Store at -20°C

Cas9 *(S. aureus)* Matched Antibody Pair

#50030

Cell Signaling TECHNOLOGY®

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UniProt ID #J7RUA5

For Research Use Only. Not for Use in Diagnostic Procedures.

Product Includes	Product #	Quantity	Isotype
Cas9 *(S. aureus)* (E4G3U) Rabbit mAb (BSA and Azide Free)	87855	100 µg	Rabbit IgG
Cas9 *(S. aureus)* (6H4) Mouse mAb (BSA and Azide Free)	52177	100 µg	Mouse IgG2b

Species Reactivity: All

Description: The Cas9 *(S. aureus)* Matched Antibody Pair is ideal for use with immunoassay technologies and high throughput ELISA platforms requiring antibody pairs with specialized or custom antibody labeling. Labels include fluorophores, lanthanides, biotin, and beads. Platforms requiring conjugated Matched Antibody Pairs include MSD, Quanterix Simoa, Alpha Technology (AlphaScreen, AlphaLISA, LANCE, HTRF), and Luminex.

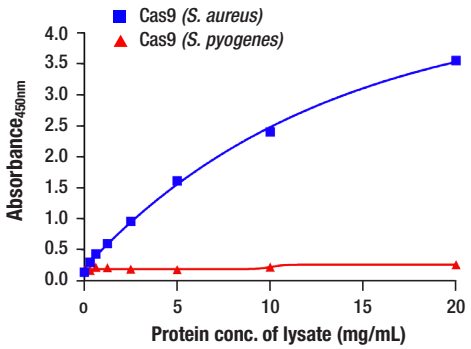
Learn how Matched Antibody Pairs move your projects forward, faster at cst-science.com/matched-antibody-pairs.

Background: The CRISPR associated protein 9 (Cas9) is an RNA-guided DNA nuclease and part of the CRISPR antiviral immunity system that provides adaptive immunity against extra chromosomal genetic material (1). The CRISPR antiviral mechanism of action involves three steps: (i), acquisition of foreign DNA by host bacterium; (ii), synthesis and maturation of CRISPR RNA (crRNA), followed by the formation of RNA-Cas nuclease protein complexes; and (iii), target interference through recognition of foreign DNA by the complex and its cleavage by Cas nuclease activity (2). The type II CRISPR/Cas antiviral immunity system provides a powerful tool for precise genome editing and has potential for specific gene regulation and therapeutic applications (3). The Cas9 protein and a guide RNA consisting of a fusion between a crRNA and a trans-activating crRNA (tracrRNA) must be introduced or expressed in a cell. A 20-nucleotide sequence at the 5' end of the guide RNA directs Cas9 to a specific DNA target site. As a result, Cas9 can be "programmed" to cut various DNA sites both *in vitro* and in cells and organisms. CRISPR/Cas9 genome editing tools have been used in many organisms, including mouse and human cells (4,5). Research studies demonstrate that CRISPR can be used to generate mutant alleles or reporter genes in rodents and primate embryonic stem cells (6-8).

Cas9 *(S. aureus)* is a Cas9 ortholog that is smaller, but as efficient, as the more commonly used Cas9 ortholog, Cas9 *(S. pyogenes)* (9).

Specificity/Sensitivity: This kit detects proteins from the indicated species, as determined through in-house testing, but may also detect homologous proteins from other species.

Formulation: Supplied in 1X PBS (10 mM Na_2HPO_4, 3 mM KCl, 2 mM KH_2PO_4, and 140 mM NaCl (pH 7.8)). BSA and Azide Free.



Data using Cas9 (S. aureus) Matched Antibody Pair #50030 are shown. The two antibodies function as a capture-target-detection sandwich (#87855 and #52177, respectively) to detect recombinant Cas9 (S. aureus) but not Cas9 (S. pyogenes).

Storage: Store at -20ºC. *This product will freeze at -20ºC so it is recommended to aliquot into single-use vials to avoid multiple freeze/thaw cycles.* A slight precipitate may be present and can be dissolved by gently vortexing. This will not interfere with antibody performance.

Please visit cellsignal.com for validation data and a complete listing of recommended companion products.

Directions for Use: Matched Antibody Pairs include capture and detection antibodies to non-overlapping epitopes. Optimal dilutions/concentrations should be determined by the end user.

Background References:

(1) Horvath, P. and Barrangou, R. (2010) *Science* 327, 167-70.
(2) Wiedenheft, B. et al. (2012) *Nature* 482, 331-8.
(3) Singh, P. et al. (2015) *Genetics* 199, 1-15.
(4) Cong, L. et al. (2013) *Science* 339, 819-23.
(5) Mali, P. et al. (2013) *Science* 339, 823-6.
(6) Li, D. et al. (2013) *Nat Biotechnol* 31, 681-3.
(7) Shen, B. et al. (2013) *Cell Res* 23, 720-3.
(8) Niu, Y. et al. (2014) *Cell* 156, 836-43.
(9) Ran, F.A. et al. (2015) *Nature* 520, 186-91.

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Applications: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **FC-FP**— Flow cytometry-Fixed/Permeabilized **FC-L**— Flow cytometry-Live **E-P**—ELISA-Peptide
Species Cross-Reactivity: **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—Horse
All—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.