

the gem

Celebrating Women's Month

Women shaping science,
research, and innovation

Ebola Spillover Risk

Ecology and
human
activity
reveal
hotspots

Made in Africa

Building local expertise
to produce essential
research reagents



summary

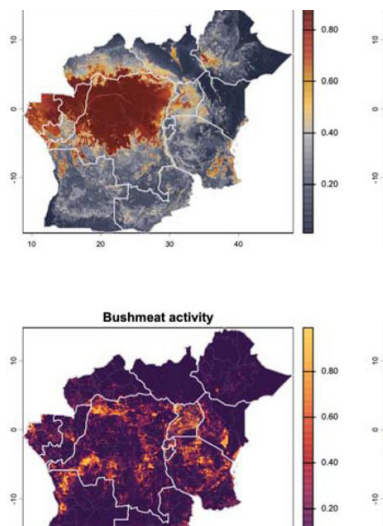
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Rewriting the Cancer Timeline

What if cancer screening was determined not primarily by age, but by changes in your own health over time? Technology entrepreneur and engineer Pieter van Rooyen is exploring how AI and existing health data could help detect cancer earlier and more affordably, particularly in countries such as South Africa.

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Ebola Spillover Risk

A new preprint, led by CERl researchers Dr Monika Moir and Professor Houriiyah Tegally, combines ecological suitability with human-driven factors such as mining, bushmeat activity, settlement, forest loss, and conflict to better predict where Ebola spillover may occur.

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Innovation Doesn't Happen in Silos

Bushra Razack brings a background in community development, entrepreneurship, and placemaking to her new collaboration with CERl and SWEAT Africa. In this article, she shares the experiences that have shaped her approach and what she hopes to bring to this new collaboration.

the gem: Centre for Epidemic Response and Innovation (CERl) & South African Centre for Epidemiology and Modelling Analysis (SACEMA), Stellenbosch University, and KwaZulu-Natal Research, Innovation and Sequencing Platform (KRISP), UKZN, Durban
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Science Made Here

African STARS fellows are building the expertise to produce essential research reagents locally, using technology transfer to strengthen biotechnology capacity and reduce Africa's reliance on imported laboratory tools. Their work is helping lay the foundations for more accessible, sustainable research infrastructure on the continent.

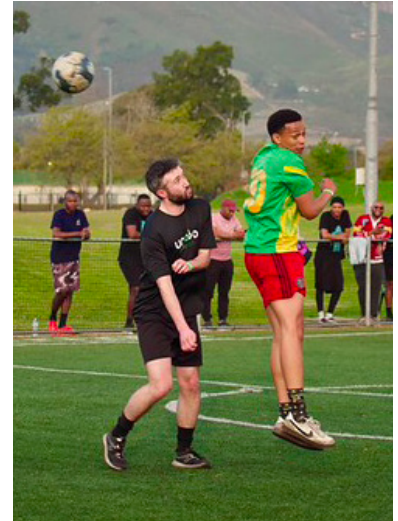
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Next Step: Oxford

African STARS fellow Fezokuhle Khumalo's next step at Oxford builds on a journey that has expanded her confidence, shaped her research ambitions, and strengthened her determination to help African scientists lead solutions to the continent's health challenges.

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SWEAT Africa: Beyond The Pitch

The SWEAT Africa Connect: Football Edition brought researchers, entrepreneurs, students, and innovation organisations together for an afternoon on the pitch. Behind the friendly competition is a bigger goal: building an African innovation community that continues to connect, collaborate, and create opportunities.



editorial



SWEAT Africa Connect's Football Edition brought researchers, founders, students and investors onto the same pitch, creating connections in a setting far removed from the usual conference or networking event. It was informal, energetic and, most importantly, gave people from different parts of the research and innovation community a chance to meet simply as people. As Bushra Razack writes in her article on page 22, innovation doesn't happen in isolation – it grows through shared ideas, relationships, and collaboration.

That idea runs throughout this August edition of the gem: science becomes stronger when we bring together people, knowledge, and perspectives.

We see this in the research itself. Pieter van Rooyen's approach to multi-cancer screening draws on years of an individual's existing health data rather than testing everyone according to the same fixed schedule. Dr Monika Moir and Professor Houriiyah Tegally's Ebola spillover model brings ecological suitability together with human factors such as mining, bushmeat activity, conflict and forest loss to improve predictions. Carlin Foka Takamgno and colleagues' dengue model looks beyond an individual location to the surrounding landscape, revealing patterns that conventional approaches may miss.

The same principle extends to sharing expertise and creating opportunities for knowledge to move. African STARS fellows have worked with Fluorobitech and the University of Wisconsin–Madison to transfer the technology needed to produce TEV protease locally – a practical step towards reducing Africa's reliance on imported laboratory reagents. Stellenbosch University's growing relationship with Wisconsin is exploring how this kind of two-way collaboration could extend into biotechnology, agritech, space sciences and fintech. Dr Chanelle Mulopo's stakeholder mapping work, meanwhile, shows the importance of connecting research with the people it is ultimately intended to benefit.

And, of course, connections can shape individual journeys too. As we celebrate Women's Month in South Africa, our cover features Fezokuhle Khumalo, who is heading to Oxford for a DPhil focused on maternal health systems. We also meet Dr Margot Otto as she begins a Fogarty Fellowship in HIV drug resistance. Both women are taking the next steps in their research careers and contributing to areas of health with profound relevance across Africa.

Enjoy this edition – a reminder of the remarkable people and ideas shaping science across Africa!

text: Katrine Anker-Nilssen
photo: Jason Avron Samuels

Rethinking When we Look for Cancer

What if cancer screening was not determined primarily by your age, but by changes in your own health over time? Technology entrepreneur and engineer Pieter van Rooyen is exploring how artificial intelligence and existing health data could help shift cancer detection earlier – while making it more affordable for countries such as South Africa. His recent Pro-VC Open Lecture at Stellenbosch University, Ahead of the Tumor: Rewriting the Cancer Timeline, unpacked the thinking behind this approach.

text: Katrine Anker-Nilssen photos: Supplied

For Pieter van Rooyen, the challenge of early cancer detection is not only about developing better technology. It is about asking a different question: who should we test, and when?

Van Rooyen, co-founder of xTenure and Extraordinary Professor in Stellenbosch University's Department of Electrical and Electronic Engineering, has spent the past 26 years in San Diego, California, including around 15 years working in genomics. There, he worked alongside people developing cancer screening, diagnostic and treatment technologies, as well as the patients these technologies are designed to help.

But spending more time in South Africa in recent years brought another reality into focus.

"It became clear to me that a great deal of that progress will not reach this country – not because the science does not work here, but because of what it costs," he says. "That was the genesis of the work: to develop, together with my colleagues, techniques and technologies that bring early cancer screening within reach of a country like ours."

Looking before symptoms appear

One of the fundamental challenges in cancer care is that too many cancers are still found only once symptoms appear.

Organised screening currently exists for only a handful

of cancers, including breast, cervical, colorectal and prostate cancer, and – for heavy smokers only – lung cancer. Together, these programmes cover cancers accounting for roughly 38% of cancer deaths. In other words, about six in ten cancer deaths occur in an organ that no organised screening programme looks at.

Pancreatic cancer provides a stark example. Van Rooyen points out that when it is caught while still confined to the pancreas, 44 in 100 people are alive five years later. Once it has spread elsewhere in the body, that falls to just three in 100. About half of South African cases are detected only after the cancer has spread.

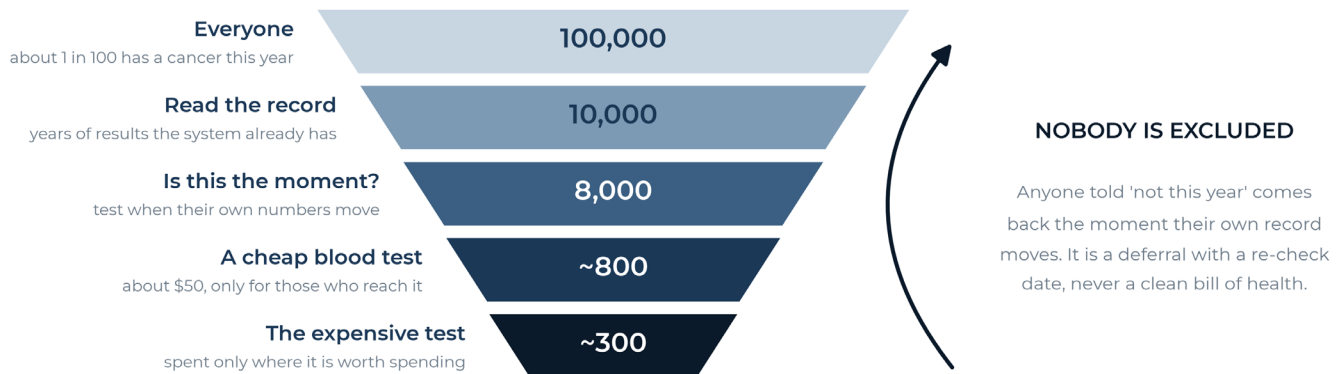
"The same disease, caught early or caught late, is in survival terms two different diseases," he notes. "You do not close that gap by diagnosing better once somebody arrives with symptoms. You close it by looking earlier, in people who feel perfectly well."

A different approach

Multi-cancer early detection tests are already beginning to change this picture. Instead of separate screening procedures for individual cancers, these tests use a blood sample to search for signals associated with multiple cancers.

