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InnoCyto Inc.

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iF647 Anti-Human IL-4 Antibody

Catalog Number:	110702, 110703
Size:	25 tests, 100 tests
Target Name:	IL-4, Interleukin-4, MCGF-2 (Mast cell growth factor-2), MFF (Macrophage fusion factor), TCGF-2 (T cell gr
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	MP4-25D2
Application:	Intracellular Flow Cytometry
Reactivity:	Human
Format:	iF647
Isotype:	Rat IgG1
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. iF647 has an excitation max at 656 nm and an emission max at 670 nm.
Excitation Laser:	Red Laser (633 nm)
Isotype Control:	300103
RRID:	AB_3738951

BACKGROUND INFORMATION

Interleukin-4 (IL-4) is a pleiotropic cytokine that plays a central role in shaping immune responses, particularly those associated with type 2 immunity. It is produced mainly by activated CD4+ T helper 2 (Th2) cells, as well as by mast cells, basophils, eosinophils, and innate lymphoid cells. IL-4 is best known for driving the differentiation of naïve CD4+ T cells into Th2 cells, thereby promoting immune programs involved in defense against helminths and in allergic inflammation.

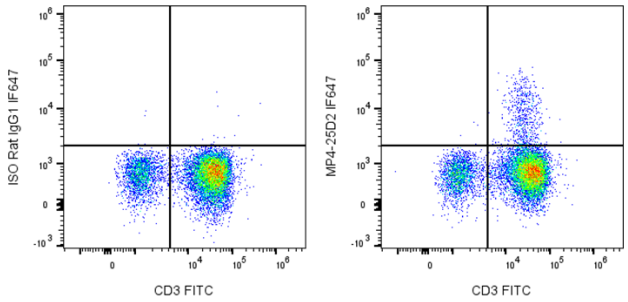
Structurally, IL-4 is a small, secreted glycoprotein of approximately 15-17 kDa that adopts a compact four–α-helix bundle characteristic of many cytokines in the hematopoietin family. IL-4 signals through a heterodimeric receptor complex composed of the IL-4 receptor alpha chain (IL-4Rα) paired with either the common gamma chain (γc) to form the type I IL-4 receptor, or with IL-13 receptor alpha 1 (IL-13Rα1) to form the type II receptor. Engagement of these receptor complexes initiates intracellular signaling primarily via the JAK-STAT pathway, with STAT6 acting as a key transcriptional mediator.

The functional “ligand” of IL-4 receptors is IL-4 itself, although IL-13 can also signal through the type II IL-4 receptor due to shared receptor subunits and overlapping biological effects. Through receptor engagement, IL-4 influences a wide array of immune cell functions. It stimulates B cell proliferation and promotes immunoglobulin class switching to IgE and IgG1 in mice, enhances expression of MHC class II and co-stimulatory molecules, and drives alternative (M2) activation of macrophages, which are associated with tissue repair and modulation of inflammation.

IL-4 plays a prominent role in disease, particularly in allergic and atopic conditions such as asthma, allergic rhinitis, and atopic dermatitis. Excessive or dysregulated IL-4 signaling contributes to elevated IgE production, eosinophilic inflammation, and airway hyperresponsiveness. IL-4 is also involved in fibrotic diseases through its effects on macrophages and fibroblasts. In cancer, IL-4-driven macrophage polarization may support tumor growth in certain contexts by promoting immunosuppressive microenvironments.

Therapeutically, IL-4 signaling has become an important target in immune-mediated disease. Biologic agents that block IL-4Rα, thereby inhibiting both IL-4 and IL-13 signaling, have demonstrated significant clinical benefit in allergic and inflammatory disorders. Conversely, controlled manipulation of IL-4 pathways is being explored to enhance tissue repair or modulate immune responses, highlighting IL-4’s dual relevance as both a driver of pathology and a potential therapeutic lever.

PRODUCT DATA



PMA/Ionomycin-stimulated human peripheral blood lymphocytes stained with FITC Anti-Human CD3 and either iF647 Anti-Human IL-4 clone MP4-25D2 (right panel) or an isotype control (left panel).

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