

iF488 Anti-human GRP78 Antibody

Catalog Number:	113105, 113106
Size:	25 tests, 100 tests
Target Name:	GRP-78, HSPA5, BiP, Endoplasmic reticulum lumenal Ca(2+)-binding protein grp78, Immunoglobulin heavy chain constant region 1, HSP70, HSP70 family class B member 1, HSP70 family class B member 2, HSP70 family class B member 3, HSP70 family class B member 4, HSP70 family class B member 5, HSP70 family class B member 6, HSP70 family class B member 7, HSP70 family class B member 8, HSP70 family class B member 9, HSP70 family class B member 10, HSP70 family class B member 11, HSP70 family class B member 12, HSP70 family class B member 13, HSP70 family class B member 14, HSP70 family class B member 15, HSP70 family class B member 16, HSP70 family class B member 17, HSP70 family class B member 18, HSP70 family class B member 19, HSP70 family class B member 20, HSP70 family class B member 21, HSP70 family class B member 22, HSP70 family class B member 23, HSP70 family class B member 24, HSP70 family class B member 25, HSP70 family class B member 26, HSP70 family class B member 27, HSP70 family class B member 28, HSP70 family class B member 29, HSP70 family class B member 30, HSP70 family class B member 31, HSP70 family class B member 32, HSP70 family class B member 33, HSP70 family class B member 34, HSP70 family class B member 35, HSP70 family class B member 36, HSP70 family class B member 37, HSP70 family class B member 38, HSP70 family class B member 39, HSP70 family class B member 40, HSP70 family class B member 41, HSP70 family class B member 42, HSP70 family class B member 43, HSP70 family class B member 44, HSP70 family class B member 45, HSP70 family class B member 46, HSP70 family class B member 47, HSP70 family class B member 48, HSP70 family class B member 49, HSP70 family class B member 50, HSP70 family class B member 51, HSP70 family class B member 52, HSP70 family class B member 53, HSP70 family class B member 54, HSP70 family class B member 55, HSP70 family class B member 56, HSP70 family class B member 57, HSP70 family class B member 58, HSP70 family class B member 59, HSP70 family class B member 60, HSP70 family class B member 61, HSP70 family class B member 62, HSP70 family class B member 63, HSP70 family class B member 64, HSP70 family class B member 65, HSP70 family class B member 66, HSP70 family class B member 67, HSP70 family class B member 68, HSP70 family class B member 69, HSP70 family class B member 70, HSP70 family class B member 71, HSP70 family class B member 72, HSP70 family class B member 73, HSP70 family class B member 74, HSP70 family class B member 75, HSP70 family class B member 76, HSP70 family class B member 77, HSP70 family class B member 78, HSP70 family class B member 79, HSP70 family class B member 80, HSP70 family class B member 81, HSP70 family class B member 82, HSP70 family class B member 83, HSP70 family class B member 84, HSP70 family class B member 85, HSP70 family class B member 86, HSP70 family class B member 87, HSP70 family class B member 88, HSP70 family class B member 89, HSP70 family class B member 90, HSP70 family class B member 91, HSP70 family class B member 92, HSP70 family class B member 93, HSP70 family class B member 94, HSP70 family class B member 95, HSP70 family class B member 96, HSP70 family class B member 97, HSP70 family class B member 98, HSP70 family class B member 99, HSP70 family class B member 100
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	C38
Application:	Flow Cytometry
Reactivity:	Human
Format:	iF488
Isotype:	Mouse IgG2b
Antibody Type:	Monoclonal
Formulation:	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and 0.2% (w/v) BSA
Protein Concentration:	Supplied at a lot-specific concentration.
Storage&Handling:	The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. Do not freeze.
Recommended Usage:	For flow cytometric staining, it is recommended to use 5 µL of this reagent per 0.5-1.0 million cells in a 100 µL volume. Optimal reagent performance should be determined by titration for each specific application. iF488 has an excitation max at 491 nm and an emission max at 516 nm.
Excitation Laser:	Blue Laser (488 nm)
Isotype Control:	301603

BACKGROUND INFORMATION

GRP78, also known as BiP or HSPA5, is a key molecular chaperone belonging to the heat shock protein 70 (HSP70) family. It is predominantly localized in the endoplasmic reticulum (ER), where it plays a central role in protein folding, assembly, and quality control. GRP78 is also a master regulator of the unfolded protein response (UPR), a cellular stress pathway activated under conditions such as hypoxia, nutrient deprivation, or accumulation of misfolded proteins. By binding to ER stress sensors, GRP78 maintains them in an inactive state under normal conditions and releases them upon stress to initiate adaptive signaling.

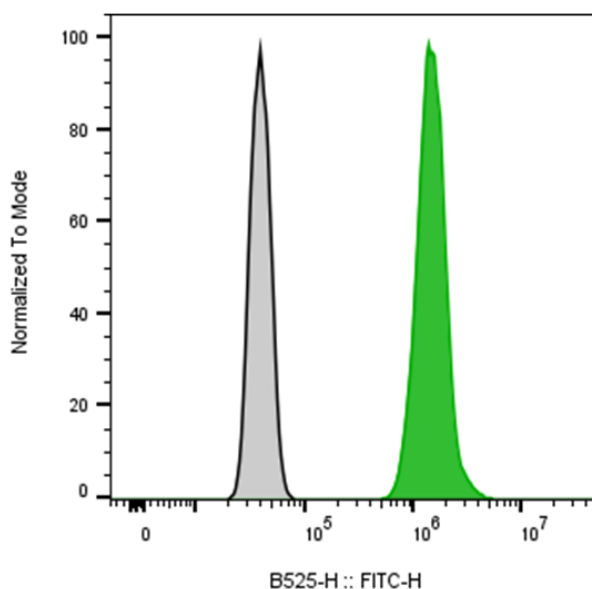
Structurally, GRP78 consists of two major functional domains: an N-terminal ATPase domain and a C-terminal substrate-binding domain. The ATPase domain hydrolyzes ATP to regulate the chaperone cycle, while the substrate-binding domain interacts with unfolded or misfolded polypeptides. A C-terminal KDEL sequence ensures its retention within the ER lumen. Under certain pathological conditions, GRP78 can also be translocated to the cell surface or secreted extracellularly, where it acquires additional signaling functions.

GRP78 interacts with a wide range of ligands, including nascent polypeptides, misfolded proteins, and ER stress sensors such as PERK, IRE1, and ATF6. When expressed on the cell surface, it can bind extracellular ligands such as α 2-macroglobulin, Cripto, and certain viral proteins, mediating signaling pathways that influence cell survival, proliferation, and immune responses.

In disease, GRP78 is frequently upregulated in cancer, where it promotes tumor cell survival, resistance to apoptosis, metastasis, and therapy resistance. It is also implicated in neurodegenerative disorders, metabolic diseases, and viral infections due to its central role in protein homeostasis and stress responses.

Therapeutically, GRP78 is an attractive target for cancer treatment. Strategies include small molecules, antibodies, and peptides that inhibit its function or target GRP78-expressing cells, particularly those displaying GRP78 on their surface. Modulating GRP78 activity may also have potential in treating diseases associated with ER stress and protein misfolding.

PRODUCT DATA



COLO-205 cells were stained with iF488 Anti-Human GRP78 clone C38 (color-filled histogram) or an isotype control (right).

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