But cost remains a major obstacle. Many emerging tests rely heavily on genomic sequencing, with prices running from around US\$950 to nearly US\$3,000. For population-wide screening in a country such as South Africa, Van Rooyen argues, that is simply not economically feasible.

Detection as a sequence, not a single test



Each step raises the chance that the person being tested actually has cancer.

That is what makes the expensive test affordable — it is spent on the few people for whom it is genuinely informative, rather than on everybody once a year.

Cost, however, is only part of the problem. In any given year, cancer is relatively rare – roughly one person in 630. Test very large numbers of people for something rare and even an excellent test can produce far more false alarms than true findings, simply because there are so many more healthy people than people with cancer being tested.

How good the test is therefore matters, but so does how likely it is that the person being tested actually has cancer. That second factor depends on who is selected for testing in the first place.

This is why Van Rooyen and his team are starting somewhere different: with information the healthcare system may already have.

Using AI, the model examines an individual's existing health record, including diagnoses and routine laboratory results accumulated over time. Rather than testing everyone of a certain age on a fixed annual schedule, the aim is to identify people for whom testing is most worthwhile at a particular point in time.

"You are read against yourself rather than against a population reference range," Van Rooyen explains. A laboratory result that falls within the accepted range for the general population might nevertheless represent a significant change for an individual whose own results have remained stable for years. Conversely, someone may consistently sit outside a population range while remaining healthy. Following an individual's trajectory could therefore reveal information that conventional thresholds miss.

Importantly, Van Rooyen stresses that the technology is not intended to diagnose cancer.

"This decides who should be tested, and when. It does not diagnose anybody – it is a screening test, a scheduler rather than a predictor."

Diagnosis remains with clinicians and confirmatory testing.

Why South Africa?

Perhaps counter-intuitively, Van Rooyen believes South Africa's constraints could help make it an important environment for developing this approach.

"A country that cannot afford to test everybody is forced to solve the harder and more useful problem, which is how to spend a fixed budget on the right people at the right time," he says. "This is a global problem; wealthier systems are simply able to postpone noticing it."

South Africa also has valuable longitudinal patient data, alongside AI and data-science expertise, a strong clinical research community and an established clinical-trial industry.

The work will initially focus on South Africa's private healthcare sector, where patient records are currently more structured and accessible. The longer-term ambition, however, is to develop an approach that can work within the public health system, where the overwhelming majority of South Africans receive their care.

Getting there will require evidence. Van Rooyen emphasises that prospective clinical trials will be essential, alongside careful attention to data quality, diagnostic capacity, regulation, patient privacy and integration into clinical practice.

From screening event to screening schedule
Looking ten years ahead, Van Rooyen's ambition is straightforward: "That screening stops being an event and becomes a schedule."

Instead of reaching a particular age and automatically being called for a test, screening could become a continuously updated, individual process based on information the healthcare system is already collecting. "Detection would move from something done to a whole population on a fixed cycle, to something tracked for one person across their life."

He is careful, however, not to get ahead of the evidence. The idea that this approach could move cancer detection years earlier remains a hypothesis to be tested through clinical trials.

Testing that hypothesis will require expertise from across disciplines. For Van Rooyen, Stellenbosch University offers an unusually fertile environment in which to bring those disciplines together. Engineering and machine

learning, clinical research, biostatistics, trial design and entrepreneurship all need to intersect if an idea is ultimately to become something a healthcare system can use.

"A university is the only place where the four things this problem needs sit close enough together to actually meet," he says.

"At most institutions those are four buildings, four funding cycles and four vocabularies, and a project like this one dies in the gaps between them. Stellenbosch has an unusual amount of it in a single place, which is precisely why the conversation is happening here."



Postdoctoral Research Fellowship:

Pathogen phylodynamics and disease ecological modeling for infectious diseases.

APPLICATION DEADLINE: 9th September 2026 at 22:00 SAST

Postdoctoral Fellowship Opportunity

Based in Stellenbosch, the fellowship offers opportunities for fieldwork and international collaboration, including with the University of Oxford. Applicants should hold a relevant PhD and have expertise in pathogen genomics or disease ecology, data analysis and a strong publication record.

Start date: 1 October 2026, with flexibility.

For more information:
ceri.africa/news/call-for-applications-postdoctoral-research-fellowship/

Stellenbosch and Wisconsin Explore Innovation Partnership

A shared focus on turning research into real-world impact is opening the door to closer collaboration between Stellenbosch University and partners in Wisconsin. Discussions explore opportunities spanning biotechnology, space sciences, agri-tech, and fintech, with an emphasis on building a genuinely two-way partnership that could strengthen innovation, entrepreneurship and economic development in both regions.

text: Logan Leonard, Corporate Communication and Marketing photos: Stefan Els



n Friday, the 24th of July, Stellenbosch University's rector and vice chancellor met with a visiting delegation from Wisconsin – including representatives

connected to the University of Wisconsin–Madison – to lay the groundwork for a bilateral partnership focused on research, entrepreneurship, and economic development.

Stellenbosch University, formally established in 1918 with roots dating to the mid-1800s, carries a fraught history tied to apartheid-era leadership. In recent years the university has issued a Restitution Statement and

adopted "Vision 2040," a strategic reorientation that positions the institution as being explicitly "in service of society" – prioritising measurable jobs, companies, and social impact alongside traditional research output.

Central to the pitch was SU's technology transfer performance: roughly 50 companies have spun out of the university over the past decade, generating an estimated 450–500 local jobs and about 150 million in cumulative turnover. Cubespace, a decade-old satellite company, was held up as the ecosystem's closest thing to a unicorn. The university's stated ambition is to scale from 50 spinouts to as many as 300, using a "quadruple-helix"



model that unites the university, industry, government, and civil society – anchored by partners including Wescro, the Western Cape provincial government, the Western Cape Chamber of Commerce, and the CHEC university consortium.

Discussions centered on four areas where SU sees genuine strength: biotechnology and biohealth (led by genomics researcher Tulio de Oliveira), space sciences (microsatellites and CubeSats), agri-sciences and sustainable food systems, and fintech, noted for unusually high per-capita activity and strong IP-to-business commercialization.

The conversation didn't avoid difficult context: official unemployment sits near 34%, with unofficial estimates of 50–60% overall and 60–70% among youth aged 18–35. A persistent gap between research output and local manufacturing capacity limits how much value stays in the region, and some local partners are wary of losing promising startups to overseas markets. Any partnership, participants agreed, needs a genuine two-way value proposition rather than a one-directional pipeline exporting South African innovation.

Wisconsin was framed as offering manufacturing infrastructure, incubator experience in fusion and biotech, and state-level incentive tools for keeping company headquarters local – precisely the “translational” capacity SU says it currently lacks. Proposed collaboration ideas included joint venture and co-incubation programs, entrepreneurship curriculum exchange, joint research in genomics, biotech, agri-tech, and space sciences, and links connecting South African supply chains to U.S. manufacturing partners.

The meeting set up a follow-up visit for the delegation to meet directly with research leads – including Prof Tulio de Oliveira – and local innovation teams, aiming to identify concrete joint projects, potential co-investments in spinouts, and curriculum alignment. Throughout, the stated goal was a genuinely bilateral relationship: knowledge exchange and joint ventures that benefit both sides.



KRISP Gives Back on Mandela Day

text & photo: Paul Harris

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t KRISP, we believe that even small acts of service can make a meaningful difference. In the spirit of Mandela Day 2026, the KRISP team stepped away from the

laboratory and office to spend the morning giving back to the community at the CANSA Care Centre on Umbilo Road in Durban.

Rolling up our sleeves and getting our hands dirty, the team set about rejuvenating the centre's vegetable garden, which had fallen into disrepair. Together, the team cleared overgrown beds, prepared the soil and planted a variety of fresh vegetables and herbs, breathing new life into a space that has the potential to provide nourishment and comfort to residents and patients undergoing cancer treatment.

“We were very excited to host the KRISP team for Mandela Day,” said Thobekile Khuzwayo, spokesperson for the CANSA Association in Durban. “Our vegetable garden had fallen into disrepair, so it was great to have help getting it back to a point where it can serve our community and help to make the lives of those undergoing cancer treatment a little brighter.”

For the KRISP team, the initiative was also an opportunity to connect outside of the usual work environment while contributing to a project with a lasting impact.

“It was great to get out of the office and work together as a team to make a real impact,” said Dr Jennifer Giandhari. “Getting our hands dirty and planting vegetables and herbs that will help the CANSA Care Centre offer some healthy food to the patients staying there is a great project to be involved in. We will monitor the garden closely and hopefully we can keep the relationship going in the future.”



Unlocking Mageu's Potential

Researchers have shown that defined bacterial starter cultures can successfully ferment mageu, with the addition of yeast shortening fermentation time. The findings also open possibilities for developing the traditional Southern African drink with potential functional health applications.

Mageu is a non-alcoholic fermented cereal drink widely consumed across Southern Africa and traditionally produced through spontaneous fermentation. A new study by Katherine Hartzenberg-Aeroe, Brian Kullin, Jo-Ann Passmore, Anna-Ursula Happel, Hoyam Gamielidien and Marijke Antonia Fagan-Endres explored whether defined *Lactobacillaceae* starter cultures could provide greater consistency while retaining the qualities of the traditional drink.

