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Anti-FPR1 Antibody

Catalog # AP51212

Product Information

Application	WB, IHC, IF/IC
Primary Accession	P21462
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Calculated MW	38446

Additional Information

Gene ID	2357
Other Names	fMet-Leu-Phe receptor; fMLP receptor; N-formyl peptide receptor; FPR; N-formylpeptide chemoattractant receptor
Target/Specificity	KLH-conjugated synthetic peptide encompassing a sequence within the center region of human FPR1. The exact sequence is proprietary.
Dilution	WB~~WB (1/500 - 1/1000) IHC~~1:100~500 IF/IC~~N/A
Format	Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.01% sodium azide.
Storage	Store at -20 °C.Stable for 12 months from date of receipt

Protein Information

Name	FPR1 {ECO:0000303|PubMed:25109685}
Function	Pattern recognition G protein-coupled receptor (PRR/GPCR) involved in innate recognition of N-formyl-methionyl peptides derived from invading microbes and host mitochondria as pathogen- and damage- associated molecular patterns (PAMPs and DAMPs). Functions as a sensor of PAMPs and DAMPs released upon microbial infection or tissue damage, triggering immune cell activation and chemotaxis to eliminate pathogens and restore tissue homeostasis (PubMed:24108355, PubMed:25605714, PubMed:35217703, PubMed:36064945). Peptide binding leads to conformational changes coupled to heterotrimeric G(i) protein signaling. Upon GDP to GTP conversion, G(i)-alpha subunit dissociates from G-beta and G-gamma subunits. Free G(i)-alpha subunit inhibits cyclic adenylate cyclase and cAMP synthesis whereas the G-beta and G- gamma dimer activates downstream phospholipase C-beta and phosphoinositide 3-kinase signaling cascades leading to Ca(2+) influx (PubMed:10514456, PubMed:15153520, PubMed:1712023, PubMed:25605714, PubMed:35217703,

PubMed:36064945). Displays two affinity states for peptide agonists, low and high, likely accounting for selective signaling of myeloid cell functions at different phases of the inflammatory response. Subnanomolar concentrations of peptide agonists induce myeloid cell chemotaxis, whereas micromolar concentrations trigger degranulation and superoxide production (PubMed:2161213, PubMed:2176894, PubMed:24108355, PubMed:25605714). May recognize a myriad of bacterial signal peptides indicative of an evolutionary conserved detection mechanism in host defense against bacterial infection. Triggers bactericidal functions of neutrophils and phagocytes in response to N-formyl-Met-Leu-Phe (fMLF) which is part of the signal peptide sequences of hundreds distinct bacterial strains (PubMed:25605714). In the homeostatic wound healing response to tissue injury, senses 'necrotaxis' DAMP-type signals released in the form of mitochondria-derived N-formylated peptides and guides neutrophil trafficking toward necrotic cells within the injury site (By similarity). In the context of antitumor immunity, interacts with ANXA1 and guides dendritic cell positioning in close proximity to necrotic tumor cells, allowing for tumor-associated antigen uptake and cross- presentation to T cells (PubMed:24108355, PubMed:26516201). Receptor for TAFA4, mediates its effects on chemoattracting macrophages, promoting phagocytosis and increasing reactive oxygen species (ROS) release (PubMed:25109685). Receptor for cathepsin CTSG, leading to increased phagocyte chemotaxis (PubMed:15210802). Beyond canonical N- terminal formylated peptide agonists, can also be activated by C- terminal amidated peptides, which appear to all share a tripartite structure motif oriented around a carboxyl group (PubMed:24108355, PubMed:25605714). Differential signaling is also defined by receptor oligomerization state. Pro-resolving ligands, such as lipoxin A4 or ANXA1, induce the formation of FPR1:FPR2 heterodimers triggering proapoptotic JNK pathway in neutrophils (PubMed:24108355).

Cellular Location

Cell membrane; Multi-pass membrane protein. Note=Internalizes in presence of its ligands, fMLP, TAFA4 and CTSG.

Tissue Location

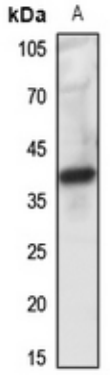
Monocytes (at protein level) (PubMed:25605714). Neutrophils.

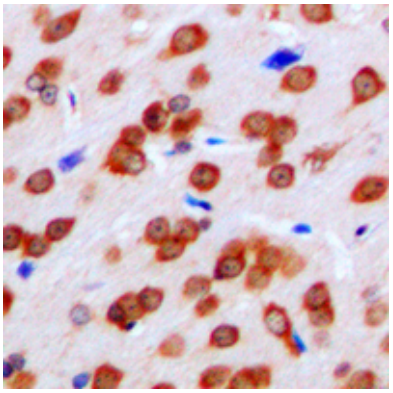
References

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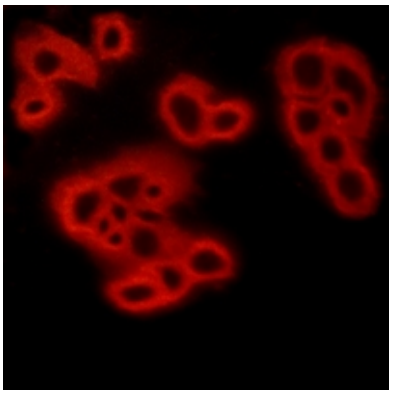
Images

Western blot analysis of FPR1 expression in mouse lung (A) whole cell lysates. (Predicted band size: 38 kD; Observed band size: 38 kD)





Immunohistochemical analysis of FPR1 staining in human brain formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.



Immunofluorescent analysis of FPR1 staining in MCF7 cells. Formalin-fixed cells were permeabilized with 0.1% Triton X-100 in TBS for 5-10 minutes and blocked with 3% BSA-PBS for 30 minutes at room temperature. Cells were probed with the primary antibody in 3% BSA-PBS and incubated overnight at 4 °C in a hidified chamber. Cells were washed with PBST and incubated with a AF594-conjugated secondary antibody (red) in PBS at room temperature in the dark.

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