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Antibody To Inhibit Inflammasome Activation

Tech ID: 34579 / UC Case 2026-537-0

BRIEF DESCRIPTION

A monoclonal antibody that selectively targets the NLRP3 pyrin domain to inhibit inflammasome activation in inflammasome-related diseases.

FULL DESCRIPTION

This innovative monoclonal antibody specifically binds to the NLRP3 pyrin domain, preventing its interaction with oxidized DNA, a critical step in inflammasome activation within macrophages. Unlike existing solutions that target the NLRP3 NACHT domain or inhibit IL-1 β receptors downstream, this approach offers targeted inhibition with reduced off-target effects, preserving other immune responses. The antibody has demonstrated significant inflammasome activation reduction in cellular models, marking a novel therapeutic strategy for inflammasome-mediated diseases.

SUGGESTED USES

- » Treatment of inflammasome-related diseases and disorders.
- » Pharmacological management of autoimmune and inflammatory conditions.
- » Development of targeted biologics for precision immunotherapy.
- » Use in research and drug discovery focused on inflammasomes.

ADVANTAGES

- » Selective targeting of the NLRP3 pyrin domain avoids off-target effects seen with NACHT domain inhibitors.
- » Prevents interaction between NLRP3 and oxidized DNA, a novel mechanism of action.
- » Maintains immune responsiveness to other inflammasomes and danger signals.
- » Demonstrated substantial inflammasome inhibition in vitro.
- » Potential for improved safety and efficacy over current IL-1 β receptor inhibitors

RELATED MATERIALS

- » Cabral, A., et al. McNulty, R. (2023). Differential binding of NLRP3 to non-oxidized and ox-mtDNA mediates NLRP3 inflammasome activation. *Commun. Biol.*, 6.
- » RM1mAb avoids Intracellular degradation to Synergistically inhibit NLRP3 Inflammasome Activation in Familial Cold Autoinflammatory Syndrome. Angela Lackner, Sofia I. Picucci, Valerie Henriquez, Karen Wang, Reginald McNulty *bioRxiv* 2025.12.09.693294

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OTHER INFORMATION

CATEGORIZED AS

- » **Materials & Chemicals**
 - » Biological
- » **Medical**
 - » Disease: Autoimmune and Inflammation
 - » Therapeutics
- » **Research Tools**
 - » Antibodies
- » **Engineering**
 - » Other

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