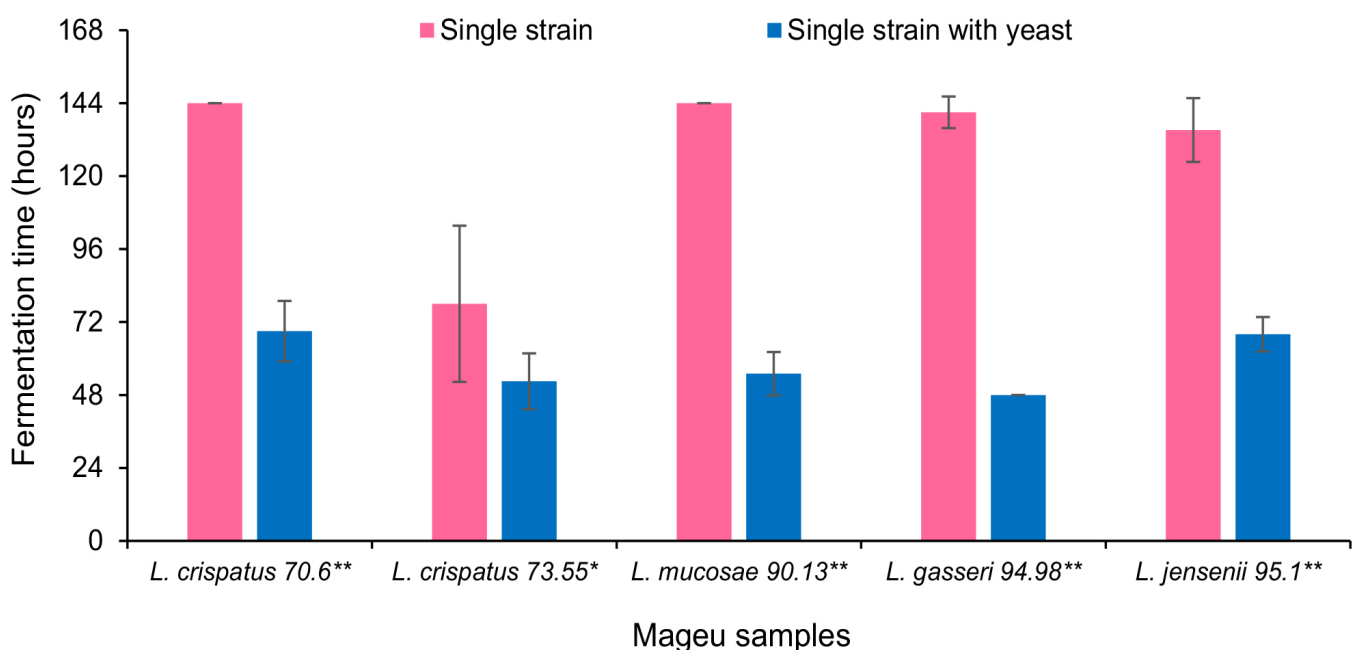
The researchers tested five bacterial isolates, both alone and together with *Saccharomyces cerevisiae*, a yeast associated with mageu fermentation. Importantly, the bacterial strains were originally isolated from healthy South African women and have shown potential as probiotics for women's health – raising the possibility of developing mageu with targeted functional applications.

Mageu's wide consumption, affordability, and cultural acceptance make it particularly interesting for functional food development. Rather than introducing an entirely new probiotic product, the approach could potentially use a familiar and widely consumed beverage as a vehicle for beneficial bacteria, although further research would be needed to establish specific health benefits.

All of the strains successfully fermented the mageu, achieving the acidity required while maintaining viable bacterial populations in the finished product – an important requirement for potential probiotic applications. Mixed cultures containing yeast shortened fermentation time, increased acid production and microbial growth, and were preferred by consumers over the single-strain versions. All of the mageu products also met South African standards for ethanol and solids content.

The findings suggest that defined starter cultures could help modernise mageu production while retaining acceptable sensory characteristics and creating opportunities to diversify the potential functionality of this culturally significant fermented beverage.

Figure (below): Average fermentation times for the mageu samples produced with *Lactobacillaceae* isolates as single strains and with yeast (* indicates a significance level of $p < 0.1$ and ** indicates a level of $p < 0.001$).



Who Belongs at the Research Table?

Stakeholder mapping helps researchers identify who can influence their work, who may be affected by it, and how best to engage them.

At a recent Public Squares research session, Dr Chanelle Mulopo explored how bringing the right voices into the research process can strengthen collaboration, build support, and help turn research findings into practice.

text: Ameera Crew photos: Robyn-lee Abrahams

The most impactful research begins by bringing the right voices to the table from the very beginning. Stakeholder mapping refers to the process of identifying the individuals or groups with an interest in a research question or who may be affected by a research project's outcomes or policies. They can include communities, policymakers, practitioners, organisations and researchers.

Researchers need to engage diverse actors to effectively address complex societal problems. Stakeholder mapping

is thus an essential tool in every researcher's toolbox. It is also a critical component of transdisciplinary research (TDR), which takes a collaborative approach to research by integrating knowledge from multiple stakeholders to co-produce solutions.

Part of the stakeholder mapping process involves a power-interest matrix that maps stakeholders according to their level of influence (power – y-axis) and level of interest (x-axis). In its simplest form, this matrix has four quadrants that maps four types of stakeholders: 1) Blockers, 2) Champions, 3) Avoiders and 4) Silent Boosters. "Rather than being reactive and interactive, stakeholder analysis helps you achieve your research goals by being proactive and interactive with your project's stakeholders", explained Dr. Mulopo.

Some useful methods to identify stakeholders include:

- Consulting your research team and experts.
- Meeting with affected communities and their leaders.
- Asking existing stakeholders to identify additional stakeholders.
- Your personal network.s
- Studying literature related to your research project.

Once the stakeholders have been identified, it is important to develop appropriate engagement strategies according to each stakeholder's influence and interest. Dr Mulopo referred to this as the "knowledge translation (KT) strategy" that entails researchers engaging strategically with key actors and beneficiaries. The significance of this strategy is because "not all stakeholders are equal" as Dr Mulopo notes and researchers need to strategically use their resources, time and energy across the different types of stakeholders.



When developing their KT strategies, researchers should ask questions like:

1. What is the purpose of engaging with this stakeholder?
2. What message do I want to convey?
3. Which medium is best suited to convey this message?
4. At what stage of the research should I engage with this stakeholder?

Researchers conduct excellent research that produces innovative solutions to important societal challenges, yet they can fall short with translating these solutions into practice. Stakeholder mapping can help bridge this gap. As Dr. Mulopo explained during the session, "Stakeholder mapping allows for greater acceptance and implementation of research findings by communities and policymakers." By involving stakeholders throughout the research process, researchers can build buy-in and foster a sense of ownership, making them more likely to support and implement the research outcomes.

It was a lively and engaging session with many attendees noting how valuable the session was for their own learning and research.

One attendee, Dr Bih Chendi, a postdoctoral researcher in Stellenbosch University's Faculty of Medicine & Health Sciences, gave the following feedback:

"One key takeaway for me was learning to look beyond simply identifying stakeholders, and to understand where they sit in terms of influence and interest. From low to high influence and low to high interest, each stakeholder requires a different approach. I particularly found the idea of identifying blockers, champions, silent boosters and avoiders useful. It's a practical reminder that successful research also requires an understanding of the people who can influence its implementation."



Postdoctoral Research Fellowship:

One Health Genomic and Environmental Modelling of Infectious Diseases in Africa

CERI at Stellenbosch University is inviting applications for a Postdoctoral Research Fellowship in One Health Genomic and Environmental Modelling of Infectious Diseases in Africa.

The fellow will integrate pathogen genomics with environmental, climate and human activity data to investigate the emergence, transmission and resurgence of cholera and other climate-sensitive diseases across Africa. Based within CERI's One Health Program and Data Science Unit, and working as part of the CLIMADE consortium, the fellow will collaborate with African and international partners to develop evidence that can strengthen disease surveillance, preparedness and resource allocation. The fellowship is based at CERI, Stellenbosch University, with opportunities for fieldwork and international collaboration. It is offered for up to three years with a competitive, tax-free stipend.

Application deadline: 25 September 2026 at 22:00 SAST. **For more info and to apply:** <https://lnq.com/hak6b0a>

Fogarty Fellowship Opens New Chapter

Dr Margot Otto's journey from microbiology to epidemiology and bioinformatics has taken an exciting new step with a prestigious Fogarty Global Health Fellowship.

text: Katrine Anker-Nilssen photo: Supplied

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hen Dr Margot Otto found out she had been selected for the 2026–2027 UJMT Fogarty LAUNCH

Programme, her mum was

sitting right beside her. An important source of motivation throughout her career, she was naturally the first person Margot told. "I think initially she thought I was having a panic attack, but then soon after realised it was very good news," Margot recalls.

SACEMA colleagues Larisse Bolton and Yuri Munsamy were next. Larisse had encouraged her to apply for the fellowship, and both spent weeks reading research proposal drafts and offering feedback. "Through the entire application I felt like I really had a team rooting for me, and this was a big motivational force for me," says Margot.

The UJMT Fogarty LAUNCH Programme is one of the world's most competitive global health research fellowships, funded by the U.S. National Institutes of Health. It gives early-career researchers a year of mentored research at leading biomedical institutions in low- and middle-income countries, while building international collaborations and leadership in global

"Some of the opportunities that have shaped my career came from taking a chance and putting myself forward before I felt entirely prepared."

– Dr Margot Otto

health. For Margot, the fellowship feels like a natural next step in a career that has been anything but predictable.

Growing up in South Africa, she was fascinated by science and initially imagined herself becoming a doctor. Instead, she discovered that she was better suited to answering health questions through research. After completing a general BSc, she specialised in microbiology before gradually moving into bioinformatics, epidemiology, and public health as data became an increasingly powerful tool for understanding disease.

