

## 20S Proteasome

Cat. No. SBB-PP0005  
Lot. No. 163060005

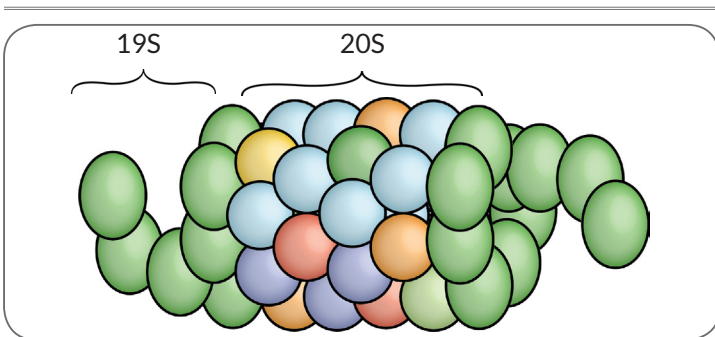


# South Bay Bio

### 20S Proteasome

The ubiquitin-proteasome pathway is the major proteolytic system in eukaryotic cells, where it catalyzes the selective degradation of short-lived regulatory proteins or the rapid turnover of misfolded proteins. One of the most important proteases in this pathway is the 26S proteasome, an ATP-dependent proteolytic complex, which is formed by the association of the barrel-shaped 20S proteasome (700-kDa) and two 19S (700-kDa) regulatory complexes. The 20S catalytic core is composed of 4 rings of 28 non-identical subunits; 2 rings are composed of 7 alpha subunits and 2 rings are composed of 7 beta subunits. The 20S catalytic core is able to degrade a variety of peptide substrates and poly-ubiquitinated proteins involved with apoptosis, DNA repair, endocytosis, and cell cycle control. The 20S proteasome can be activated chemically by the addition of the detergent SDS at a concentration not exceeding 0.035% or by the proteinaceous activator PA28.

This 20S proteasome is a highly active protein complex that has been purified from human erythrocytes. The complex is able to proteolytically degrade substrates in an ATP-independent manner and the 20S core can be activated chemically with SDS (0.035%), or by the addition of PA28. Initial experiments should be carried out at 20S proteasome concentrations between 1-5 nM.



### Product Information

**Quantity:** 50µg **Molecular Weight:** >700 kDa

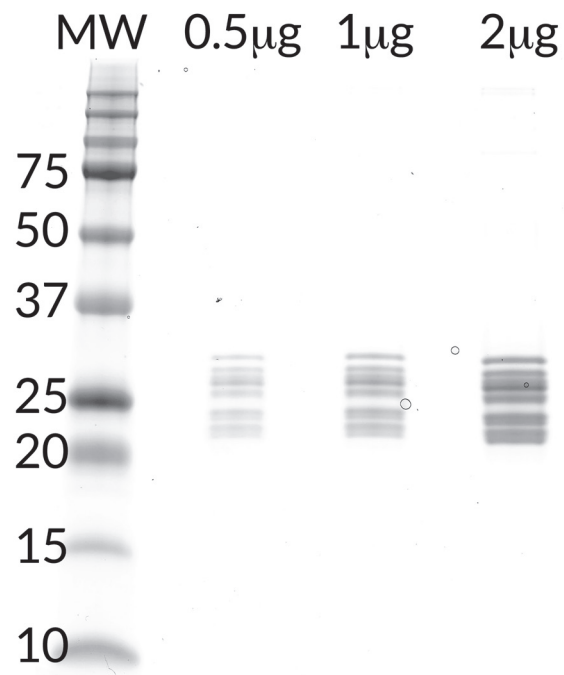
**Concentration:** 2µM, 1.4 mg/mL

**Purity:** >95% by SDS-PAGE

**Storage Buffer:** 50 mM HEPES pH 7.5, 100 mM NaCl, 1 mM TCEP.

**Storage:** Store at -80°C. Avoid multiple freeze thaw cycles.

### Quality Control and Performance Data



**Figure 1. 20S Proteasome, SDS-PAGE.** From left to right, increasing amounts of 20S Proteasome loaded onto a 4-20% SDS-PAGE gel, stained with coomassie brilliant blue.

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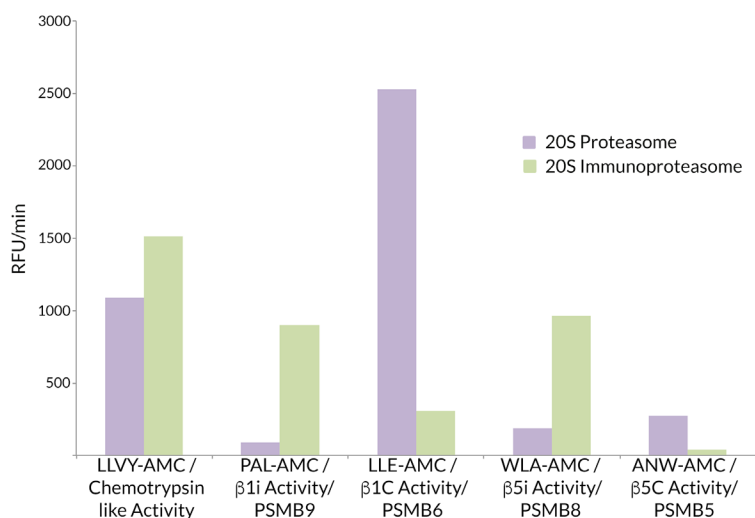
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**Figure 2. 20S Constitutive Proteasome vs. 20S Immunoproteasome Activity.** 20S Proteasome is most active against LLVY-AMC (SBB-PS0010), LLE-AMC (SBB-PS0006), and WLA-AMC (SBB-PS0008) substrates, representing physiologically relevant chymotrypsin-like,  $\beta$ 1c, and  $\beta$ 5c proteasome activity respectively.

### References

- 1) Smith DM, Chang SC, Park S, Finley D, Cheng Y, Goldberg AL (Sep 2007). "Docking of the proteasomal ATPases' carboxyl termini in the 20S proteasome's alpha ring opens the gate for substrate entry". *Molecular Cell*. 27 (5): 731-44. doi:10.1016/j.molcel.2007.06.033. PMC 2083707 Freely accessible. PMID 17803938.
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- 3) Haas AL, Warms JV, Hershko A, Rose IA (Mar 1982). "Ubiquitin-activating enzyme. Mechanism and role in protein-ubiquitin conjugation". *The Journal of Biological Chemistry*. 257 (5): 2543-8. PMID 6277905.
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