

‘N4 Pharma’ to Apply Its Nuvec Delivery Platform to Develop COVID-19 Vaccines



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N4 Pharma Plc announced that Nuvec® technology ability to be used as a delivery system by potential collaboration partners developing Covid-19 DNA or RNA vaccines.

[N4 Pharma Plc](#), the specialist pharmaceutical company developing [Nuvec®](#), a novel delivery system for cancer treatments and vaccines using its unique silica nanoparticle delivery system, recently announced it will be undertaking a proof-of-concept research project using a Covid-19 DNA plasmid for the purpose of demonstrating the ability of Nuvec to be used as a delivery system by potential collaboration partners developing Covid-19 DNA or RNA vaccines.

Nuvec is a silica nanoparticle with elongated silica spikes radiating from the core. This topography results in a high surface area that subsequently is coated with Polyethylenimine (PEI), resulting in a positively charged surface. It has been previously demonstrated that oligonucleotides, including plasmid DNA and mRNA can be attached to the nanoparticle at high loading capacity. In both in vitro and in vivo test models, the loaded nanoparticle is taken up by cells involved in transfection/transduction processes resulting in the synthesis of foreign proteins and stimulation of the required immunological response.

The proof-of-concept work will show whether Nuvec is capable of loading the Covid-19 plasmid and transfecting cells with the plasmid in vitro. Assuming successful in vitro transfection, the company will then undertake a proof-of-concept in vivo study to demonstrate the improved transfection when using Nuvec, compared to not using the delivery system, by measuring the production of the antigenic protein and antibodies generated against the encoded Covid-19 protein.

The Covid-19 DNA plasmid will be licensed from the National Institute for Health (NIH) in the

US and is the same plasmid provided to leading biotech companies and researchers already working on Covid-19 vaccines. The company will appoint an experienced contract research organization (CRO) that it has worked with previously to undertake the program of studies outlined above. Further details on timings will be notified as soon as they are available. It is important to note that N4 Pharma is not itself attempting to develop a vaccine for coronavirus, it is purely seeking to demonstrate whether Nuvec could work as a delivery system for a vaccine when it is developed.

[Nanotechnology in Battle Against Coronavirus ...](#)

Operational Impact of Covid-19 Pandemic

The Company operates a virtual model, so most of its workforce typically either work from home or in small offices. Therefore, operationally, the Company has not been affected to date by the [UK](#) Government's requirements regarding social distancing and self-isolation.

Further, the company has received confirmation that the main laboratories contracted by N4 Pharma to undertake research and those identified as partners for the Covid-19 work detailed above are implementing rota systems to enable key laboratory staff to stay and work on projects. As a result, there are no current significant delays to N4 Pharma's announced work plan. This will be kept under close review in the coming months, as the situation evolves.

The Company's academic partner in [Australia](#) remains open, meaning N4 Pharma currently has a continued supply of Nuvec for its research needs.

On 20 March 2020, the company's academic partner in the [UK](#) announced it will be closed until after Easter. As this is a longer-term project, looking at stability testing and efficacy proof of concept of a DNA plasmid loaded on Nuvec the company does not expect this closure to greatly impact their program of work.

Nigel Theobald, Chief Executive Officer of the company, said "Developing a convincing proof of concept data package for Nuvec is a key priority for the company so demonstrating

whether Nuvec is capable of loading a plasmid DNA for the Coronavirus provides an opportunity to show the versatility and potential for our Nuvec delivery system, and to license Nuvec to partners looking to develop vaccines for this virus.

We are not doing this work to develop a vaccine for Coronavirus but rather to demonstrate to those working on these vaccines how Nuvec may enhance any vaccine and could be beneficial for subsequent vaccines they may be looking to develop for this Coronavirus or other viruses that may well surface in the future.”

Read the [original article](#) on Drug Development and Delivery.