"What motivates me most is the idea that science can help guide better decisions and ultimately improve health outcomes at population level," she explains.

That motivation now underpins her work as a postdoctoral researcher at the Africa Health Research Institute (AHRI), where she has strengthened her skills in epidemiology, statistics, and public health research. She first worked with AHRI data while based at Stellenbosch University, serving as a data liaison between the two institutions, before later joining AHRI and building closer relationships with its researchers and data teams.

One of the defining experiences of her time at AHRI has been visiting the surveillance and clinic sites in rural KwaZulu-Natal. "Seeing firsthand where the data come from and how HIV services are delivered has helped connect my analyses to the communities they ultimately serve," says Margot.

Her research already tackles questions with national significance. In work soon to be published in *The Lancet HIV*, Margot and colleagues examine South Africa's progress towards HIV epidemic control, with findings suggesting that progress has begun to falter in recent years despite the availability of highly effective

prevention and treatment tools. "Being able to contribute evidence that can inform national and international health policy is what makes global health research so rewarding to me," she says.

The Fogarty Fellowship brings together many of the threads Margot has followed throughout her career: epidemiology, bioinformatics, data science, and HIV research. Working within CERI and SACEMA has exposed her to researchers shaping how infectious disease epidemics are understood across Africa and globally. The fellowship now allows her to add a new dimension to that work through HIV bioinformatics.

"Developing these skills will not only benefit my own career, but will also add new capacity to the research programmes that I contribute to," Margot explains.

During the fellowship, she will investigate how HIV drug resistance is changing in rural KwaZulu-Natal following the widespread introduction of dolutegravir, now a cornerstone of HIV treatment in South Africa. By combining viral genetic sequencing with clinical, treatment and long-term population data, she hopes to identify which forms of resistance are emerging, who is most affected, and what factors may be driving them.

With South Africa home to the world's largest HIV treatment programme, those answers matter. Drug resistance can make treatment less effective and viral suppression harder to achieve, while understanding how resistance evolves at community level could strengthen surveillance, guide treatment strategies, and inform public health policy in South Africa and elsewhere in the region.

Margot will be mentored by Prof Frank Tanser and Prof Ann Dennis, whose complementary expertise spans HIV epidemiology, bioinformatics, and pathogen genomics. Their combined expertise aligns closely with Margot's longer-term goal of becoming a senior researcher working at the intersection of epidemiology, bioinformatics, and infectious disease research.

The fellowship has already taken her to the NIH campus in Bethesda, Maryland, where the new cohort met NIH and Fogarty International Center leadership, programme alumni, and fellow researchers during an intensive orientation week. Margot hopes the international component of the fellowship will bring benefits beyond technical training.

"I hope to bring back new ideas, new skills and new collaborations," she says. She also values the opportunity to experience another culture, meet new people, and make friends along the way. "I think those experiences outside the research environment are an important part of a fellowship too as they broaden your perspective, both

as a scientist and as a person," she adds.

Margot is no stranger to living abroad. She previously spent three years in Hungary, an experience that broadened her perspective both professionally and personally, and remains open to working internationally again. For now, however, two things brought her back to South Africa: being closer to her family and the opportunity to work with Prof Tanser and the SACEMA team on public health challenges of particular importance to South Africa.

Looking back, what surprises Margot most is how little she could have predicted the direction her career would take. "I started my career in microbiology doing very hands-on laboratory work, and if someone had told me then that I would one day be working primarily in HIV epidemiology and population health research, with most of my work now being computational, I probably would not have believed them," she reflects. "Perhaps that has been the biggest surprise: becoming comfortable with not knowing exactly where the journey will lead next."

It is an experience that also shapes her advice to young South African scientists considering competitive international opportunities. "Some of the opportunities that have shaped my own career came from taking a chance and putting myself forward before I felt entirely prepared. You may be surprised by what others see in your potential," she says.

Her advice is to see even an unsuccessful application as part of the process, with the proposal and feedback providing opportunities to refine ideas and strengthen future applications. "Apply, learn from the outcome, and keep going. Being unsuccessful sometimes is simply part of building a research career," Margot concludes.



Welcome, New STARS!

A new group of young African scientists has arrived in Stellenbosch to begin the next chapter of their careers. The 2026-27 cohort of African STARS fellows is settling in at the CERI – where four months lie ahead for the ATT fellows, and a full year for those in the YPP track – working alongside mentors, faculty, and programme staff.



At a welcome dinner, the fellows already in town gathered at the Stellenbosch Institute for Advanced Study (STIAS), arriving in festive traditional dress as an African drumming session got the evening moving. It was a room full of people swapping stories, comparing notes, and figuring out where their work might overlap – already excited about the collaborations, networks, and training ahead.

This group is part of something big and hard-won. Fifty early-career scientists from 20 African countries make up the 2026 African STARS cohort, selected through

a highly competitive process that drew applications from across the continent. Twenty-four are based at CERI in Stellenbosch, with the remaining 26 at the Center for Africa's Resilience to Epidemics (CARE), hosted by the Institut Pasteur de Dakar in Senegal. The Stellenbosch group includes 14 fellows in the Advanced and Translational Training (ATT) track and 10 in the Young Professional Programme (YPP).

CERI's Director, Prof Tulio de Oliveira, welcomed the group warmly. "We are delighted to have you in the African STARS family. I can't wait to see what you will achieve," he said.

For Dr Doreen Lugano, a cell and

molecular biologist from Kenya, the fellowship is a chance to grow in more than one direction at once. "I would like to advance my expertise in genomics towards innovations that will improve our understanding of infectious diseases and provide platforms for more African scientists. As an early-career researcher, I am also keen on gaining leadership skills in financial and people management, as well as grant writing skills that would be key to performing independent work."

Flywell Kawonga, a Malawian PhD candidate in virology at the University of Liverpool and the Malawi-Liverpool Wellcome Programme, thinks about his work in similarly personal terms. To him,

every genome tells a story worth following – he describes it as “a roadmap to better health” – and he’s hoping the fellowship helps him turn that kind of genomic insight into diagnostics, vaccines, and disease control strategies built by and for Africa.

Prof Sibusiso Moyo, Deputy Vice-Chancellor: Research, Innovation and Internationalisation at Stellenbosch University, put a question to the room that got people thinking out loud. “What are some of our greatest challenges as a continent?” Answers came back quickly – limited resources, sustainability, human capital, health, and more. “Through this programme, we can contribute to solving these challenges,” she told them. “Build relationships with your facilitators and fellow STARS, but also look out to understand who are the potential partners in your ecosystems and area back home that you can reach out to for collaboration.”

Prof Kanshukan Rajaratnam, Director of the School for Data Science and Computational Thinking at Stellenbosch University, offered the fellows three things to hold onto for the year ahead: reflection, network, and ambition. “Firstly, reflection. Use this time to think about your growth, where you want to be, and how you want to relate to people both personally and professionally. Secondly, network – not just within your group, but across the university, the town, and beyond. The more people you meet, the more you get out of it. Thirdly, we want to solve big problems, not small ones – and that means transdisciplinary work, drawing on many different skills and perspectives.”

Elizabeth Lubinda, a maternal and newborn health epidemiologist from Zambia entering the Young Professional Programme, sees her own path in similar terms – less about staying in the lab, more about getting research to actually reach

people. “This fellowship brings together science, biotechnology, entrepreneurship, and leadership to transform evidence into impact. I am excited to learn, collaborate, and contribute to innovations that improve health across Africa and beyond.”

The fellows have now started their journey of scientific training, leadership development, mentorship, and industry engagement, working alongside researchers, innovators, and entrepreneurs to turn their science into things that actually reach people – products, policies, ventures that respond to Africa’s health challenges.

The new cohort has already started building the kind of connections this year is meant to run on. As Dr Doreen Lugano put it, “Unity is strength. The transfer of knowledge, collaboration, and mentorship are how we move forward towards a better world.”



Ebola Spillover Risk

A new model combining ecological conditions with human activities could help identify emerging Ebola spillover hotspots and strengthen epidemic preparedness.

A new preprint led by CERI researchers Dr Monika Moir and Professor Houriiyah Tegally and colleagues looks beyond the environmental conditions traditionally used to predict where Ebola spillover may occur. The researchers combine ecological suitability with human-driven factors that can increase opportunities for contact between people and wildlife – including mining, bushmeat activity, human settlement, forest loss and conflict.

The work is particularly relevant to the 2026 Bundibugyo virus outbreak in the Democratic Republic of Congo, which emerged in Ituri Province, a region where ecological suitability intersects with mining-related mobility, conflict, food insecurity and rainforest environments. The researchers found that incorporating these human factors improved the ability of their models to predict historical spillover locations, with mining showing the largest and most consistent contribution over the past decade.

