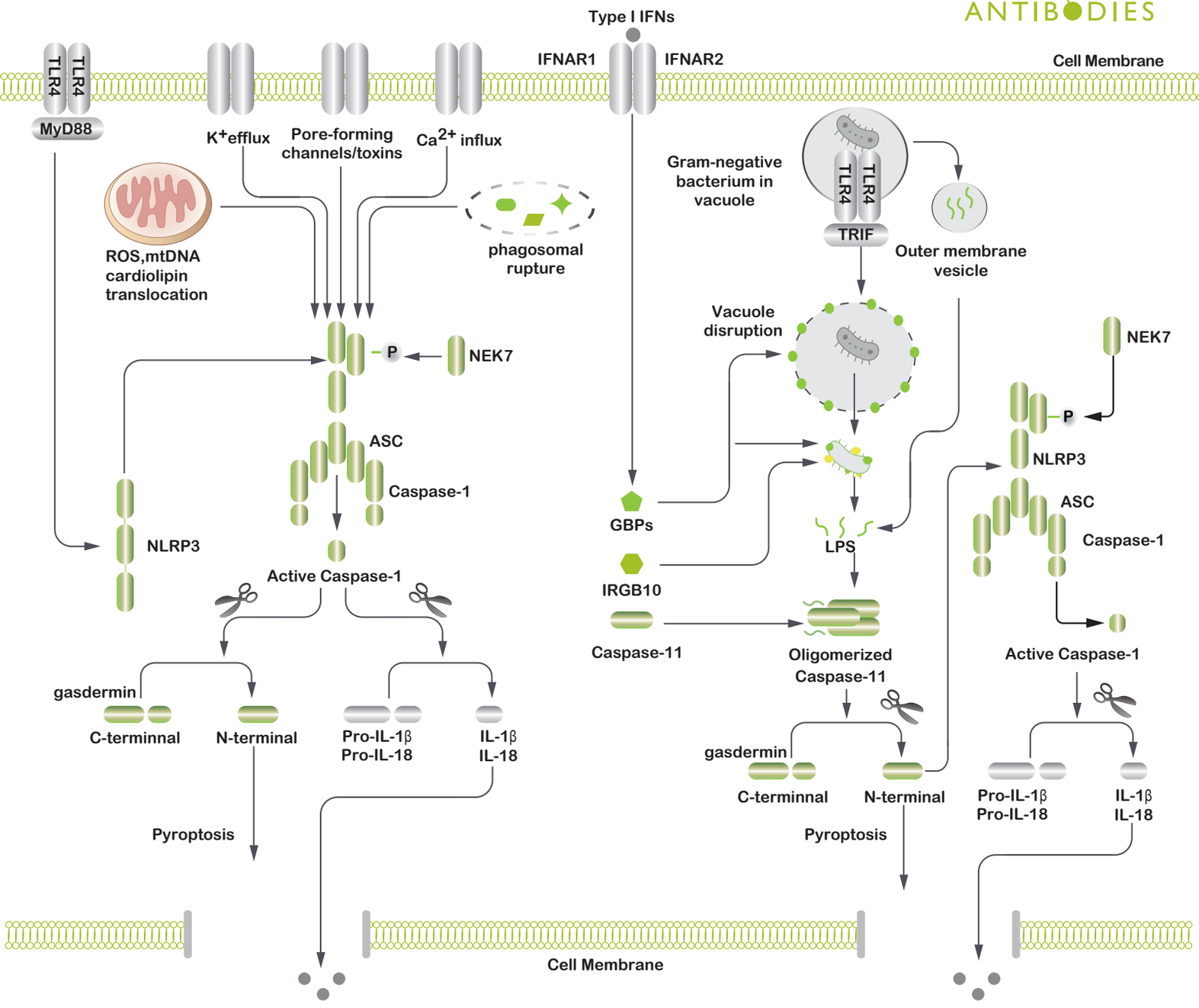
Inflammasome(Pyroptosis) Signaling



Canonical and non-canonical activation process of inflammasomes.

