

On Covid-19 invention by Dr Magoola: Here are the facts

The skepticism voiced by Dr Muniini Mulera regarding the work of Dr Matthias Magoola and Dei BioPharma stems from a misunderstanding of how high-level pharmaceutical research transitions from early crisis response to established global innovation.

While Dr Mulera's critique titled "A spray and a prayer: Kadaga, Magoola and Uganda's Covid-19 miracle cure" published in the *Daily Monitor* on February 24, focuses on the initial public controversy surrounding CovaNil, the actual scientific trajectory has moved into the rigors of international patent law and advanced molecular biology.

The filing of United States Patent Application No. 19/430,222: "thermostable messenger RNA (mRNA) vaccines and formulations for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)" — invented by Dr Magoola — serves as objective evidence of a sophisticated biotechnological breakthrough.

This platform addresses the fundamental failures of the first generation of mRNA vac-

munogenic prefusion shape. Therefore, by ensuring the protein maintains this form, the vaccine directs the immune system to produce a more focused and potent antibody response compared to earlier, less stable designs.

The mRNA itself is further optimized through structural elements such as a 5' cap, untranslated regions and a poly(A) tail.

The use of modified nucleosides, such as N1-methylpseudouridine, is a critical technical achievement that suppresses unwanted inflammatory reactions while maximizing the production of the target protein. This genetic material is encapsulated within a protective lipid nanoparticle delivery system composed of a specific balance of ionizable lipids, phospholipids, sterols and PEG-lipids.

This delivery mechanism ensures that the vaccine can be effectively transported into human cells without degradation, even in environments lacking specialized deep-freeze infrastructure.

Unlike traditional vaccines that require growing viruses in eggs or large cell culture systems, this platform utilizes cell-free enzymatic synthesis.

This process is significantly more scalable and cost-effective, allowing the manufacturing platform to be reused for different variants by simply changing the genetic sequence.

The existence of the innovation and the patent that has already been accepted by the United States Patent and Trademark Office — including a comprehensive 12-page specification and a detailed sequence listing — proves that the ambition to build local pharmaceutical capacity was far from a miracle cure facade.

Under the leadership of Dr Magoola, Dei BioPharma is investing in novel research and owns over 100 patents filed with the United States Patent and Trademark Office (USPTO) that cover its innovations and technology — focusing on treatments and cures in the areas of Cancer, Sickle Cell Disease, HIV-Aids, Diabetes, Alzheimer's, and other rare diseases. Most of this information is published and is public knowledge.

The Dei BioPharma Matugga campus is the largest Biotech and Pharmaceutical facility on the African continent.

While Dr Mulera focused on the original chapter of the pandemic response, the current reality is one of verified, world-class innovation that positions Uganda as a hub for advanced biotechnology. This level of science has already been appreciated by USPTO, USFDA and peer review experts around the world.

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cines, specifically regarding storage and manufacturing.

The cornerstone of this invention is a thermostable mRNA vaccine platform. A major barrier to global vaccine equity during the pandemic was the extreme cold-chain requirement of early mRNA products, which often demanded storage at temperatures as low as -70 degrees Celsius. Dr. Magoola's invention solves this logistical crisis by utilizing a stabilized spike protein design and optimized mRNA chemistry that allows the formulation to remain effective under normal refrigeration.

This is achieved through precise genetic modifications, including the K986P and V987P substitutions, as well as a modification at the cleavage site where RRAR is changed to GSAS. These changes lock the spike protein into its most im-