

## Anti-human HLA-G Antibody

|                           |                                  |
|---------------------------|----------------------------------|
| <b>Catalog Number:</b>    | 112701, 112702                   |
| <b>Size:</b>              | 25 ug, 100 ug                    |
| <b>Target Name:</b>       | HLA-G, Human Leukocyte Antigen-G |
| <b>Regulatory Status:</b> | RUO                              |

### PRODUCT DETAILS

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| <b>Clone:</b>                 | HLAGAR1                                                                                                                                                                                                                           |
| <b>Application:</b>           | Flow Cytometry                                                                                                                                                                                                                    |
| <b>Reactivity:</b>            | Human                                                                                                                                                                                                                             |
| <b>Format:</b>                | Purified                                                                                                                                                                                                                          |
| <b>Isotype:</b>               | Rat IgG1                                                                                                                                                                                                                          |
| <b>Antibody Type:</b>         | Monoclonal                                                                                                                                                                                                                        |
| <b>Formulation:</b>           | Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide                                                                                                                                                                |
| <b>Protein Concentration:</b> | 0.5 mg/mL                                                                                                                                                                                                                         |
| <b>Storage&amp;Handling:</b>  | The antibody solution should be stored between 2°C and 8°C                                                                                                                                                                        |
| <b>Recommended Usage:</b>     | For flow cytometric staining, it is recommended to use less than 0.2 ug 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 |
| <b>Isotype Control:</b>       | 303401                                                                                                                                                                                                                            |

### BACKGROUND INFORMATION

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HLA-G is a non-classical major histocompatibility complex (MHC) class I molecule encoded within the human leukocyte antigen (HLA) region. Unlike classical MHC class I proteins, HLA-G has limited polymorphism and a restricted tissue distribution, primarily expressed at the maternal-fetal interface, where it plays a critical role in immune tolerance during pregnancy.

Structurally, HLA-G consists of a heavy chain associated with  $\beta$ 2-microglobulin and presents peptides similarly to other MHC class I molecules. However, alternative splicing generates multiple isoforms, including both membrane-bound (e.g., HLA-G1) and soluble forms (e.g., HLA-G5). These structural variants contribute to its diverse immunomodulatory functions.

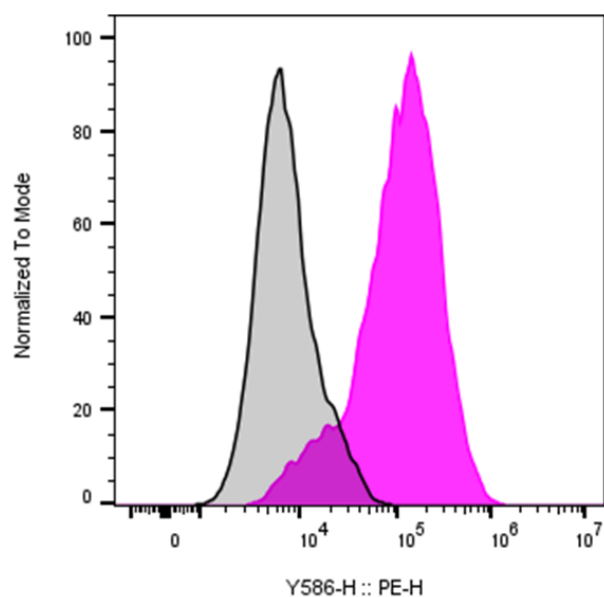
HLA-G interacts with inhibitory receptors such as ILT2 (LILRB1), ILT4 (LILRB2), and KIR2DL4 expressed on immune cells including natural killer (NK) cells, T cells, and antigen-presenting cells. Through these ligand-receptor interactions, HLA-G suppresses immune responses by inhibiting cytotoxic activity, reducing cytokine production, and promoting regulatory cell phenotypes.

In disease contexts, aberrant expression of HLA-G has been associated with cancer, viral infections, and autoimmune disorders. Many tumors exploit HLA-G expression to evade immune surveillance, leading to poorer clinical outcomes. Conversely, reduced HLA-G expression may contribute to pregnancy complications such as preeclampsia or recurrent miscarriage.

Therapeutically, HLA-G represents a promising target in both immunosuppression and immuno-oncology. Enhancing HLA-G activity could be beneficial in transplantation and autoimmune diseases by promoting immune tolerance. In contrast, blocking HLA-G or its receptors is being explored as a strategy to restore anti-tumor immunity. Ongoing research aims to better understand its mechanisms and develop targeted therapies that modulate HLA-G pathways.

## PRODUCT DATA

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JEG-3 cells were stained with purified Anti-Human HLA-G clone HLAGAR1 (color-filled histogram) or an isotype control (gray histogram).

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