Antibody stimulates immune system against damaged cells

When a normal cell becomes stressed, it will produce antigens on its surface that signal for the immune system to destroy it. However, if a cell is overexpressing the endoplasmic reticulum protein 5 (ERp5), these antigens will be cleaved from the cell’s surface before the immune system can respond. This masks the cellular damage, allowing the damaged cell to proliferate. This technology is an antibody, clone IA5, that binds to ERp5 and prevents it from cleaving cell-surface antigens. It can be used as an immunophenotyping tool to target cells that overexpress ERp5. It can also be adapted for use as a treatment for the wide range of diseases characterized by ERp5 overexpression, including Hodgkin’s lymphoma, multiple myeloma, and chronic lymphocytic leukemia.

Anti-ERp5 antibody prevents cleavage of cell-surface antigens targeted by immune cells, drug and immunotherapies, and diagnostics

The cell-surface antigens cleaved by ERp5, known as NKG2D ligands (NKG2DLs), are a common marker for cellular damage. They are therefore an attractive target for drugs and immunotherapies, as well as for diagnostics. When ERp5 is overexpressed these treatments and diagnostic tools are rendered ineffectual. By binding ERp5 and preventing NKG2DLs cleavage, the anti-ERp5 antibody allows for detection of damaged cells that might otherwise be invisible to diagnostic tools. This antibody can potentially be used as a treatment in conjunction with drugs and immunotherapies that target NKG2DLs. It could also be developed into an independent immunotherapy by attracting NKG2DLs target immune cells and “natural killer” cells (NKs), which can contain the damaged cell before it can divide.

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Applications:

- Immunotherapy for diseases that upregulate ERp5 expression
- Immunophenotyping tool for ERp5 expression
• Research tool for detection of ERp5 expression
• Research tool for blocking ERp5 activity

**Advantages:**

• Restores efficacy to drugs and therapies that target NKG2DLs
• Allows for detection of damaged cells with overexpressed ERp5
• Potential therapy for a wide range of diseases including lymphocytic leukemia, Hodgkin's lymphoma, and multiple myeloma

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