

First-for-Africa platform will advance gene research

By  Nicci Botha

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Until now, African scientists working on genomics haven't had access to a local storage platform for the immense amount of data their research generates.



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To solve this dilemma, Microsoft, through its [4Afrika initiative](#), and the Centre for Proteomic & Genomic Research (CPGR) have teamed up to bring together intelligent cloud technology and genomics research to create a scalable, cost-effective technology platform to power advanced medical analysis and research.

This platform will be enabled by Microsoft Azure – to support the data transfer, storage and processing capabilities for genomics datasets – and will allow African scientists and academics to perform and collaborate on ground-breaking genomics research.

The project aims to make genomic applications (such as, non-invasive prenatal testing (NIPT), BRCA sequencing for breast cancer, HLA typing for stem cell match making and ancestry profiling) available on an accessible, secure and versatile cloud-based platform.

The collaboration could have enormous social and healthcare provision benefits for the continent, including avoiding prescription of ineffective drugs and sidestepping potential side effects, as well as enhancing the analysis of data, the dissemination of information and the aggregation of data to support regional genomic research, innovation and health provision.

Partnering for health

Based in Cape Town, the CPGR provides advanced 'omics' services to the life science and biotech communities in South Africa. 'Omics' groups, together with several specialities within the field of biology – including proteomics and genomics, which 'zoom in' on the proteome (the proteins output of an organism) and genome (the genetic makeup of an organism) respectively," says Reinhard Hiller, managing director at CPGR.

Arguably the most famous of omics projects – to a broader, non-specialist audience – was the Human Genome Project which set out to map the entire human genome,” he says.

This ambitious inward journey of discovery took 15 years to be declared ‘complete’ and uncovered, among other things, that the length of the average human genome – measured in base pairs (letters of the DNA sequence) – is approximately three billion. “If we think of this as kilobytes of data, we’re talking about three terabytes of data points to be unpacked and explored per person,” says Ryno Rijnsburger, chief technology officer at Microsoft 4Afrika.

To analyse this amount of information, a robust technology platform for analytics is needed, and so the need for a partnership such as this becomes more apparent.

“The project allows us to use an existing cloud-based data management ecosystem, while amplifying our own expertise in developing and running a genomics technology platform. We envisage creating a system that allows us to deliver value, and collaborate with others across the continent,” says Hiller.

In this way, the platform aims to counter the often-incomplete access to cutting-edge medical solutions for many people in Africa. The platform will:

- enhance access to patient eco-systems;
- ease collection and transfer of information;
- support the processing and down-stream analysis of genomic (e.g. DNA sequencing) data;
- allow for the secure, efficient and safe aggregation of such data; and
- provide a means to combine and mine such data for research purposes.

Sheer volume of data

“For Microsoft 4Afrika, it is one of the most exciting fruits of our long-term investment into Africa’s economic, social and technological development,” says Ryno Rijnsburger, chief technology officer at Microsoft 4Afrika. “We are providing both financial and technical support to the CPGR and also intend to bring out Microsoft experts to work with the team through our MySkills4Afrika volunteer programme.

“The sheer volume of data that can flow through the system will drive genomic research and medical innovation, and public health across Africa will reap the benefits,” concludes Rijnsburger.

ABOUT NICCI BOTHA

Nicci Botha has been wordsmithing for more than 20 years, covering just about every subject under the sun and then some. She's strung together words on sustainable development, maritime matters, mining, marketing, medical, lifestyle... and that elixir of life - chocolate. Nicci has worked for local and international media houses including Primedia, Caxton, Lloyd's and Reuters. Her new passion is digital media.

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