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In Vivo Star Anti-Mouse NK1.1 Antibody

Catalog Number:	515601, 515602, 515603
Size:	1 mg, 5 mg, 25 mg
Target Name:	mouse NK1.1
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	PK136
Application:	ELISA, WB, Flow cytometry, IHC, ICC, animal model study
Reactivity:	Mouse
Format:	Liquid
Product Description:	In Vivo Grade Recombinant Anti-mouse NK1.1 Monoclonal Antibody
Isotype:	Mouse IgG2a Kappa
Antibody Type:	Recombinant
Purity:	>95% by reducing SDS-PAGE
Endotoxin:	< 1 EU per 1 mg of the protein by the LAL method.
Storage Conditions:	4ºC
Grade:	In vivo
Recommended Usage:	This product is suitable for in vivo animal use. Optimal amounts need to be determined empirically for each experiment.
Hidden Synonyms:	InVivoMab, InVivoPlus, GoInVivo, In Vivo Gold

BACKGROUND INFORMATION

NK1.1, also known as CD161c or NKR-P1C, is a defining cell surface marker used extensively in immunology to identify Natural Killer (NK) cells and a subset of T cells known as NKT cells in specific strains of mice. It belongs to the C-type lectin-like receptor superfamily and plays a significant role in the regulation of NK cell function. Unlike many other immune receptors that are conserved across all members of a species, NK1.1 expression is strain-dependent; it is notably present in C57BL/6 mice but absent in BALB/c and SJL mice, which express allelic variants (NKR-P1B) that are not recognized by the standard anti-NK1.1 monoclonal antibody (clone PK136).

Structurally, NK1.1 is a type II transmembrane glycoprotein that exists as a disulfide-linked homodimer. It contains an extracellular C-type lectin-like domain (CTLD), a transmembrane region, and a cytoplasmic tail. Functionally, NK1.1 acts as an activating receptor. Its cytoplasmic tail associates with the Fc receptor gamma chain (FcRγ), an adaptor protein containing an Immunoreceptor Tyrosine-based Activation Motif (ITAM). When NK1.1 binds to its ligand, this association triggers a signaling cascade involving Syk kinase, leading to the release of cytotoxic granules (containing perforin and granzymes) and the production of cytokines like Interferon-gamma (IFN-γ), thereby promoting the killing of target cells.

The specific physiological ligand for NK1.1 (NKR-P1C) has been a subject of investigation, with research identifying members of the C-type lectin-related (Clr) family as key interaction partners. Specifically, NKR-P1C has been shown to bind to Clr-b (encoded by the Clec2d gene). This interaction is part of a complex system of "missing self" and "induced self" recognition, where NK cells monitor the health of host tissues. While the inhibitory receptor NKR-P1B also binds Clr-b to prevent autoimmunity, the activating NK1.1 receptor may help detect cells that have dysregulated Clr-b expression due to stress or infection.

In mouse research, NK1.1 is the "gold standard" marker for identifying NK cells in C57BL/6 mice, the most common background for genetic models. The anti-NK1.1 antibody (clone PK136) is widely used not only for flow cytometry staining but also for in vivo depletion studies. By injecting this antibody, researchers can selectively eliminate NK and NKT cells to study their specific contributions to tumor immunity, viral infections, and autoimmune diseases. However, because its expression is restricted to certain strains, researchers working with BALB/c mice must rely on other markers, such as CD49b (DX5), to identify NK cells.