Canonical activation process of NLRP3 inflammasome (left panel) requires a priming signal (also known as Signal 1), often mediated by TLRs and activation of NF- B, inducing the expression of NLR proteins and IL-1 family members. An activating signal (also known as Signal 2) with various sources (PAMPs/DAMPs, ion efflux or influx, pore-forming channels/toxins, endogenous factors, and mitochondrial damage) leading to assembly of the inflammasome mediated by the kinase NEK7, ASC, and caspase-1. Caspase-1 cleaves gasdermin D, releasing the N-terminal fragment of gasdermin D that assembles into pores on the membrane, resulting in pyroptosis. Active caspase-1 also cleaves pro-IL-1 and pro-IL-18, which are secreted through the pores formed by gasdermin D. Non-canonical activation process of inflammasomes is induced by Gram-negative bacteria. LPS from Gram-negative bacteria is recognized by TLR4 via the adaptor TRIF, resulting in the production of type I IFNs. Type I IFNs induce the expression of IFIs GBPs and IRGB10 and caspase-11. Through GBPs and IRGB10 mediated release and disruption of the bacteria, or via bacterial outer membrane vesicles, LPS can be released into the cytoplasm and results in non-canonical inflammasome activation, which leads to caspase-11-dependent pyroptosis and secretion of IL-1 and IL-18.

Inspiring Scientific Discovery

Key Products for Inflammasome/Pyroptosis Signaling

Target Name	Cat.No.	Reactivity	Applications	Citations
NLRP1/NALP1/CARD7	bs-6854R	Human,Mouse,Rat	WB,IHC-P	
NLRP2/NALP2	bs-6717R	Human,Mouse,Rat	WB,IHC-P	
NLRP3/NALP3/CIAS1	bs-10021R	Human,Mouse,Rat	WB,IHC-P,IF	PubMed
NLRP5/NALP5	bs-19006R	Human,Mouse,Rat	WB,IHC-P	
NLRP6/NALP6	bs-10440R	Human,Mouse,Rat	WB,IHC-P	
NLRP8	bs-19287R	Human	WB,IHC-P	
NLRP9	bs-6867R	Human,Mouse,Rat	WB,IHC-P	
NLRP10	bs-6856R	Human	WB,IHC-P	
NLRP11	bs-19283R	Human	WB,IHC-P	
NLRP12/NALP12	bs-6864R	Human,Mouse,Rat	WB,IHC-P	
NLRP13	bs-19285R	Human	WB,IHC-P	
NLRP14	bs-19286R	Human	WB,IHC-P	
NLRC4/CARD 12	bs-20016R	Human,Mouse,Rat	WB,IHC-P	
NLRC1/NOD1/CARD4	bs-7085R	Human,Mouse,Rat	WB	PubMed
NOD2/CARD15	bs-7084R	Human,Mouse,Rat	WB,FCM	
NLRC5	bs-19284R	Human	WB,IHC-P	
AIM2	bs-5986R	Human,Mouse,Rat	WB,IHC-P,FCM	
NEK7	bs-7758R	Human,Mouse,Rat	WB,IHC-P	
ASC	bs-6741R	Human,Mouse,Rat	WB,IHC-P,FCM	PubMed
Caspase-1 (p10)	bs-0169R	Human,Mouse,Rat	WB,IHC-P	PubMed
Caspase-1 (p20)	bs-10743R	Human,Mouse,Rat	WB,IHC-P	PubMed
Caspase-1 (p20)	bs-10442R	Human,Mouse,Rat	WB,FCM	
Caspase-4	bs-20494R	Mouse,Rat	WB	
Caspase-5 (p20)	bs-6860R	Human,Mouse,Rat	WB	
Gasdermin A	bs-16331R	Human,Mouse,Rat	WB,IHC-P	
Gasdermin C	bs-16332R	Human	WB,IHC-P	
Gasdermin D/DFNA5L	bs-14287R	Human	WB,IHC-P	PubMed
Gasdermin L	bs-13291R	Human	WB,IHC-P	
IL-1β	bs-6319R	Human,Mouse,Rat	WB,IHC-P	PubMed
IL-1β	bs-0812R	Human,Mouse,Rat	WB,IHC-P,FCM	PubMed
IL-18	bs-0529R	Mouse,Rat	WB,IHC-P	PubMed
IL-18	bs-4988R	Human,Mouse,Rat	WB,IHC-P	
Human IL-1 beta ELISA Kit	bsk00026	Human	ELISA	
Rat IL-1 beta ELISA Kit	bsk00027	Rat	ELISA	
Mouse IL-1 beta ELISA Kit	bsk00028	Mouse	ELISA	
Human IL-18 ELISA Kit	bsk00371	Human	ELISA	
Rat IL-18 ELISA Kit	bsk00196	Rat	ELISA	

WB=Western Blot; IHC-P=Immunohistochemistry with Paraffin-Embedded Tissue Slides; IF=Immunofluorescence; FCM=Flow cytometry