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## Nanoparticle Vaccine for COVID-19 with Added Value and Socio-economic Benefits

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Analytik reports how the renowned Quadram Institute (Norwich, UK) has invested in a ZetaView Nanoparticle Tracking Analyser to help them develop a new approach for vaccine delivery based on engineering the natural ability of resident gut bacteria to generate nanoparticle-sized Outer Membrane Vesicles (OMVs).

In combination with the latest developments in recombinant protein production established at the [University of Kent](#), Department of Synthetic Biology and Bioinformatics, researchers at the [Quadram Institute](#) have identified key antigen targets within the SARS-CoV-2, developed and assembled constructs and will employ plug and play technology to help generate immune-responsive nanoparticles.

Professor Simon Carding of the Quadram Institute commented "Our technology and approach are unique and has significant advantages over existing methodologies to develop COVID-19 vaccines in terms of added value and speed in the realisation of health and socio-economic benefits. Specific benefits of our approach include easy nasal or oral administration, rapid cost-effective production, needle-free administration, potent intrinsic adjuvanticity and the increased safety and stability of OMV's which are stable for ultra-long periods when lyophilised".

He added "To characterise our nanoparticle sized OMVs we considered a range of different analytical technologies. In the end we elected to purchase a ZetaView Nanoparticle Tracking Analyser from Analytik. Beneficially the ZetaView takes measurements at eleven separate positions, and advises of any outliers, this increases the reliability of all concentration and size measurements. We also liked that the ZetaView was able to accurately measure biological nanoparticles down to as low as 30-40nm diameter. Furthermore, we found it very useful that camera sensitivity and shutter settings can be optimised and saved within an SOP for each sample type. With COVID-19 vaccine development time is of the essence. Thus, the ability to make size, concentration, zeta potential and fluorescence measurements in as little

as 60 seconds using a ZetaView means users can run hundreds of samples per day. We also found the system really easy-to-use and technical advice from Analytik team of specialists very helpful".

Professor Carding concluded "OMV-based meningococcal vaccines with excellent safety records (children and adults) exist in the market, demonstrating that they can be commercially successful. We are unaware of any products in development that deliver COVID-19 vaccine antigens to the nasopharynx/ lungs directly or via other physical delivery systems that would compete with our technology. Successful completion of our OMV nanoparticle-based delivery system will overcome the limited capacity of current vaccine approaches to protect at primary COVID-19 infection sites, the lung. Proven efficacy of OMV-based influenza vaccines provides confidence that our deliverables are achievable".

To learn more about the pioneering work of the Quadram Institute to develop immune responsive nanoparticles for COVID-19 vaccine delivery please visit [here](#).

Read the [original article](#) on Analytik Ltd.