京都大学大学院医学研究科

学術セミナー開催のお知らせ

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（University of California San Diego／Project Scientist）

Vaccine Adjuvant Program at University of California San Diego

Vaccines are used to prevent or reduce the severity of infectious diseases and malignancies. However, current vaccines, including subunit or mRNA vaccine platforms, provide only short-term protection, limited efficacy in immune-compromised individuals and are largely ineffective against heterologous strains of pathogens. Thus, adjuvants play a critical role in improving vaccine efficacy to address these limitations. The University of California San Diego has participated in the “NIH Vaccine Adjuvant Program” since 2008 ((https://www.niaid.nih.gov/research/vaccine-adjuvant-research-programs). In this presentation, we describe six small molecule compounds/scaffolds as vaccine adjuvant candidates that promote an innate immune activation, which was discovered under three vaccine adjuvant discovery programs. Two of these compounds, oxoadenine **1V270** and pyrimidoindole **2G053/2G023a**, are small molecule ligands for TLR7 and TLR4, respectively. When combined as a TLR7 and TLR4 ligand adjuvant, **Fos47**, they demonstrated better durability and protection breadth in murine influenza virus challenge models. **Fos47** has a high safety profile in mice, and we are currently working on developing it for human influenza or COVID-19 vaccines. In parallel, we have identified four innate immune enhancers under the two recent NIH discovery contracts: **2E151**, **2E272**, **2F52**, and **2H050**. **2E151** and **2E272** are calcium-influx-inducing compounds that work as co-adjuvants to the approved TLR4 adjuvant monophosphoryl lipid A (MPL). **2E151** improved antigen-specific antibody production via NFAT activation of innate immune cells. **2E272** increases immune stimulation of extracellular vesicle release from antigen-presenting cells. **2F52** induces aggregation of mitochondrial MAVS protein, and **2H050** inhibits tubulin polymerization, enhancing antigen-specific antibody responses. For these early-stage compounds, we completed preclinical proof of concept efficacy and safety studies and are looking for further opportunities for collaboration that promote research toward the mechanism of action and development of human vaccine adjuvants.

２０２４年3月１２日（火）１７：００～１８：００

会場：京都大学医学部構内　Ａ棟１階１０３／１０７セミナー室

参加費無料、事前お申込み不要。

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