature with agitation. The blots were washed as above. The blot was developed for 5 min with ECL detection reagent according to the manufacturer's instructions. Images of the blots were obtained using a CCD imager (VersaDoc MP 4000) and Quantity One software (Bio-Rad). Exposure time was 30 seconds.