

## Goat anti-human $\alpha_2$ Macroglobulin ( $\alpha_2$ M)

Whole IgG from antiserum

10 mg

**Product #:** GAA2M-IG

**Lot #:** XXXX

**Expiry date:** XXXX

**Store at -10 to -20°C**

For Research Use Only.

Not for use in diagnostic procedures.

### Description of $\alpha_2$ Macroglobulin ( $\alpha_2$ M)

$\alpha_2$ Macroglobulin ( $\alpha_2$ M) is a large proteinase inhibitor molecule of 718,000 daltons, consisting of 4 identical subunits of 185,000 each. Produced in hepatocytes and macrophages, plasma concentrations of  $\alpha_2$ M are typically 2  $\mu$ M in adults, and as high as 6  $\mu$ M in childhood.  $\alpha_2$ M has the ability to inhibit most enzymes from the serine, metallo, cysteine and aspartate subclasses. It is not a member of the SERPIN family of inhibitors but belongs to a class of proteins that include pregnancy zone protein (PZP) and the complement proteins C3, C4 and C5. These proteins contain regions of conserved sequence as well as one or more internal  $\beta$ -cysteinylyl-glutamyl thiolester bonds, which in the case of  $\alpha_2$ M are susceptible to cleavage by enzymes or by nucleophilic compounds such as methylamine or ammonium ions. Although the precise nature of the interactions is as yet unknown, it is generally thought that cleavage of a bait region within the  $\alpha_2$ M molecule by an enzyme leads to a conformational change, which then traps and/or covalently binds the enzyme<sup>1,2</sup>. The active site of the trapped enzyme is usually still intact and able to cleave small substrates, but is inaccessible to larger natural substrates. The conformational change induced also exposes receptor-binding regions within the molecule, which may be important in the clearance of  $\alpha_2$ M-enzyme complexes from the circulation. It is thought that the main role of  $\alpha_2$ M *in vivo* is that of a "backup" inhibitor and scavenger of proteinases in blood and in tissues<sup>3,4</sup>, but it has also been reported to participate in other physiological processes, including regulation of immune function<sup>1,2</sup>.

### REFERENCES and REVIEWS

- Salvesen G, Pizzo SV; Proteinase Inhibitors:  $\alpha$ -Macroglobulins, Serpins and Kunins; in **Hemostasis and Thrombosis**, 3<sup>rd</sup> Edition, eds. RW Colman, J Hirsh, VJ Marder and EW Salzman, pp. 241-258, J.B. Lippincott Co., Philadelphia PA, USA, 1994.
- Barrett J;  $\alpha_2$ Macroglobulin; *Methods in Enzymology*, 80, pp 737-754, 1981  
Larsson LJ, Neuenschwander DE, Strickland DK; Reaction of Proteinases with  $\alpha_2$ Macroglobulin: Evidence for Alternate Reaction Pathways in the Inhibition of Trypsin; *Biochemistry* 28, pp 7636-7643, 1989.
- Schmidt B, Mitchell L, Ofosu FA, Andrew M;  $\alpha_2$ Macroglobulin is an Important Progressive Inhibitor of Thrombin in Neonatal and Infant Plasma; *Thromb Haemostas* 62, pp 1074-1077, 1989.
- Hoogendoorn H, Toh CH, Nesheim ME, Giles AR;  $\alpha_2$ Macroglobulin Binds and Inhibits Activated Protein C; *Blood* 78, pp2283-2290, 1991.

### Product Specifications

**Description:**

Vial containing XXXX ml of whole IgG, representing approximately 1 ml of antiserum. Total protein is 10 mg.

**Format:**

Whole IgG, clear liquid.

**Host Animal:**

Goat

**Immunogen:**

Human  $\alpha_2$ macroglobulin purified from plasma.

**Concentration:**

IgG concentration is XXXX mg/ml, determined by absorbance using an extinction coefficient ( $E^{1\%}_{280}$ ) of 13.4.

**Buffer:**

10 mM HEPES, pH 7.4, 150 mM NaCl, 50% (v/v) glycerol.

**Storage:**

Store between -10 and -20°C. Product will become viscous but will not freeze. Avoid storage in frost-free freezers. Keep vial tightly capped. Allow product to warm to room temperature and gently mix before use.

**Specificity:**

This antibody is specific for  $\alpha_2$ macroglobulin as demonstrated by immunoelectrophoresis and ELISA.

**Applications:**

Suitable for use as a source of antibodies to human  $\alpha_2$ M.

**Neutralizing activity:**

Not determined

**Species Cross Reactivity:** (immunodiffusion vs. citrated plasma)

Human:	XXXX	Mouse:	XXXX	Rat:	XXXX
Rabbit:	XXXX	Pig:	XXXX	Dog:	XXXX