

DESCRIPTION

Species Reactivity	Rat
Specificity	Detects rat IL-9 in direct ELISAs and Western blots. In direct ELISAs, approximately 30% cross-reactivity with recombinant mouse IL-9 is observed, and approximately 10% cross-reactivity with recombinant human IL-9 is observed.
Source	Polyclonal Sheep IgG
Purification	Antigen Affinity-purified
Immunogen	Mouse myeloma cell line NS0-derived recombinant rat IL-9 Gln19-Ala144 Accession # NP_001099217
Endotoxin Level	<0.10 EU per 1 µg of the antibody by the LAL method.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied either lyophilized or as a 0.2 µm filtered solution in PBS.

APPLICATIONS

Please Note: Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

	Recommended Concentration	Sample
Western Blot	0.1 µg/mL	Recombinant Rat IL-9 (Catalog # 4134-RL)
Intracellular Staining by Flow Cytometry	2.5 µg/10 ⁶ cells	See Below
CyTOF-ready	Ready to be labeled using established conjugation methods. No BSA or other carrier proteins that could interfere with conjugation.	
Neutralization	Measured by its ability to neutralize IL-9-induced proliferation in the TS1 mouse helper T cell line. Moreau, F. J. <i>et al.</i> (1988) <i>Nature</i> 336 :690. The Neutralization Dose (ND ₅₀) is typically 1.5-7.5 µg/mL in the presence of 10 ng/mL Recombinant Rat IL-9.	

DATA

Intracellular Staining by Flow Cytometry

Detection of IL-9 in Rat Splenocytes by Flow Cytometry. Rat splenocytes were treated for 24 hours with 50 ng/mL PMA and 500 ng/mL Ca²⁺ ionomycin then stained with Sheep Anti-Rat IL-9 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF4134, filled histogram) or control antibody (Catalog # 5-001-A, open histogram), followed by NorthernLights™ 637-conjugated Anti-Sheep IgG Secondary Antibody (Catalog # NL011). To facilitate intracellular staining, cells were fixed with paraformaldehyde and permeabilized with saponin.

Neutralization

Cell Proliferation Induced by IL-9 and Neutralization by Rat IL-9 Antibody. Recombinant Rat IL-9 (Catalog # 4134-RL) stimulates proliferation in the TS1 mouse helper T cell line in a dose-dependent manner (orange line). Proliferation elicited by Recombinant Rat IL-9 (10 ng/mL) is neutralized (green line) by increasing concentrations of Sheep Anti-Rat IL-9 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF4134). The ND₅₀ is typically 1.5-7.5 µg/mL.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.2 mg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
Stability & Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <ul style="list-style-type: none"> • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 6 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Rat interleukin-9 (IL-9; also T-cell growth factor P40 and MEA) is a 20-30 kDa secreted glycoprotein that belongs to the IL-7/IL-9 family of hematopoietic cytokines. It is best considered an atypical Th2-type cytokine (1-4). Rat IL-9 was initially isolated from the 4437A rat thymoma cell line (5). The IL-9 precursor is 144 amino acids (aa) in length and contains an 18 aa signal sequence plus a 126 aa mature segment (5). An extended, 219 aa alternate precursor form is reported in GenBank (Accession # XP_001068265). It shows a 113 aa substitution for the first 38 aa of the standard form. Its significance is unknown. Mature rat IL-9 is 75%, 74% and 58% aa identical to cotton rat, mouse and human IL-9, respectively (6-9). There is variability in cross-species reactivity. Canine and mouse IL-9 are purportedly active on human cells (9-11), while human IL-9 is inactive on mouse cells (9). Cells reported to express IL-9 include activated CD4+ T cells and eosinophils (12, 13). The receptor for rat IL-9 is composed of the 62 kDa rat IL-9R α chain and the 64 kDa rat common cytokine receptor γ -chain (5, 14, 15). IL-9 is suggested to play a significant, but likely supporting role in allergy and asthma. Its synthesis is induced upon exposure to allergen (10, 13). Following release, it is known to upregulate IgE production by IL-4-stimulated B cells (16). It also stimulates mucin secretion and IL-13 production through a direct action on respiratory epithelium (10, 17). In the bone marrow, it promotes eosinophilia, likely through IL-5 induction (18, 19). And once produced, eosinophils are chemoattracted to the bronchi through the IL-9-induced secretion of eotaxin-1 by airway smooth muscle cells (20).

References:

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