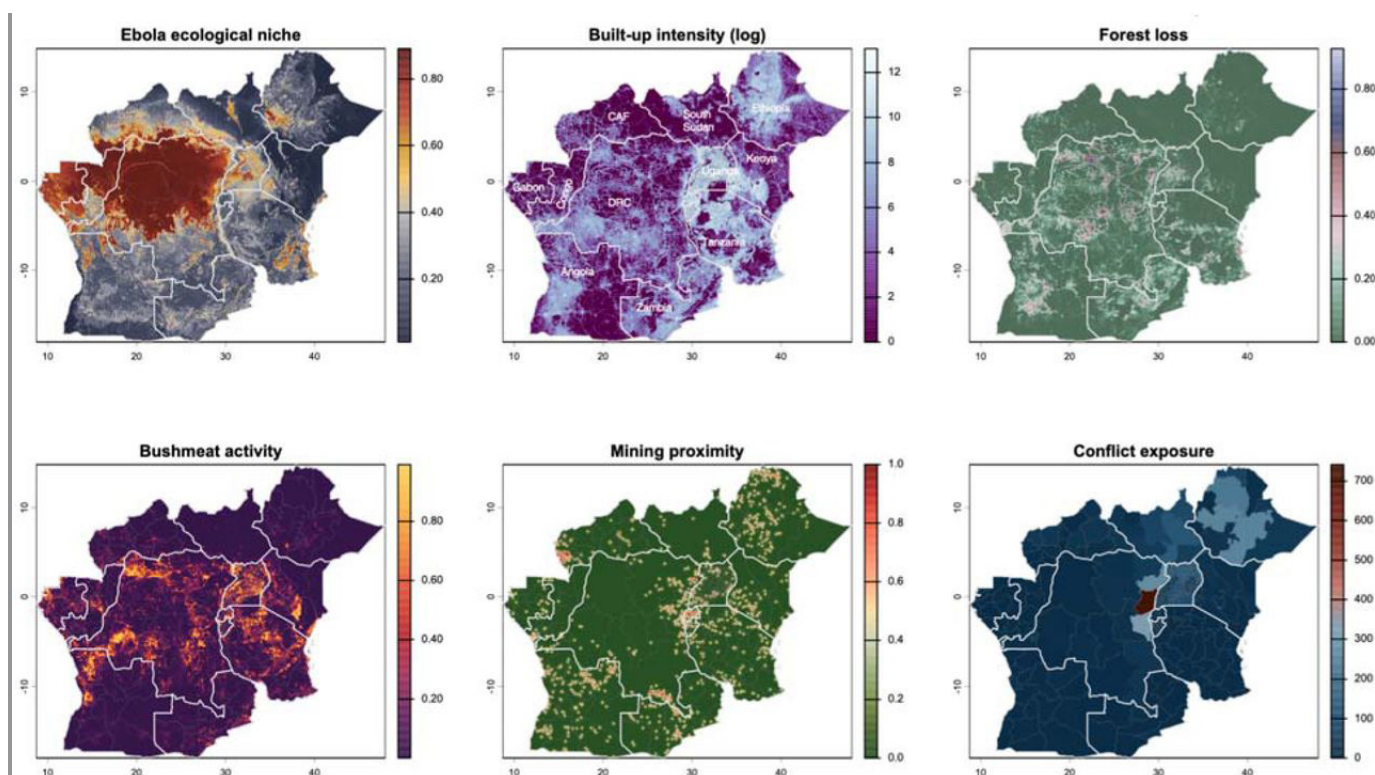
Read the full paper, and list of authors, here:

<https://pubmed.ncbi.nlm.nih.gov/42289653/>

Figure (below): Spatial distribution of ecological and anthropogenic drivers of orthoebolavirus spillover risk across the DRC and neighbouring countries.

Maps show six key variables integrated to predict spillover and transmission risk in eastern DRC.

Top left: orthoebolavirus ecological niche – updated 2026 modelled habitat suitability for orthoebolavirus circulation. **Top middle:** built-up intensity – nighttime light-derived settlement intensity, quantifying human population concentration and urbanisation patterns. **Top right:** forest loss – proportion of forest cover loss between 2000–2025, indicating habitat fragmentation and land-use change that may alter human–wildlife contact patterns. **Bottom left:** bushmeat activity – spatial density of bushmeat hunting and wildlife exploitation activity. **Bottom middle:** mining proximity – distance-weighted proximity to active artisanal and large-scale mining sites, with warmer colours indicating closer proximity to mining operations. **Bottom right:** conflict exposure – conflict intensity based on conflict events aggregated over 2000–2026, with darker colours indicating higher cumulative conflict exposure.



PEPFAR-supported HIV Treatment Declines

New research across 55 countries shows a substantial decline in PEPFAR-supported HIV treatment in 2025, raising questions about how countries including South Africa will sustain HIV care as external support decreases.

A new study published in *Nature Health*, co-authored by Prof Frank Tanser, provides one of the first empirical assessments of changes in PEPFAR-supported HIV treatment following major disruptions to U.S. foreign assistance. Across all 55 PEPFAR-supported countries, approximately 1.97 million fewer people were reported as receiving PEPFAR-supported antiretroviral treatment in 2025 than in 2024 – a decline of 10.2%.

South Africa saw the largest absolute decline in direct PEPFAR-supported treatment, with approximately 1.73 million fewer people receiving this form of support. This was largely offset by an increase of around 1.64 million people reported as benefiting from PEPFAR's broader, system-level support, resulting in a net decline of approximately 95,000 people receiving some form of PEPFAR treatment support.

"The figures suggest that the way PEPFAR supports HIV care has changed significantly," says Prof Tanser. "The key concern is whether South Africa's health system can maintain uninterrupted, high-quality HIV treatment and support as direct external assistance decreases." He says protecting the progress already made will require stronger domestic funding and health-system capacity as PEPFAR withdraws its support, alongside close monitoring of treatment access, retention in care, and viral suppression.

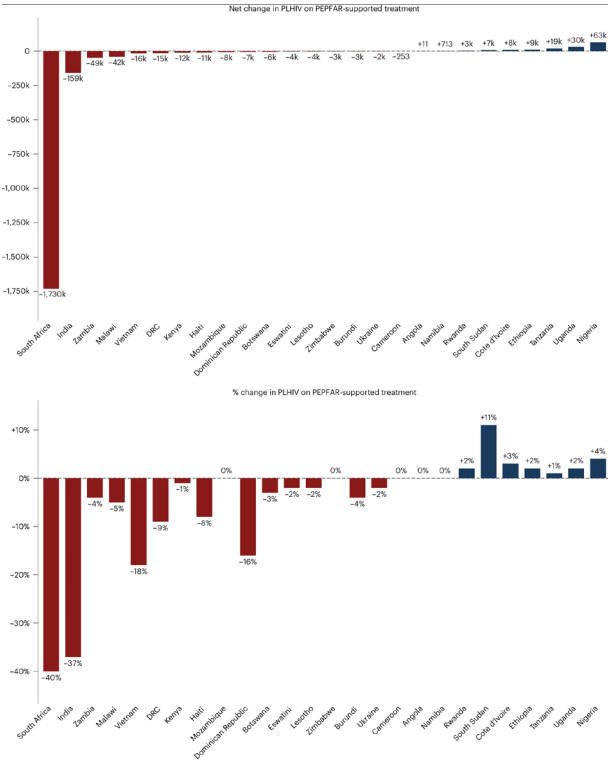
ABSTRACT

Here we analysed recently released treatment data from the US President's Emergency Plan for AIDS Relief (PEPFAR) programme following a year of disruption. Globally (n = 55 countries), the programme reported approximately 1.97 million (–10.2%) fewer individuals receiving PEPFAR-supported antiretroviral treatment in fiscal year (FY) 2025 as compared with FY2024. FY2025 treatment budget execution declined by approximately 8 percentage points compared with the historical mean. Within a subset of countries selected for further analysis (n = 26), most experienced absolute declines in PEPFAR-supported treatment and 14 deviated negatively from pre-2025 trends. For South Africa, PEPFAR reported a decline of 1.73 million individuals on direct PEPFAR-supported treatment and an increase of 1.64 million

individuals on treatment benefitting solely from the programme's broader support to health systems, yielding a net treatment loss of 94,881 (–1.8%) individuals. Outstanding questions remain regarding the drivers, persistence and broader impact of PEPFAR-supported treatment shifts, underscoring the need for timely programme data.

Read the full paper, and list of authors, here: <https://www.nature.com/articles/s44360-026-00159-1>

Figure (below):
Top: absolute net change in PLHIV on PEPFAR-supported treatment. **Bottom:** corresponding percentage change. Countries are ordered by magnitude of absolute change. Bars extending below zero indicate net declines; bars extending above zero indicate net gains. Values exceeding 1,000 are rounded to the nearest thousand; percentage changes are rounded to the nearest whole percent. No error bars are shown as values represent reported programmatic totals rather than estimates.



Unlock the Wallet, Decode the Opportunity

Stellenbosch University's 2026 Data School Hackathon brought more than 120 students together to tackle a real-world data challenge, showcasing how academia–industry partnerships can build skills, spark innovation and prepare the next generation of AI practitioners.

text: Dr Sunday Oladejo photos: Henk Oets

The 2026 Data School Hackathon, proudly sponsored by Standard Bank, once again demonstrated what is possible when academia and industry come together to create opportunities for students to learn, innovate and solve real-world problems.

This year's theme, *Unlock the Wallet: Decode the Opportunity*, challenged students to think creatively about how data science and artificial intelligence can be used to uncover meaningful opportunities from complex data. The Hackathon attracted an impressive 47 teams, comprising more than 120 participants, from across Stellenbosch University. Participants came from different faculties, academic programmes, and levels of study, including PhD students, reflecting the truly interdisciplinary character of the School for Data Science and Computational Thinking.

The Hackathon ran from 5 to 14 August 2026, during which teams worked intensively to develop and refine their solutions. Of the 47 teams that registered, 20 teams, representing 61 participants, submitted final solutions for consideration. Following the first round of judging, seven teams progressed to the Grand Finale, which was held

on 20 August 2026 at the School for Data Science and Computational Thinking.

