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Titel des Beitrags: The inflammasome: an integrated view.

Abstract: An inflammasome is a multiprotein complex that serves as a platform for caspase-1 activation and caspase-1-dependent proteolytic maturation and secretion of interleukin-1? (IL-1?). Though a number of inflammasomes have been described, the NLRP3 inflammasome is the most extensively studied but also the most elusive. It is unique in that it responds to numerous physically and chemically diverse stimuli. The potent proinflammatory and pyrogenic activities of IL-1? necessitate that inflammasome activity is tightly controlled. To this end, a priming step is first required to induce the expression of both NLRP3 and proIL-1?. This event renders the cell competent for NLRP3 inflammasome activation and IL-1? secretion, and it is highly regulated by negative feedback loops. Despite the wide array of NLRP3 activators, the actual triggering of NLRP3 is controlled by integration a comparatively small number of signals that are common to nearly all activators. Minimally, these include potassium efflux, elevated levels of reactive oxygen species (ROS), and, for certain activators, lysosomal destabilization. Further investigation of how these and potentially other as yet uncharacterized signals are integrated by the NLRP3 inflammasome and the relevance of these biochemical events in vivo should provide new insight into the mechanisms of host defense and autoinflammatory conditions.

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