

# New technique rapidly quantifies immune response following vaccination

February 4 2021

---



Credit: CC0 Public Domain

A global team of researchers has developed a new strategy for fast and reliable antibody tests, which can quantify the immune response induced by vaccination and reveal the timeline and stage of pathogen infection.

Led by Professor Martin Hegner, Principal Investigator in CRANN and Trinity College Dublin's School of Physics, the team's one-step quantitative antibody tests are conducted using (blood) serum and are on a par with the gold-standard, enzyme-linked immunosorbent assay (ELISA) technique.

The major advantage of the newly developed nano technique with respect to ELISA tests is that it is equally sensitive and able to simultaneously detect multiple target molecules—but in a fraction of the time.

As a global multidisciplinary research consortium from Europe, Africa and the US, Professor Hegner and his co-workers focused on malaria vaccines and their generated humoral [immune response](#) for case study analysis. Malaria is a life-threatening epidemic disease with 228 million estimated annual cases occurring worldwide. It caused over 400,000 deaths last year.

The team's findings have been published in the interdisciplinary journal, *Nanoscale*, which is a high-impact, peer-reviewed journal of the Royal Society of Chemistry.

Professor Hegner said, "The current worldwide situation caused by the spread of SARS-CoV-2 cannot leave us blind towards the ongoing malaria plague that our technology directly addresses. While [malaria](#) is our published [test](#) case, we believe that this new technology will improve antibody testing in a broad range of diseases and infections."

"The direct technique greatly simplifies the preparation protocol that in ELISA includes many washings and waiting steps, hence reducing the amount of consumables needed and thus the relative cost. It will therefore be well suited to use in emergency situations."

"Due to the COVID-19 pandemic, it has been increasingly emphasised during such a tough year that a novel diagnostic tool must be added to our arsenal. Our technology is capable of directly quantifying immune responses with potential application across a range of diseases. We are currently investigating its applicability to COVID-19 antigen responses."

**More information:** Giulio Brunetti et al, Nanotechnological immunoassay for rapid label-free analysis of candidate malaria vaccines, *Nanoscale* (2020). [DOI: 10.1039/D0NR08083G](https://doi.org/10.1039/D0NR08083G)

Provided by Trinity College Dublin

Citation: New technique rapidly quantifies immune response following vaccination (2021, February 4) retrieved 19 April 2024 from <https://phys.org/news/2021-02-technique-rapidly-quantifies-immune-response.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.