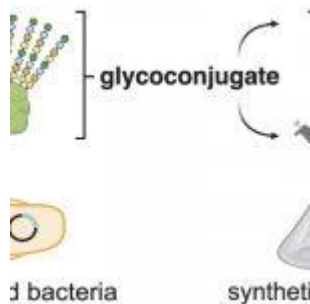


Using lab grown organs to test vaccines



Animal testing is nearly always necessary for the development and testing of novel medications or [vaccinations](#) for people, but this testing can often take years and raise ethical questions about how the animals are treated. In a recent study, scientists created a brand-new testing platform that comprises B cells into tiny organoids with the aim to speed up vaccination screening and significantly lower the requirement for animals (Figure 1).

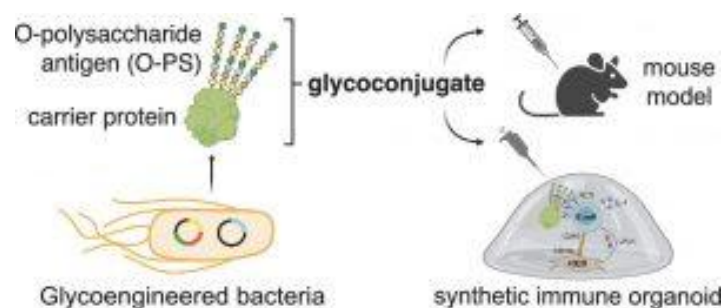


Figure 1: Graphical abstract.

By exposing the immune system to an antigen—which might be all or a portion of a virus or bacterium—vaccines help the body be ready for a potential exposure. A polysaccharide coat on some bacteria necessitates the use of specialised conjugate vaccines, such as those that guard against pneumonia and meningitis. It is unclear exactly how conjugate vaccines interact with B cells to trigger an immune response.

[Historically, vaccinations have been tested by injecting them](#)

[into animals](#) and then waiting weeks or months for the results. Researchers are investigating the use of organoids, which are tiny clusters of cells that behave like miniature organs and create a simulated environment that mimics in vivo circumstances, in order to expedite the procedure and solve ethical concerns.

In this work, B cells from mouse spleens were separated, cellular signalling molecules and structural components were added, and everything was then enclosed in a synthetic hydrogel matrix to create organoids. They then created conjugate vaccination candidates that were directed at the particular bacteria.

The group discovered that the platform may be used to find B cell clones that produce highly antigen-specific antibodies, which have several potential uses. More work has to be done because this project is still in its early stages.

Journal article: Tyler D. Moeller, T.D., et al., 2023. [Profiling Germinal Center-like B Cell Responses to Conjugate Vaccines Using Synthetic Immune Organoids](#). *ACS Central Science*.

Summary by Stefan Botha