

### Protein A (Recombinant)

<b>Cat#</b> PRTA11-R-1	<b>Size:</b> 1 mg	liquid	powder
<b>Cat#</b> PRTA11-R-5	<b>Size:</b> 5 mg	liquid	powder
<b>Cat#</b> PRTA11-R-100	<b>Size:</b> 100 mg	liquid	powder

The common bacterial pathogen, *Staphylococcus aureus*, produces a 42-kDa factor, protein A (SpA). The biological role of protein A is not understood fully, although it is secreted by nearly all clinical isolates of *S. aureus* and is thought to enhance pathogenicity. Protein A interacts with antibodies through two distinct binding events: the "classical" binding site on the Fc portion of human IgG1, IgG2, and IgG4, and the "alternate" binding site found on the Fab portion of human IgG, IgM, IgA, and IgE that contain heavy chains of the VH3 subfamily. Protein A has long been studied for its properties as a valuable immunological tool and more recently for its ability to act as a B cell superantigen by cross-linking IgM molecules through VH3-mediated binding.

Protein A contains five homologous;58 residue immunoglobulin (Ig)-binding domains followed by a C-terminal region necessary for cell wall attachment. The Ig binding domains are designated E, D, A, B, and C ~in order from the N-terminus and share 65–90% amino acid sequence identity. The domains were named based on the order in which they were discovered: A-, B-, and C-domains were initially identified as proteolytically stable modules, D-domain was identified using modified digestion conditions, and finally E-domain was recognized as an additional homologous Ig-binding domain. Individual domains are composed of three-helix bundle structures. Residues from the first two helices are important for Fc binding. The Fc binding site has been localized to the elbow region at the CH2 and CH3 interface of most IgG subclasses, and this binding property has been extensively used for the labeling and purification of antibodies. Less is known about the protein A-VH3 interaction. Presumably stimulation with Protein A (SpA) can contribute to selection of the B cells and promote the production of antibodies that may include rheumatoid factor autoantibodies. In vivo exposure to recombinant SpA can result in supraclonal suppression and deletion of B lymphocytes that are susceptible based on their VH usage.

#### Form and Storage

Recombinant Protein A from *Staphylococcus aureus* Cowan I is expressed in *Bacillus* and purified (>98%, ~45 kDa). The gene has been altered to truncate the protein A at the C-terminus. This does not affect the protein binding to IgG. It is supplied in liquid (see concn on the vial) or lyophilized in salt free form. The product has no detectable IgG or organism or Endotoxin (<0.5 EU/mg protein).

Reconstitute powder in water or buffer at a desired concentration. Store unopened vials at 4oC and the reconstituted protein at –20oC or below. Stability is at least 1 year in powder form and at least 6 months after reconstitution.

#### Binding Capacity

Binding capacity of the protein A : 1 mg binds 10 mg of human gG. Binding of other species may be different.

This product is for in vitro research use only.

MSDS: This product is considered non-hazardous as defined by OSHA (CFR 1910.1200. Nov 25, 1983). It can be disposed of in the drain.

#### Related Items

##### Protein A and Protein G ELISA kits

Anti-Protein A and Protein G antibodies, HRP and Biotin conjugates

Protein A And Protein G-Agarose (Affinity matrix)

Pre-coated Protein A and Protein G ELISA plates

<b>Cat#</b>	<b>Description</b>	<b>SIZE</b>
PRTA11-R-1	Recombinant purified >98% (E. Coli) Protein A	1 mg
PRTA11-R-100	Recombinant purified >98% (E. Coli) Protein A	100 mg
PRTA11-R-5	Recombinant purified >98% (E. Coli) Protein A	5 mg
PRTA12-A	Anti-Protein-A IgG	0.1 ml
PRTA13-A	Anti-Protein-A IgG, aff pure	100 ug
PRTA13-AB	Anti-Protein-A IgG-biotinylated,	0.1 ml
PRTA13-HRP	Anti-Protein-A IgG-HRP conjugate,	100 ul
PRTG15-R-1	Recombinant purified Protein G,	1 mg
PRTG15-R-10	Recombinant purified Protein G,	10 mg
PRTG15-R-100	Recombinant purified Protein G,	100 mg
PRTA11-R-1, -5, -100		61009A