

product **AS03 037-200**

RbcL | Rubisco large subunit, form I and form II (200 µl)

product information

background	<p>This antibody is especially suitable for quantifying of Rubisco in plant and algal samples.</p> <p>Rubisco (Ribulose-1,5-bisphosphate carboxylase/oxygenase) catalyzes the rate-limiting step of CO₂ fixation in photosynthesis. It is one of the most abundant proteins on Earth and its homology has been demonstrated from purple bacteria to flowering plants.</p>
immunogen	<p><u>KLH</u>-conjugated synthetic peptide conserved across all known plant, algal and (cyano)bacterial RbcL protein sequences (form I L8S8 and form II L2), including <i>Arabidopsis thaliana</i> AtCg0049Q, <i>Hordeum vulgare</i> P05698, <i>Oryza sativa</i> P0C510, <i>Chlamydomonas reinhardtii</i> P00877, <i>Synechococcus</i> PCC 7920 A5CKC5</p>
antibody format	rabbit polyclonal serum, lyophilized
quantity	200 µl for reconstitution add 200 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) Immunofluorescence/confocal microscopy (IF), immunolabelling (IL), tissue printing (TP)
additional information	antibody is a cellular [compartment marker] of plastid stroma or a cytoplasm marker in cyanobacteria. Antibody can detect Rubisco protein from 31.25 fmoles. Antibody will detect Rubisco Form I and Form II, therefore is suitable for work with samples from Dinoflagellates, Haptophytes and Ochrophytes (diatoms, Raphidophytes, brown algae) as well as higher plants. This antibody can be used to quantify Rubisco protein in plant and algal samples.

application information

recommended dilution	1: 5000 -10 000 with standard ECL (WB), immunofluorescence/confocal microscopy (IF), 1: 250 images in Prins et al. 2998, detailed protocol available on request (IL)
expected apparent MW	52.7 kDa (<i>Arabidopsis thaliana</i>), 52.5 kDa (cyanobacteria), 52.3 (<i>Chlamydomonas reinhardtii</i>)
confirmed reactivity	<i>Arabidopsis thaliana</i> , <i>Apium graveolens</i> , <i>Bienertia sinuspersici</i> , <i>Chlamydomonas reinhardtii</i> , <i>Cyanophora paradoxa</i> , <i>Emiliana huxleyi</i> , <i>Euglena gracilis</i> , <i>Fraxinus mandshurica</i> , <i>Glycine max</i> , <i>Gonyaulax polyedra</i> , <i>Guzmania hybrid</i> , <i>Heterosigma akashiwo</i> , <i>Micromonas pusilla</i> , <i>Nicotiana benthamiana</i> , <i>Physcomitrella patens</i> ,

	<p><i>Porphyra sp.</i>, <i>Spinacia oleracea</i>, <i>Stanleya pinnata</i>, lichens, <i>Synechococcus PCC 7942</i>, <i>Thalassiosira pseudonana</i>, <i>Prochlorococcus sp.</i> (surface and deep water ecotype), <i>Triticum aestivum</i>, dinoflagellate endosymbionts (genus <i>Symbiodinium</i>), extreme acidophilic verrucomicrobial methanotroph <i>Methylacidiphilum fumariolicum</i> strain SolV, <i>Thalassiosira punctigera</i></p>
predicted reactivity	<p>di and monocots, conifers, mosses, liverworts, welwitschia, green algae, red algae, brown algae, cryptomonad, cyanobacteria including prochlorophytes, gamma-proteobacteria, beta-proteobacteria, alpha proteobacteria</p>
not reactive in	<p>no confirmed exceptions from predicted reactivity known in the moment</p>
additional information	<p>This antibody was used in:</p> <p>Immunocytochemical staining of diatoms according to Schmid (2003) J Phycol 39: 139-153 and Wordemann et al. (1986) J Cell Biol 102: 1688-1698.</p> <p>Immunofluorescence Dreier et al. (2012). FEMS Microbial Ecol., March 2012.</p> <p>Western blot and tissue printing during a student course Ma et al. (2009).</p>
selected references	<p>Li et al. (2012). MAP Kinase 6-mediated activation of vacuolar processing enzyme modulates heat shock-induced programmed cell death in Arabidopsis. New Phytol. ahead of print - RbcL antibody used as loading control.</p> <p>Zhao et al. (2011). Expansins are involved in cell growth mediated by abscisic acid and indole-3-acetic acid under drought stress in wheat. Plant Cell Rep. Nov (RbcL antibody used as a loading control)</p> <p>Heckwolf et al. (2011). The <i>Arabidopsis thaliana</i> aquaporin AtPIP1;2 is a physiologically relevant CO₂ transport facilitator. Plant J. doi: 10.1111/j.1365-313X.2011.04634.x. [Epub ahead of print]</p> <p>Johnson (2011). Manipulating RuBisCO accumulation in the green alga, <i>Chlamydomonas reinhardtii</i>. Plant Mol Biol. May 24.</p> <p>Kubien et al. (2011). Quantification of the amount and activity of Rubisco in leaves. Methods Mol Biol. 2011;684:349-62.</p> <p>Nicolardi et al. (2011). The adaptive response of lichens to mercury exposure involves changes in photosynthetic machinery. Environmental Pollution (16): 1-10.</p> <p>Zilliges et al (2011) The Cyanobacterial Hepatotoxin Microcystin Binds to Proteins and Increases the Fitness of <i>Microcystis</i> under Oxidative Stress Conditions. PLoS ONE.</p>

application example

0.25 µg of chlorophyll a/lane from *Spinacia oleracea* (1), *Synechococcus* PCC 7942 (2), *Cyanophora paradoxa* (3), *Heterosigma akashiwo* (4), *Thalassiosira pseudonana* (5), *Euglena gracilis* (6), *Micromonas pusilla* (7), *Chlamydomonas reinhardtii* (8), *Porphyra* sp (9), *Gonyaulax polyedra* (10), *Emiliania huxleyi* (11) extracted with PEB (**AS08 300**), were separated on **4-12%** NuPage (Invitrogen) **LDS-PAGE** and blotted 1h to **nitrocellulose**. Filters were blocked 1h with 2% low-fat **milk powder** in TBS-T (0.1% TWEEN 20) and probed with anti-RbcL antibody (AS03 037, **1:50 000**, 1h) and secondary anti-rabbit (**1:20000**, 1 h) antibody (HRP conjugated, Abcam) in TBS-T containing 2% low fat milk powder. Antibody incubations were followed by washings in TBS-T. All steps were performed at RT with agitation. Blots were developed for 5 min with ECL Advance detection reagent according the manufacturers instructions (GE Healthcare). Images of the blots were obtained using a CCD imager (FluorSMax, Bio-Rad) and Quantity One software (Bio-Rad).

