

## Product Information

### Anti-PBP2a of MRSA antibody, Mouse monoclonal Clone 38, purified from hybridoma cell culture

Product Number **SAB4200853**

#### Product Description

Monoclonal Anti-PBP2a of MRSA antibody (mouse IgG1 isotype) is derived from the 38 hybridoma, produced by the fusion of mouse myeloma cells and splenocytes from a mouse immunized with purified recombinant protein corresponding to an internal region of the MRSA PBP2a.<sup>1</sup> The isotype is determined by ELISA using Mouse Monoclonal Antibody Isotyping Reagents (Sigma ISO-2). The antibody is purified from culture supernatant of hybridoma cells.

Monoclonal Anti-PBP2a of MRSA antibody specifically recognizes PBP2a protein from *Methicillin-resistant Staphylococcus aureus* (MRSA). The antibody reacts with both denaturated recombinant PBP2a protein and bacteria lysates in Immunoblot.<sup>1</sup> The antibody recognizes PBP2a in MRSA cells in both the exponential and stationary phases, however no cross reaction with methicillin-sensitive *Staphylococcus aureus* (PBP2a negative) and *E. coli* were seen.<sup>1</sup> The antibody may be used in various immunochemical techniques including Immunoblotting<sup>1</sup> (~76 kDa), ELISA<sup>1</sup>, Surface Plasmon Resonance (SPR)<sup>1</sup> and Flow cytometry<sup>1</sup>.

Infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA) are a major concern cause for clinicians, presenting high mortality and morbidity rates compared to infections caused by methicillin-sensitive *Staphylococci*.<sup>2</sup> Resistance of *S. aureus* to methicillin and all beta-lactam antibiotics is due to the activity of PBP2a protein (i.e., penicillin binding protein2a) that is located in the cell wall of the resistant strains.<sup>3-4</sup> PBP2a is encoded by *mecA* gene and belongs to a family of penicillin binding proteins (PBPs). PBPs are membrane-bound enzymes that catalyze the transpeptidation reaction necessary for cross-linkage of peptidoglycan chains.<sup>5-6</sup> Contrary to all PBPs, PBP2a has low affinity for all  $\beta$ -lactam antibiotics.<sup>7</sup> Therefore, in the presence of  $\beta$ -lactam antibiotics, while normal PBPs are blocked, the PBP2a is able to continue catalyze the transpeptidation reactions enabling cell wall synthesis.<sup>4</sup> PBP2a protein is suggested to be a promising candidate for anti-MRSA vaccine development.<sup>8</sup>

#### Reagent

Supplied as a solution in 0.01 M phosphate buffered saline pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody Concentration: ~ 1.0 mg/mL

#### Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

#### Storage/Stability

For continuous use, store at 2-8°C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

#### Product Profile

Immunoblotting: a working concentration of 0.5-1  $\mu$ g/mL is recommended using whole recombinant PBP2a protein.

Note: In order to obtain best results in different techniques and preparations it is recommended to determine optimal working concentration by titration test.

#### References

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3. Senna JP., et al., *Vaccine*, **21**, 2661-6 (2003).
4. Roth DM., et al., *Genet Mol Res.*, **5**, 503-12 (2006).
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6. Lowy FD., *J Clin Investigation*, **111**, 1265-73 (2003).
7. Foster TJ., *J Clin investigation*, **114**, 1693-6 (2004).
8. Haghightat S., et al., *Microb Pathog.*, **108**, 32-39 (2017).

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