Docket #: S21-012

System biological analysis of vaccination for mechanisms of adjuvanticity and antibody durability in humans

Stanford researchers have developed a multi-omics method for predicting the strength and durability of immune responses to vaccines shortly after vaccination. The COVID-19 pandemic was a grave demonstration of the threat pandemics pose to global public health. Rapid development of vaccines is critical for the prevention and control of such pandemics. As part of this goal, adjuvants are key components of vaccines that can potentially increase the strength, durability, and breadth of the immune response. Unfortunately, the mechanisms that determine how adjuvants work are, in many cases, poorly understood. This new method allows for the determination of vaccine and adjuvant efficacy in provoking strong and durable immune responses based on gene expression changes in as little as one day post-injection, providing a substantial benefit in shortening the time required to evaluate vaccine and adjuvant effectiveness.

This technology is part of a portfolio of innovations aimed at fighting the COVID-19 pandemic.

Stage of Research

- Testing in humans

Applications

- Rapid vaccine/adjuvant development
- Rapid vaccine/adjuvant testing, benchmarking, and evaluation
- COVID-19 vaccine/adjuvant testing, benchmarking, and evaluation

Advantages

- Can predict long-term immune response within days of vaccination
- Significantly shortens the time required for vaccine/adjuvant evaluation

Patents

- Published Application: WO2022266094
- Published Application: 20240369540

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