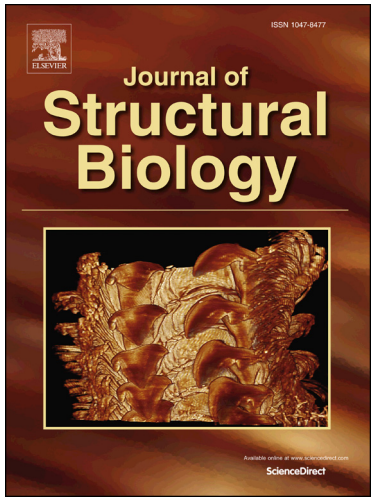

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AIM2 inflammasome activation and regulation: A structural perspective

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Abstract

Absent in melanoma 2 (AIM2) inflammasome is a multi-protein platform that recognizes aberrant cytoplasmic dsDNA and induces cytokine maturation, release and pyroptosis. It is composed of AIM2, apoptosis-associated speck-like protein containing a CARD (ASC), and caspase-1. Recent X-ray crystallographic and high resolution cryo-electron microscopic (cryo-EM) studies have revealed a series of structures in AIM2 inflammasome activation and regulation. One prominent feature common in multiple steps is the assembly of high-order structures, especially helical filaments nucleated by upstream molecules, rather than stoichiometric complexes. In this review, we track the AIM2 inflammasome activation process step by step, using high-resolution structures to illustrate the overall architecture of AIM2 inflammasome and its assembly and regulatory mechanisms.

Keyword: AIM2; inflammasome; helical filament; high-order assembly; polymerization; ASC; caspase-1; PYD; CARD; p202; INCA