Inflammasomes: Intracellular Regulators of Pathogen Recognition, Host Defense, & Inflammation

Inflammasome-mediated Caspase-1 Activation Regulates the Secretion of IL-1β & IL-18

Inflammasomes are intracellular protein complexes composed of molecular sensors, adapters, and executioners. These sensors include receptor-like proteins that detect danger and activate inflammasomes, leading to the subsequent processing and secretion of IL-1β and IL-18. Inflammasomes require a signal from an upstream pathway and a signal from a sensor that is triggered by a specific stimulus, such as microbial components or DAMPs. The inflammasome is activated by membrane perturbations, reactive oxygen species (ROS), or ATP. Although the secretion of IL-1β and IL-18 results in the maturation and secretion of IL-1β and IL-18, these cytokines are not sufficient for the full activation of the inflammasome, such as ion or membrane perturbations, reactive oxygen species (ROS), or ATP. Inflammasomes play a crucial role in host defense against bacterial, fungal, or viral infections.

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