The Grand Finale brought together students, academics, university leadership, and industry partners in an exciting celebration of innovation. Among those in attendance were the Deputy Vice-Chancellor: Research, Innovation and Postgraduate Studies, Prof Sibusiso Moyo, Prof Kanshukan Rajaratnam, Director of the School for Data Science and Computational Thinking, Prof Jacomine Grobler from the Department of Industrial Engineering, and Dr Sunday Oladejo, Chair of the Standard Bank Lab for Recommender Systems at the School for Data Science and Computational Thinking. The event also welcomed industry partners and friends of the Data School, including Dr McElory Hoffmann, CEO of Praelexis.

Standard Bank, whose generous support made the event possible, was represented by Mr John Mukomberanwa, Head of Applied AI at Standard Bank. The Bank sponsored R50 000 in cash prizes, together with several gifts for participants. Beyond the prizes, however, the value of the Hackathon lies in the experience it gives students to work on challenging problems, collaborate across disciplines, present their ideas and engage directly with professionals working at the forefront of AI and Data Science.

The Data School Hackathon has become an important annual platform for developing the next generation of problem-solvers. It provides students with an opportunity to move beyond the classroom and apply their knowledge in a setting that demands creativity, teamwork, analytical thinking, and effective communication. It also gives students a clearer understanding of the types of challenges they may encounter in industry and the role that AI and Data Science can play in addressing them.

The partnership between the School for Data Science and Computational Thinking and Standard Bank, supported through initiatives such as the Standard Bank



Lab for Recommender Systems chaired by Dr Sunday Oladejo, is central to the success of the Hackathon. It is a strong example of how universities and industry can work together to build skills, encourage innovation and prepare students for a rapidly changing world shaped by artificial intelligence. This partnership talks to the School's commitment to the university's vision of 'in service to society'.

Importantly, this partnership has also gained wider recognition. The Evident AI Banking Index highlighted Standard Bank's collaboration with Stellenbosch University and specifically referenced the recurring Data Science Hackathon hosted through the Standard Bank Lab at the University. This recognition speaks to the broader value of the partnership, not only in supporting research and innovation, but also in building awareness, developing talent and preparing the next generation of AI practitioners.

The 2026 Hackathon was therefore more than a competition. It was a meeting point for ideas, disciplines

and people. It showcased what students can achieve when they are given a meaningful challenge, the right support and the freedom to explore. Most importantly, it reaffirmed the shared commitment of Stellenbosch University and Standard Bank to developing talent and contributing to an AI-ready future.

BELOW: Celebrating Innovation: 2026 Data School Hackathon Outstanding Solution Award, from left to right; Prof Jacomine Grobler, Refiloe Motsoeneng, Khanyisa Maluleka, and Floyd Moleshiwa.



Global Recognition

Professor Tulio de Oliveira joins a select global group recognised for shaping bioinformatics and computational biology – and for advancing Africa's contribution to the field.

Professor Tulio de Oliveira has become only the second Africa-based scientist to be elected a Fellow of the International Society for Computational Biology, one of the highest honours in global bioinformatics and computational biology.

For Prof de Oliveira, the recognition reflects not only his own career, but the strength of science being built in Africa by African researchers.

"I am very honoured to have been selected as the second-ever African-based fellow of the ISCB," he said. "Being a fellow of the ISCB is the highest honour awarded by the International Society for Computational Biology and is widely recognised as the pinnacle career distinction in the global bioinformatics and computational biology community."

The ISCB highlighted his leadership in genomic surveillance, including work that helped establish South Africa as a global leader in tracking viral evolution during the COVID-19 pandemic and the identification and tracking of the Omicron variant. It also recognised his role in building an Africa-based research programme

driven predominantly by African scientists and in training a new generation of bioinformaticians.

Prof de Oliveira joins 19 other scientists elected to the 2026 cohort. He credited the achievement to the teams behind the science, including Eduan Wilkinson, Richard Lessells and Houriiyah Tegally, as well as collaborators across Africa, South Africa, Brazil and internationally.

The fellowship places him among a select group of scientists whose work has helped shape a field increasingly central to understanding and responding to disease.



Innovation Doesn't Happen in Silos

Bushra Razack brings a background in community development, entrepreneurship, and placemaking to her new collaboration with CERl and SWEAT Africa. Formerly CEO of Philippi Village, she is now working with Prof Tulio de Oliveira and the SWEAT Africa team to explore social impact innovation and township tech. In this article, she shares the experiences that have shaped her approach and what she hopes to bring to this new collaboration.

My professional journey has always been rooted in people, place, and possibility. I've spent much of my career at the intersection of community development, entrepreneurship, and placemaking, asking one simple question: what becomes possible when communities are treated not as beneficiaries, but as partners, experts, and creators of their own futures?

For several years, I led Philippi Village in Cape Town, a community-led development and entrepreneurial hub in one of the city's most underserved communities. Philippi taught me that meaningful development is rarely

neat or linear. It requires patience, relationships, and the ability to hold many different realities at once – bringing communities, entrepreneurs, government, funders, and civil society to the same table, while making sure that the people closest to the problem are still heard.

It also taught me one of the most important lessons of my career: how we engage matters as much as what we deliver. I've lost count of the times listening properly changed a project's outcome, reshaping designs and surfacing risks before they became crises. The more we listen, the more we build trust – and trust is one of the most important currencies in any kind of meaningful change.

That's the lens I'm now bringing into a different, exciting world. Over the past few months, I've worked increasingly closely with Prof Tulio de Oliveira and the SWEAT Africa team. What a team! I immediately felt welcome and inspired. I've been helping them think through a new lens for SWEAT Africa: a stream of social impact innovation with a specific focus on township tech.

I'll admit that entering the CERl environment initially felt intimidating. I'm not an academic or a scientist. I come from communities and township entrepreneurship, and suddenly I was surrounded by researchers working at the frontiers of innovation. But the more time I've spent with the team, the more struck I've been by how open people are to learning across disciplines, and how willing they are to challenge who gets to be part of innovation.

That's where SWEAT Africa becomes important to me. Innovation doesn't happen in silos. A brilliant discovery or an exceptional idea is only ever as valuable as its connection to the people, systems, capital, and trust around it.

Our innovation and investment systems have never been





designed equally. Where you come from, who you know, and access to the right rooms can determine which ideas get seen. What sits around an idea often matters as much as the idea itself: the context, the community knowledge, the moment a scientist meets an entrepreneur, or an investor hears directly from the people living the problem.

I believe SWEAT Africa can become far more than a conference: a meeting place for science, entrepreneurship, investment and lived experience, where people who would never ordinarily meet can sharpen each other's thinking. I hope to bring a township and community lens to SWEAT Africa, asking who isn't in the room, what an idea would look like in Khayelitsha or Philippi, what non-financial risks need to be weighed, and what those communities could teach us in return.

I'm incredibly grateful for the opportunity to bring that perspective into a team that is already so open to thinking differently about how innovation is shaped, shared, and understood.

One of the conversations already emerging within the CERI and SWEAT Africa team is around storytelling. Creativity, collaboration, and meaningful engagement aren't add-ons. They strengthen research, broaden its relevance, and build the trust that makes real impact possible.

Communities are too often researched, documented, and spoken about by other people, their lives reduced to case studies interpreted through somebody else's lens. Yet listening isn't just about representation: it improves the work itself, informing design and building trust from the start rather than as an afterthought. I'll be sharing some of these lessons on stakeholder engagement and trust-building with the new African STARS cohort next month. I'm particularly excited about bringing this storytelling component into SWEAT Africa 2027.

We're imagining training young mobile journalists to move through the event, capturing conversations, ideas, and connections as they happen, and giving researchers, entrepreneurs, and communities another way to tell their own stories. I'd also love to explore working with public artists and graffiti artists to interpret what they're hearing across the event in real time.

For me, that creates another layer of information – almost another kind of data set – capturing not only what people presented, but what they were thinking, questioning, feeling, and connecting. It feels like a powerful way to document innovation as a living process, rather than only recording the final outcomes.

Many of these lessons are also shaping work Prof Tulio de Oliveira and I are building together: TRUST AFRICA, an NPC exploring new ways to support entrepreneurs shaping social innovation from outside traditional investment systems, through an outcomes-based recoverable grant model with a township tech focus.

At its centre is a simple provocation: what if trust itself were a form of currency? Traditional capital asks entrepreneurs to fit the system; we believe the system should fit the entrepreneur. TRUST AFRICA exists to build that bridge, with capital that understands context and support that fits.

The future of innovation may look less like one brilliant person with the answer and more like an ecosystem, where the ability to connect, listen and hold complexity isn't peripheral, but central.

Because increasingly, I believe the future belongs to people who can connect what others keep separate.

Looking Beyond the Map Point

A new deep-learning approach shows that the conditions surrounding a location can reveal dengue suitability that conventional models may miss – potentially improving how countries target surveillance, vector control, and outbreak resources.

Traditional dengue risk models often assess the environmental conditions at the precise location where a case has been reported. But mosquitoes, people and climatic conditions do not stop at a single coordinate.

In a new medRxiv preprint, Carlin Foka Takamgno and colleagues developed a deep-learning model that instead examines the landscape surrounding reported dengue locations at three different spatial scales – local, neighbourhood and broader landscape.

"Many models used to map dengue suitability examine the environmental conditions at a single point, for example, they use information such as the temperature

or population density at the exact location where dengue was reported, while overlooking the surrounding area," explains Foka Takamgno. "However, mosquitoes, people and climatic conditions are not confined to a single coordinate."

The distinction matters because a location that appears relatively unsuitable when considered in isolation may be surrounded by conditions capable of supporting dengue transmission.

