

New agreement paves way for development of first African-owned Covid-19 vaccine

One year since the establishment of the mRNA vaccine technology transfer hub, a collaboration between two of the world's leading biotech companies - Afrigen Biologics and the Univercells Group - has been announced.



Source: FreePik.

This agreement intends to pave the way for the development of the first-ever African-owned Covid-19 vaccine.

The collaboration will focus on the development of a novel mRNA vaccine using intellectual property from the collaboration partners, as well as developing new intellectual property (IP), and is intended to supercharge access to the vaccine.

Afrigen and Univercells will be supported in the collaboration by mRNA specialist eTherNA.

The companies will collectively tackle two major challenges that have hampered the rollout of Covid-19 vaccines in Africa and other low- and middle-income countries (LMICs): lack of local cost-effective production, and the need for cold- or super-cold chains.

At present, African countries import 99% of all the vaccines that they use. This lack of local production has contributed to challenges in Covid-19 vaccine rollout where, although more than 60% of the global population has been fully vaccinated, some LMICs are yet to deliver even a single dose to 1% of their population.

An African-owned Covid-19 vaccine is considered a critical step to closing this gap.

Furthermore, cold-chain storage and distribution, especially the super-cold chains required for existing mRNA vaccines are expensive and present a logistical challenge for many countries.



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The agreement paves the way for the production of an mRNA vaccine that is thermo-stable at temperatures used in regular refrigerators, making it easier to store and distribute in rural and remote locations where fewest people are currently vaccinated.

Afrigen Biologics (Afrigen) will host the new collaboration at their sites in Cape Town, South Africa.

Afrigen hosts the World Health Organization's global mRNA vaccine technology transfer hub and is working to facilitate production of mRNA vaccines at more than 15 designated manufacturing sites in LMICs across the world.

The agreement, and the eventual vaccine produced, will build on the expertise developed through the hub.

Speaking at an event to mark the signing of the agreement, Professor Petro Terblanche, Afrigen managing director, said: "The Covid-19 pandemic has shown that there is a pressing need to build African capabilities in vaccine development and manufacturing. Without the capacity to make their own vaccines, too many countries haven't been able to access them.

"This agreement is an important step towards ensuring that everyone, everywhere – in Africa, and across LMICs – has access to life-saving vaccines and medicines."

In addition to developing a novel vaccine, the collaboration intends to pioneer a new model of manufacturing for mRNA vaccines.

Quantoom Biosciences, a Univercells company, is developing an mRNA production technology that encompasses all the steps of RNA production, from sequence construction to large-scale production, allowing for rapid growth and scale-up.

Dramatically more efficient than existing methods, it was built with distributed and de-centralised manufacturing in mind – ensuring that processes can be easily transferred across LMICs.



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The system is designed to support the expansion of capacity and enables production at a large scale – allowing for rapid growth and scale-up. By working with eTheRNA, the Covid vaccine produced on the Univercells system will have improved thermo-stability, which is critically important in LMICs.

Dr Martin Friede of the World Health Organization's vaccines and biologicals (IVB) said: "The WHO mRNA technology transfer hub is designed to establish and share know-how on mRNA vaccines with LMICs globally.

"It will increase the capacity of LMICs to be self-sufficient in terms of outbreak response, and enables the addressing of regional needs through research and development. This unique partnership model enables the sharing of information,

technology and human capital, and has potential to shape vaccine production worldwide.

"The WHO and its partners are committed to ensuring that we build a robust system to further the cause of vaccine equity and access."

José Castillo, co-founder of Univercells Group and chief executive officer of Quantoom Biosciences, said: "The existing global model for vaccine manufacturing has failed millions of people during the pandemic.

"We believe a new model is needed where manufacturers are not locked-in to any individual product but have technology which enables them to manufacture the right vaccine or medicine at the right time.



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"Our system, which was initially developed with funding from the Bill & Melinda Gates Foundation, is built with this flexibility in mind. The foundation has provided funding to Univercells for many years to support the development of biomanufacturing solutions that promote affordability and autonomy. We are delighted to work with our partners to produce a truly free-to-operate mRNA vaccine platform."

Bernard Sagaert, chief operational officer of eTheRNA concluded: "This research and development collaboration will be supported by multiple layers of our technologies, from the processes licensed to Quantoom previously for the procedure to run on the equipment, to the formulation of the lipid nanoparticles (LNP), including the processes to make the LNP and the technology and the processes needed to produce a thermo-stable vaccine through lyophilisation.

"This will allow for storage in normal fridges which are more accessible than -20 or -80°C freezers, especially in LMICs. All of these technologies are needed for the end-goal of making a vaccine accessible for low and middle income countries. We are very happy to be part of this initiative and to work together to enhance the prospects of making vaccines more accessible globally."

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