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研究課題名	核酸に対する細胞表面受容体の解析と炎症性疾患に対する新規治療戦略の構築	
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共同研究報告書 (年次終了・研究完了)【国内】

共同研究報告 (年次終了)

Nucleic acid-based adjuvants such as CpG oligonucleotides (CpG ODNs) and poly(I:C) are potential vaccine adjuvants for infectious diseases and cancers. However, the mechanism by which their cell surface receptors promote their uptake into dendritic cells (DCs) and shuttle them to intracellular Toll-like receptors remains to be further investigated. Here, we demonstrated a role for nucleolin, a multifunctional DNA- and RNA-binding protein and a major constituent of the nucleolus, as one of the cell-surface receptors for nucleic acid-based adjuvants. Nucleolin on mouse DC surface bound directly to A-type CpG ODN, B-type CpG ODN, and poly(I:C) and promoted their internalization into cells following DC maturation in vitro. In human DCs, nucleolin also contributed to the binding and internalization of both types of CpG ODNs and subsequent cytokine production. Furthermore, nucleolin played a crucial role in cytokine production and activating antigen-specific antibodies and T cell responses induced by B-type CpG ODN in vivo in mice. Our findings provide valuable information that can help improve the efficacy and safety of these adjuvants (Kitagawa et al. NPJ Vaccines. 7:115. 2022.) .