The researchers found that neighbourhood conditions provided the strongest signal, although information from all three spatial scales contributed to the model. Compared with conventional point-based approaches, the model identified 6–18% more environmentally suitable

A. Global dominant scale map



C. Regional examples

Latine America & Caribbean

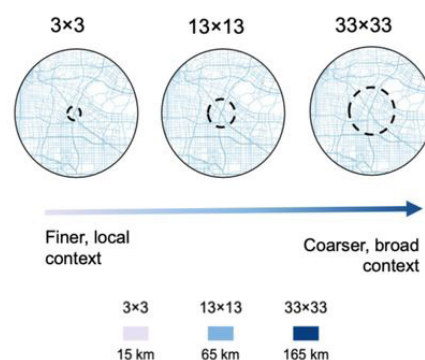
Europe

South Asia

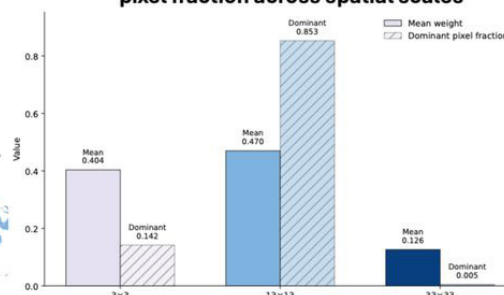
Southeast Asia



B. Patch scale legend – what do the scales mean?

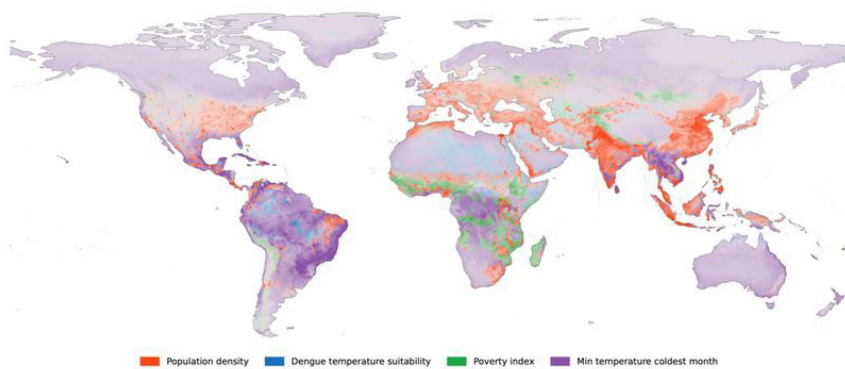


D. Global mean weight vs. dominant pixel fraction across spatial scales

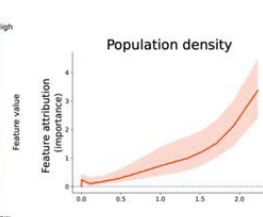
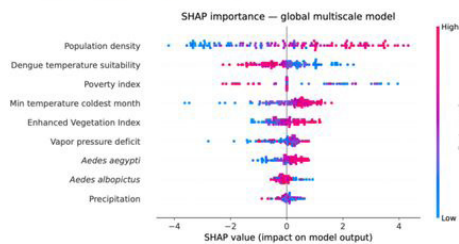


A. Global features importance

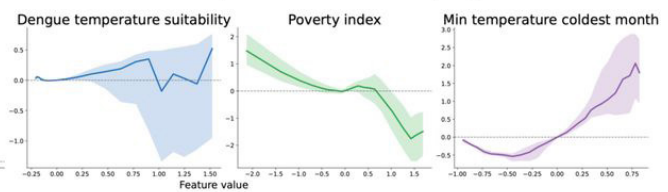
Top 4 global feature attribution map



C. Global SHAP values



D. Nonlinear response curves for top 4 global features



land across South Asia, Southeast Asia and South America – areas collectively home to tens of millions of people.

Feature analysis also identified population density as the strongest overall predictor of dengue suitability, followed by dengue temperature suitability, poverty and minimum temperature during the coldest month.

For Foka Takamgno, looking at multiple spatial scales provides a more complete picture of where dengue transmission could potentially occur. “Two locations with similar temperatures or population densities may have different levels of suitability if their surrounding environments differ,” he says. “By examining local, neighbourhood and broader landscape conditions, the model can detect spatial patterns that point-based models may miss.”

Better maps could ultimately help countries decide not only where to strengthen surveillance, but where to direct resources when an outbreak occurs.

Densely populated urban and peri-urban areas identified as highly suitable may warrant closer disease and mosquito surveillance, stronger vector control and better-prepared health services. During an outbreak, the maps could also help authorities look beyond locations where cases have already been detected.

“The maps could help authorities direct staff, diagnostic tests and other resources towards suitable surrounding areas, rather than focusing only on places where cases

have already been reported,” says Foka Takamgno.

At the same time, he cautions against focusing exclusively on individual hotspots or major cities. Because local, neighbourhood and broader landscape conditions all contributed to the model, targeted interventions need to be accompanied by coordinated national surveillance and response planning.

Read the full paper, and list of authors, here:

<https://www.medrxiv.org/content/10.64898/2026.08.10.26359943v1>

Figure 2 (opposite page): Spatial-scale contributions to the multiscale CNN-DRE.

(A) Dominant spatial scale globally. (B) The three neighbourhood scales: 3×3 , 13×13 and 33×33 , representing approximately 15, 65 and 165 km. (C) Regional patterns across Latin America and the Caribbean, Europe, South Asia and Southeast Asia. (D) Relative contribution of each scale. Neighbourhood-scale context dominated 85.3% of land pixels, followed by local at 14.2% and broader context at 0.5%.

Figure 3 (above): Key predictors of dengue suitability.

(A) Global distribution of the four leading predictors: population density, dengue temperature suitability, poverty and minimum temperature in the coldest month. (B) Regional differences in predictor importance. (C) Global ranking of predictors. (D) Relationships between predictors and model attribution. Population density was the strongest global predictor, while other socioeconomic and environmental influences varied by region.

Producing the Tools of African Science at Home

African STARS fellows are using technology transfer to build biotechnology expertise and reduce Africa's reliance on imported research reagents.

text: Katrine Anker-Nilssen photo: Supplied

Many of the enzymes and specialist reagents used every day in African laboratories begin their journey thousands of kilometres away. Manufactured overseas, they come with the added costs of international shipping, importation and, in some cases, cold-chain transportation – and researchers can wait weeks for something they need to continue an experiment.

African STARS fellows Grace Bosco Mwakinga, Celestine Kemunto Nyamari, Francisca Serwaa Adomako, Kabugo Joel, and Monique Barnard-Mathee, are exploring how that dependence can begin to change. Working with Fluorobiotech and the University of Wisconsin–Madison, the team has been transferring the technology needed to produce TEV protease locally.

"A reagent may be available from a supplier, but it can still take weeks to reach the laboratory because of shipping, customs clearance, and other logistical processes," says Celestine. "If a reagent is out of stock, the delay can be even longer. This can interrupt experiments and delay research projects."

But for Celestine, the frustration of waiting for a delivery points to a much bigger issue. "Researchers can be doing very good science but still be dependent on external suppliers for basic inputs needed to do that work," she says. "This makes research more expensive and can make it difficult to plan experiments around when reagents will actually be available."

TEV protease is one of those essential research tools. The enzyme acts like a highly precise pair of molecular scissors. When researchers produce proteins in the laboratory, they often add a small tag to help produce and purify the protein. TEV protease can then remove that tag without damaging the protein of interest.

"It is therefore a useful tool in recombinant protein production and is used in many research and biotechnology workflows," Celestine explains. "Having

access to good-quality TEV protease is important because protein production is part of a wide range of research, including work related to biotechnology, pharmaceuticals, and other applications where recombinant proteins are needed."

The opportunity to produce it locally emerged during the fellows' industry placement at Fluorobiotech. The company already had the infrastructure and capacity to produce recombinant proteins and saw the potential to manufacture TEV protease rather than continue relying on an imported enzyme. It could also use locally produced TEV protease in its own protein purification processes.

The other piece of the puzzle came through an existing relationship between CERI and Professor Brian Fox at the University of Wisconsin–Madison. Fox became a mentor to the project, giving the team access to the technology and expertise they needed. The fellows found themselves working between the two environments, learning the process and helping to transfer and implement it at Fluorobiotech.

"For us, it was important that this was not simply about obtaining the enzyme from Wisconsin," says Celestine. "The aim was to understand the process well enough to reproduce it locally, while building capacity that could eventually support both in-house applications and commercial production."

Then came the milestone they had been working towards: the team successfully expressed and purified TEV protease at Fluorobiotech. They established a laboratory workflow and went through several rounds of optimisation to improve the production and purification process.

For Celestine, seeing the purified enzyme made the achievement real. "When we obtained the purified enzyme, that was a very tangible indication that the technology transfer had worked," she says.

There is still work ahead before the enzyme can become a commercial product. The team needs to further improve



yield and purity, demonstrate that the process can be reproduced consistently and integrate TEV protease into Fluorobiotech's quality management system.

If they get there, researchers and biotechnology companies could eventually have a local or regional source of an enzyme they currently import. Celestine is careful not to put a figure on potential savings before a commercial cost analysis has been completed, but says local production could reduce some of the costs associated with shipping, importation and cold-chain logistics, as well as the time researchers spend waiting for reagents to arrive.

And the potential impact goes beyond TEV protease. Learning how to reproduce a biotechnology process locally builds knowledge and expertise that could potentially be applied to other products, gradually expanding the range of research tools that can be made on the continent.

That learning has been an important part of the project for the fellows themselves. African STARS supported workshops, hands-on laboratory time and virtual mentoring, while connecting the team with mentors and Fluorobiotech. "The skills and knowledge transferred to us were immense," says Joel.

