



Recombinant Human TLR9

Catalog Number: GR104200

Background

Toll-like receptor 9 (TLR9) has also been designated as CD289. TLR9 is a member of the toll-like receptor (TLR) family which plays a fundamental role in pathogen recognition and activation of innate immunity(1). TLRs are named for the high degree of conservation in structure and function seen between mammalian TLRs and the *Drosophila* transmembrane protein Toll. TLRs are transmembrane proteins, expressed on the cell surface and the endocytic compartment and recognize pathogen-associated molecular patterns (PAMPs) that are expressed on infectious agents and initiate signalling to induce production of cytokines necessary for the innate immunity and subsequent adaptive immunity. The various TLRs exhibit different patterns of expression. This gene is preferentially expressed in immune cell rich tissues, such as spleen, lymph node, bone marrow and peripheral blood leukocytes. Studies in mice and human indicate that this receptor mediates cellular response to unmethylated CpG dinucleotides in bacterial DNA to mount an innate immune response(2). TLR9 recognizes unmethylated CpG sequences in DNA molecules. CpG sites are relatively rare (~1%) on vertebrate genomes in comparison to bacterial genomes or viral DNA. TLR9 is expressed by numerous cells of the immune system such as dendritic cells, B lymphocytes, monocytes and natural killer (NK) cells. TLR9 is expressed intracellularly, within the endosomal compartments and functions to alert the immune system of viral and bacterial infections by binding to DNA rich in CpG motifs. TLR9 signals leads to activation of the cells initiating pro-inflammatory reactions that result in the production of cytokines such as type-I interferon and IL-12. There are new immunomodulatory treatments undergoing testing which involve the administration of artificial DNA oligonucleotides containing the CpG motif. CpG DNA has applications in treating allergies such as asthma (3), immunostimulation against cancer (4), immunostimulation against pathogens, and as adjuvants in vaccines (5). TLR9 has been shown to interact with RNF216 (6).

References

1. Du X, et al. *Eur Cytokine Netw* 11 (3): 362–71.
2. Entrez Gene: TLR9 toll-like receptor 9.
3. Kline JN. *Proc Am Thorac Soc* 4 (3): 283–8.
4. Thompson JA, et al. *Journal of Clinical Oncology*, 2004 ASCO Annual Meeting Proceedings (Post-Meeting Edition) 22 (14S).
5. Klinman DM. *Int. Rev. Immunol.* 25 (3-4): 135–54.
6. Chuang TH and Ulevitch RJ. *Nat. Immunol.* 5 (5): 495–502



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Description

Sources: Expressed in *E. coli*.

Composition: Leu24-Thr637

Accession #: P_059138.1

Molecular weight: 67 kDa

Activity: Measured by its ability to inhibit poly I:C induced IL8 secretion by TLR9 transfected HEK293 human embryonic kidney cells.

The ED50 for this effect is typically 5-10 µg/mL in the presence of 10 µg/mL of poly I:C.

Endotoxin level: <1.0 EU per 1 µg of the protein by the LAL method.

Purity: > 98%, by SDS-PAGE under reducing conditions and visualized by silver staining.

Formulation: Lyophilized from a 0.2 µm filtered solution in PBS.

Reconstitution: Reconstitute at 50-100 µg/ml in sterile PBS and store at -20°C ~ -70°C for up to 3 months.

Shipping and storage: The product is shipped at ambient temperature or with ice pad. Upon receipt, store it immediately at -20°C to avoid loss of activity and use it in 6 months.

Related products

1. GR239031 96-well microplate sealer plastic, pack of 100
2. GR238016 50 ml Reagent Reservoir, 100/case, 5 packs/case (pack of 20)
3. GR238004 Tissue Culture 96-well Microplate, individually packed, Case of 50
4. GR238002 Microplate 12x8-Well Strip High Binding, Case of 50
5. GR238003 Microplate 12x8-Well Strip Medium Binding, Case of 50
6. GR238032 42592 Costar Stripwell Microplate 1 x 8 Flat Bottom, High Binding, Case of 100
7. GR238001 468667 Thermo Microplate 12x8-Well Strip Nunc Maxisorp F8, Case of 60
8. GR238019 1.5 ml Microcentrifuge tube with screw cap and free-standing, pack of 500

DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

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NOT FOR USE IN HUMANS AND ANIMALS**