

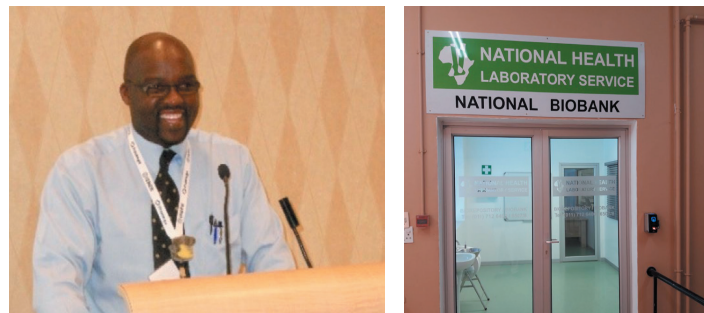
Quality assured

Reliable biobanking for medical research across South Africa

Introduction

At the National Health Laboratory Service (NHLS) Biobank's main facility in Johannesburg, an efficient staff of eight shoulders a big responsibility. Serving 80% of the South African population, the team takes in biospecimens from laboratories at hospitals around the country and sends out requested specimens to hospital-based researchers, other government institutions, and private entities.

Bonginkosi Duma, Quality Assurance and Biorepository Manager, is a bit of an ambassador. He oversees and champions the network of biobanks operated by the NHLS. Based in Johannesburg, his role includes ensuring the viability of the biobanks and developing operations within other regions. At medical universities across the country's nine provinces, he is a familiar face, giving lectures and representing the services of the biobank. As a committee member, Duma proudly promotes quality assurance standards at industry conferences worldwide, ensuring



Bonginkosi Duma
Quality Assurance and Biorepository Manager, NHLS Biobank



that the NHLS biobanking operation is at the same level with peer organizations. Duma and his staff also manage projects to preserve financial sustainability and mitigate risk through disaster management planning.

Data points: NHLS Biobank

The NHLS Biobank helps secure and manage collections of biomaterials and their associated data for research, human health, and biotechnology development.

- The first and only biobank to obtain ISO 9001:2015 certification in Africa
- Member of International Society for Biological and Environmental Repositories (ISBER) and represented in the Standards Working Committee
- Member of ESBB (European, Middle Eastern, and African Society for Biopreservation and Biobanking)
- Member of BCNet (Biobank and Cohort Building Network) of the International Agency for Research on Cancer and the World Health Organization (WHO)

Stability for protection of biospecimens

“As we were developing a second part of the biobank to accommodate a number of samples we were retained to store, our representatives from Thermo Fisher Scientific made recommendations in terms of cold storage, how it helps, and how good it is. They don’t have to convince me how good it is. I know it because I’ve seen it with the Thermo Scientific™ freezers I’ve purchased,” says Duma.

“I’ve already had some of the freezers for seven years, and I haven’t had any problems, so based on my experience and what I see, if they are telling me about some of their products, I don’t even have to second-guess them because everything they’ve given me so far has shown it’s very stable and very reliable.”

He continues, “They’re the most stable freezers we’ve ever had, especially with regard to changes in temperature. Here in South Africa, we have very high temperatures, between 38° and 40°C. Sometimes we have electricity surges or cutoffs. When my generator kicks in, the equipment doesn’t fail. It just keeps running. The freezers themselves and the compressors are very stable, even when there is any change in terms of environmental temperature or an electrical surge.”

“We have a huge diesel generator as backup in case of electrical outages to keep the biobank running continuously for a week or even a month. As for freezers, we have one backup that we keep running continuously, but we haven’t needed to use it.”

Waiting is the hardest part

With cold storage in demand for coronavirus vaccine storage, lead times on freezers have increased. Duma notes, “The only issue is waiting for delivery. Here from South Africa, I order it, then they have to build it, and then they have to ship it. Sometimes I need more freezers, and they take time to arrive, and when they get to the harbor, they still have to be released. The good thing is that when they arrive, they function very well. Some of the issues of shipping can be forgiven once you receive the freezer.”

The only ISO 9001:2015 certification in Africa

The NHLS Biobank, based at the National Institute for Occupational Health, is the first and only biobank to obtain ISO 9001:2015 certification in Africa. Frequent internal and external audits by third parties ensure their quality management meets international standards.

Thermo Scientific freezers have the capacity to record their own performance. “All of the data is there for download for monthly audits and year to year. We can also provide that data to private clients to show that the samples were stored as per the agreement, that the temperature has been maintained, and that there hasn’t been any instability in terms of temperature,” Duma says.

“There have been quite a number of good shifts as the technology progresses. Now with the touchscreens, you can see an electrical surge or a change in temperature without going to the computer to check it. It quickly tells the staff that at this day at this time, there was a little electricity interruption.” This functionality is included on the TSX Ultra Low Temperature Freezers, which feature a user-friendly touch screen with intuitive notifications, event logs, and temperature mapping.

In published research, the NHLS Biobank has been credited for maintaining the specimens correctly. “Your research is only as good as the quality of your specimen. That’s why we have to make sure the samples are kept at their proper temperatures, and that data is the proof. If someone is sitting in another region, but they still want to see the data, you can send it to them on the computer. The data has to be retrievable, and you have to be able to analyze it,” Duma says.

“We haven’t had an incident where we couldn’t retrieve the specimen, and we haven’t had an incident where a Thermo Scientific freezer has dropped the temperature,” says Duma.

“The freezers themselves and the compressors are very stable, even when there is any change in terms of environmental temperature or an electrical surge.”

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The NHLS Biobank has a track record that others recognize and try to emulate. The large central facility in Johannesburg draws visitors from across South Africa and around the world. Duma explains, “We connect with other provinces in South Africa, we show them our processes, so they can get going and give the labs the kinds of services that they’re truly happy with. We’ve consulted countries outside of the African continent to help them start biobanks. We’ve been to the UK, US, Cuba, and Jamaica. The US CDC sends us to help other countries such as Vietnam to train them on biobanking, including the use of Thermo Scientific freezers,” says Duma.



Sandringham, Johannesburg, South Africa

Remote monitoring for peace of mind

In spite of Duma’s busy travel schedule, he is essentially on call 24/7. “I can monitor all the freezers in the biobank wherever I am. We have temperature monitors that are controlled within the biobank, on my laptop, and at home. If the temperature were to go beyond the set temperature, I would get an alarm. I haven’t had any such problems. We’ve found that Thermo Scientific freezers have been very stable.”

Growing to support South Africa’s medical researchers

Duma’s level of trust in the equipment is impressive. “I know I’m set with very stable equipment from here through the next 10 years. I bought some of the freezers in 2014, and now it’s 2021, and I haven’t had any problem with them, so that gives me peace of mind,” he says. “We perform annual maintenance, but I haven’t had any Thermo Scientific equipment that I’ve had to wonder about.”

As the NHLS plans for growth to support medical researchers across South Africa, Thermo Scientific freezers will continue to arrive in port, eagerly anticipated, appreciated, and always worth the wait.



It’s not a problem

With Thermo Scientific equipment, the NHLS Biobank has not:

- Lost a specimen or the ability to retrieve a specimen
- Lost temperature to a level that destabilized specimens
- Lost quality management certification
- Had a freezer malfunction
- Had to use CO₂ backup

Find out more at thermofisher.com/biobanking