Infectious diseases science in Africa takes a leading place in the world

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During the COVID-19 pandemic, the lives of many loved ones and colleagues have been lost. Despite the terrible toll of COVID-19, in South Africa scientists have worked relentlessly to produce some of the science that has driven the global COVID-19 response. But researchers faced challenges, notably the international travel ban that was placed on South Africa for much of the pandemic[1] and deeply affected the local economy. Some researchers in South Africa received death threats and, at some point, even needed armed guards in front of our laboratories. Against all the odds, we persevered and are a leading country in SARS-CoV-2 genomics surveillance.[2,3]

Praise and recognition of scientists in Africa is not common on the global stage; typically, researchers in Africa have to produce at least twice as much to get less than half the respect of researchers from high-income countries (HICs). For example, the discovery of Ebola virus in 1976 was credited to European scientists, when much of the work had been done in Africa by African scientists.[4] This kind of scientific discrimination against researchers from low-income and middle-income countries (LMICs) is widespread.[5]

It is time to enter a new global phase where researchers in Africa and other LMICs are recognised and not punished for their scientific discoveries. Scientists in Africa and other LMICs have key contributions to make in advancing global health, especially in areas such as epidemic response and infectious diseases. It is time to invest more in science in LMICs if the world is to be better prepared to deal with future epidemics and pandemics. HICs, which have discriminated against the work of scientists in Africa for centuries, are only now starting to recognise the leading role they have had during this pandemic.

On May 23, 2022, I presented at the Nobel Symposium of Medicine in Sweden, where 26 global scientists reflected on the scientific advances made during the COVID-19 pandemic.[6] Two fellow South Africans, Professor Glenda Gray and Professor Penny Moore, were also part of this group, so in total, South Africans comprised over 11% of the participants.

Scientists in Africa identified some of the most important SARS-CoV-2 variants (beta [B.1.351] and omicron [(B.1.1.529])[7,8] and ran a successful trial of a COVID-19 vaccine with almost 500 000 health-care workers,[9] a trial that proved the effectiveness of a vaccine and protected South Africa's health workforce before a large wave of infections hit South Africa. The scientific community in South Africa can now produce results on the neutralisation of SARS-CoV-2 variants in days to guide programmes for booster vaccination around the world.[10] South Africa's scientific community has become highly resourceful and efficient during the pandemic, having worked in a context of travel bans and vaccine hoarding in HICs,[11] both of which decreased access to key scientific reagents and vaccines.

Later this year, South Africa will be one of the first countries outside of Sweden to host Nobel symposia, when it holds the Nobel Symposia in Africa Symposia Series.[12] It is fitting that these symposia will be hosted at the Stellenbosch Institute for Advanced Study in Stellenbosch, which is close to where our Stellenbosch University data science offices are based. I feel fortunate to be able to take part in these symposia and to have been invited to present at the first of the Nobel Symposia in Africa Symposia Series, the Physics Nobel Symposium on Predictability in Science in the Age of Artificial Intelligence in October, 2022. In addition, South Africa will also host the Nobel Symposia on Physiology or Medicine and Chemistry in 2023 and on Economic Sciences in 2024. We

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hope that the world will come to South Africa and provide international recognition of the true value of the science that is being conducted on the continent.

I hope that the Nobel Symposia and other high-level meetings will bring increased attention to African sciences and that more scientists from Africa and other LMICs will start to be recognised and win Nobel Prizes and other awards. Africa and other LMICs, including India and China, constitute more than 84% of the world's population, but have won less than 11% of the Nobel Prizes.[13–15] Importantly, we need top scientists from Africa and other LMICs to be supported to stay or return to where they are most needed. I am particularly proud of two previous PhD students I taught, Dr Justen Manasa and Dr Shikulile Moyo, who returned to their country of residence in Zimbabwe and Botswana to lead molecular laboratories at the African Institute of Biomedical Science and Technology (AiBST) and Botswana Harvard Partnership (BHP) that were crucial for the identification and characterisation of omicron.

African science should have a central place on the world stage and needs to be recognised and supported. African scientists can help the world to prepare for the next pandemic. But the way science is done and recognised needs to change. Scientists in Africa and other LMICs need the opportunity to lead global consortiums, host large grants and events, and guide the global scientific agenda. The world will soon realise that our relentless energy and expertise is based on the motivation to save lives—lives that are close to us, lives of people whose names, families, and communities we know and who we keep in our hearts.

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