

# NEW PRODUCT SINGLE COLOR ANTIBODIES

## Anti-Granzyme B-FITC PN B46038

### Antibody

Specificity: Human  
Clone: GB11  
Isotype: IgG1 mouse

### Reagent

Line: IOTest  
Format: Liquid  
Size: 1 mL  
Status: ASR

### Antibody characteristics

The monoclonal antibody (mAb) GB11 recognizes the human, mouse and rat Granzyme B.

### Antigen characteristics

Granzyme B (GrB) is single chain and single domain serine protease. GrB is member of the chymotrypsin superfamily. GrB is synthesised as an inactive preproenzyme and transported into the endoplasmatic reticulum (ER) as proGrB. ProGrB, covalently modified with a mannose-6-phosphate (M6P) group, is transported in ER-derived vesicles to the Golgi apparatus (GA). Within the secretory granules, granzymes are stored in association with the chondroitin sulphate containing proteoglycan serglycin (SG). The GrB molecule alone has a high positive surface charge, but when GrB binds to SG its charge may be substantially neutralized.

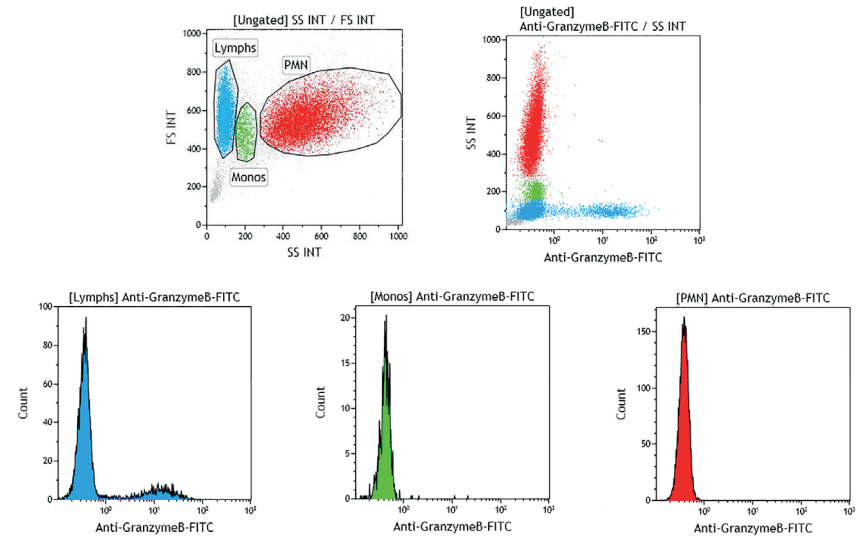
The newly synthesised GrB is heterogeneously glycosylated. The mature enzyme has two potential glycosylation sites. The process of GrB glycosylation results in generation of both the 32 and 35 kDa glycosylated forms of GrB. The 32 kDa GrB forms contain high mannose oligosaccharide moieties and accumulate in cytotoxic T lymphocytes (CTLs) after T cell receptor (TCR) stimulation. In contrast, the 35 kDa GrB forms, which possess only the complex oligosaccharide groups, are not stored in CTLs and instead they are secreted through the constitutive calcium-independent secretory pathway after TCR activation. GrB is the most abundant serine protease stored in secretory granules of CTLs and NK cells. GrB can be produced by plasmacytoid dendritic cells (pDCs). GrB-induced cell death is a primary mechanism in cytotoxic T lymphocytes (CTLs) and natural killer (NK) cells to eliminate harmful target cells including allogeneic, virally infected and tumor cells. This mechanism implies activation of several pro-apoptotic pathways by direct proteolysis. The mannose 6-phosphate receptor has been identified as the plasma membrane receptor for GrB.

### Formats available

	Size	Line	Status	Part #
FITC	1 mL	IOTest	ASR	B46038

ASR: Analyte Specific Reagent. Analytical and performance characteristics are not established.

### Example of results



Normal whole blood sample

### References

- ◆ Pinkoski MJ, Hobman M, Heibin JA, et al: Entry and trafficking of granzyme B in target cells during granzyme B perforin-mediated apoptosis. *Blood* 92:1044-1054, 1998.
- ◆ Motyka B, Korbitt G, Pinkoski MJ, et al: Mannose 6-phosphate/insulin-like growth factor II receptor is a death receptor for granzyme B during cytotoxic T cell-induced apoptosis. *Cell* 103: 491-500, 2000.
- ◆ Kam C-M et al., Granzymes (lymphocyte serine proteases): characterization with natural and synthetic substrates and inhibitors. *Biochimica et Biophysica Acta*, 2000, 1477, 307-323.
- ◆ Estebanez-Perpina E, Fuentes-Prior P, Belorgey D, et al: Crystal structure of the caspase activator human granzyme B, a proteinase highly specific for an Asp-P1 residue. *Biol Chem* 381: 1203-1214, 2000.
- ◆ Trapani JA: Granzymes: a family of lymphocyte granule serine proteases. *Genome Biol* 2: REVIEWS 3014, 2001.
- ◆ Shi L, Keefe D, Durand E, Feng H, Zhang D and Lieberman J: Granzyme B binds to target cells mostly by charge and must be added at the same time as perforin to trigger apoptosis. *J Immunol* 174: 5456-5461, 2005.
- ◆ Wagner et al., Expression of granzyme B in peripheral blood polymorphonuclear neutrophils (PMN), myeloid cell lines and in PMN derived from haematopoietic stem cells in vitro. *Molecular Immunology* 2008, 45, 1761-1766.
- ◆ Jahrsdorfer B, et al, Granzyme B produced by human plasmacytoid dendritic cells suppresses T-cell expansion. *Blood*, 2010, 11, 115, 6.
- ◆ Thiery et al., Perforin activates clathrin and dynamin-dependent endocytosis, which is required for plasma membrane repair and delivery of granzyme B for granzyme-mediated apoptosis. *Blood*, 2010, 115(8), 1582-1593.
- ◆ Hagn et al., Activated Mouse B Cells Lack Expression of Granzyme B. *J Immunol* 2012; 188:3886-3892.