For Joel and the team, these ranged from understanding how ISO 13485 is implemented in biotechnology production to advanced protocols for quality protein production, molecular techniques, and activity assays. It gave them experience not only in making an enzyme, but in understanding what it takes to move a biotechnology product towards a quality-controlled manufacturing environment.

Joel sees potential for the same approach to go further. Bringing together scientists, industry partners, and

technical expertise to transfer a production process and build the skills to implement it locally could, he believes, be applied to other forms of protein production in Africa.

The experience has also shown the team that being able to make a product is only part of the challenge. Joel points to fragmented regulatory systems across African countries, lengthy and expensive approval processes, the high cost of production when critical raw materials must themselves be imported, and the loss of experienced scientists to better-resourced opportunities elsewhere.

Overcoming those barriers will require changes well beyond the laboratory. Joel highlights the need for greater regulatory harmonisation, investment in manufacturing and quality-control facilities, policies that support African-produced products, pooled procurement, and sustained career pathways for biotechnology scientists.

For the team, the bigger ambition is therefore not simply to produce one enzyme successfully. It is to contribute to an environment in which more of the biotechnology products African scientists, laboratories, and health systems need can be developed and manufactured on the continent.

"Success in ten years, to us, is when Africa no longer depends on the Global North for vaccine production, the production and supply of diagnostic kits for Africa-prone pathogens, and there is an integrated regulatory policy across Africa for biotech products," says Joel.

The TEV project is one early step towards that vision. For Grace, Celestine, Francisca, Joel, and Monique, producing an enzyme locally is also about something bigger: building the knowledge, skills and partnerships that could allow Africa to produce more of the tools its scientists need.

Cape HealthTech Connect is back!

Bringing researchers, innovators, investors, and industry together to turn promising HealthTech ideas into real-world solutions.

Following a successful inaugural event in 2025, Cape HealthTech Connect returns on 17 September 2026 at the Biomedical Research Institute (BMRI), Tygerberg, bringing together researchers, clinicians, entrepreneurs, startups, industry leaders, investors and funders.

Last year's event attracted around 150 participants and more than 50 HealthTech companies and startups, creating a space to explore how promising research and innovation can move from the laboratory towards real-world healthcare solutions.

This year will build on that momentum, with emerging HealthTech, new ideas and conversations around collaboration, commercialisation and scaling innovation. A key focus will be connecting those developing

healthcare technologies with the expertise, resources and networks that can help take them further.

From diagnostics and biotechnology to medical devices and digital health, the event provides an opportunity to discover some of the innovation emerging from the region and explore how it can respond to healthcare needs in Africa and beyond.

By bringing different parts of the ecosystem into the same room, Cape HealthTech Connect aims to strengthen the connections needed to translate locally developed innovation into meaningful healthcare impact.

When: September 17, 2026, 08h00

Where: BMRI, Tygerberg

Register today: <https://lnkd.in/dxn8udmC>

2026 CAPE HEALTHTECH CONNECT

17 September 2026

08:30 - 16:00



Cape HealthTech Connect brings together health researchers, clinicians, entrepreneurs, startups, industry leaders, investors and funders who are passionate about advancing healthcare innovation. Attend to build meaningful connections, discover emerging technologies and explore opportunities for collaboration, commercialisation and real-world impact.



17 September 2026



08:30 - 16:00



BMRI, Tygerberg



Admission fee: R400

Exhibitor's fee: R3 000

Tickets available on Radi



Answers Within Africa

Dr Gugu Gama on connecting African researchers to shape Africa's research agenda.

text & photo: SU International



For Dr Gugu Gama, strengthening African research starts by recognising the expertise already on the continent. As Coordinator of the CERi Africa STARS Fellowship Programme at Stellenbosch University International, she helps connect young scientists across countries, disciplines and cultures.

Her commitment grew from early community engagement work, where she saw how education could build confidence, skills and possibility. Today, she sees the same potential in African scientists working together to address shared challenges.

Through Africa STARS, fellows gain scientific training alongside leadership, science communication and grant-writing skills, preparing them not only to participate in research but to shape its direction.

For Gugu, the relationships formed are just as important. Fellows who begin as names on a list become collaborators who share opportunities, visit one another's countries and support each other's careers.

Behind that work are often deeply personal motivations. Gugu has met fellows whose research choices were shaped by losing family members to diseases that could not be diagnosed or treated in time. Their determination to prevent other families experiencing the same loss, she says, reflects the sense of purpose driving African research.

"African researchers get to set the agenda, define the priorities, and back each other in doing so."




VEME Open Lecture: Data, AI and the Future of Outbreaks

Wednesday, 9 September 2026 • 17:00-18:30
 Reitz Hall, Engineering Building A1001, Stellenbosch University • Hybrid Event (In-person + Online)


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TOPIC
Smart Surveillance: Digital Tools and AI for Early Warning and Outbreak Preparedness

Prof. Moritz Kraemer
Professor of Epidemiology and Data Science
University of Oxford



TOPIC
Connecting the Dots: Data Science from Pathogen Emergence to Epidemic Spread

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Next Step: Oxford

Fezokuhle Khumalo's next step at Oxford builds on a journey that has expanded her confidence, shaped her research ambitions and strengthened her determination to help African scientists lead solutions to the continent's health challenges.

text: Katrine Anker-Nilssen photos: CERI Media, Charlie Sperring

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hen Fezokuhle Khumalo received the news that she had been accepted to pursue a DPhil at the University of Oxford,

the moment was deeply personal. Oxford had not initially been part of her plan; she had not considered applying until a potential supervisor at another institution encouraged her to do so. "When the offer arrived, it affirmed that the years of work, sacrifice, and quiet perseverance had not been in vain," she says. "Even the seasons in which the way forward felt unclear had been shaping and preparing me in ways I could not yet recognise."

Her path to Oxford has been shaped by a gradual movement from the laboratory towards the realities of health systems. Her first master's degree, in Medical Virology at the University of Cape Town, helped her understand how health innovations and evidence are generated. Her second, in Epidemiology specialising in Implementation Science at the University of the

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— Fezokuhle Khumalo

Witwatersrand, drew her closer to a question that increasingly interested her: what happens when an effective intervention leaves the research environment and must reach people through routine healthcare?

Her work with Georgetown University's Center for Global Health Practice and Impact in Eswatini brought that question to life. "I began to understand that even the most sophisticated intervention has limited value if it cannot reach the person for whom it was designed," she says. Receiving an early-career research grant from the Royal Society of Tropical Medicine and Hygiene was another turning point, allowing her to move from supporting research to leading her own study and begin seeing herself as an independent researcher.

At CERI, several strands of that journey began to come together. Through the African STARS Fellowship, Fezo encountered maternal anaemia as a research focus and recognised how closely it connected her scientific background, experience of frontline health systems and growing interest in implementation. "In many ways, this has become the meeting point of those different parts of my story, and ultimately helped shape the direction that has led me to Oxford," she says.

The experience also changed how she thought about what a scientist could be. "My time at CERI through the African STARS Fellowship awakened an innovative side of me that I had not fully recognised before," she says. Rather than only understanding and describing health problems, she began asking what could be built to address them and how scientific ideas could become practical, sustainable solutions.

Exposure to accomplished researchers, innovators and entrepreneurs broadened that sense of possibility. "These were not distant figures whose careers felt impossible to emulate; they were people who had also started with curiosity, an idea and the courage to pursue it," she says. "That made ambitious scientific careers feel more tangible to an ordinary young woman from the small Kingdom of Eswatini."

Perhaps the biggest shift was in her confidence. "When I arrived, I did not always see myself as someone who could generate bold ideas, lead research or contribute meaningfully in rooms with highly accomplished scientists," Fezo says. Being trusted with opportunities, supported by mentors and challenged to stretch beyond what felt familiar gradually changed that. "CERI helped me move from wondering whether I belonged in these spaces to understanding that I also have something worthwhile to contribute."

That confidence found a practical outlet in SmartPath, a health-systems catalyst company Fezo co-founded through the fellowship. Bringing together community, science and technology, SmartPath aims to improve care pathways, beginning with maternal anaemia. Developing it showed Fezo that she could move beyond identifying a health-system problem to working with a multidisciplinary team to develop solutions, engage communities and stakeholders, and translate an idea into a practical model for care.

It also helped strengthen her Oxford application. "Before the fellowship, I sometimes expected good work to speak for itself," she says. "African STARS taught me that we also need to know how to position our ideas, present our achievements and tell a compelling story about the contribution we are capable of making." SmartPath gave substance to the research direction she presented to Oxford by showing that it was grounded in work she had already begun leading.

Fezo is also conscious that journeys such as hers depend on more than talent and hard work. "One of the greatest barriers has been access," she says. "Not necessarily a lack of ability or ambition, but limited access to the networks, funding, mentorship and information that help turn potential into opportunity." Coming from Eswatini has meant learning to navigate what she calls academia's "invisible curriculum" – knowing where opportunities lie, how to approach mentors, build collaborations and recover from rejection. "I have learned that talent matters, but people also need someone to open a door, explain the room and, eventually, trust them to take their place within it."

At Oxford, Fezo will pursue her DPhil within the Nuffield Department of Medicine, joining the Health Systems Collaborative research group in the Centre for Global Health Research. Her research will focus on strengthening maternal healthcare in African health systems, particularly how evidence-based interventions can be adapted into routine care across different contexts.

"Having strong evidence that an intervention works is only part of the journey," she says. Health systems differ, as do healthcare workers, facilities, communities and the women receiving care. Her interest lies in understanding what should be adapted, what needs to

remain unchanged and which contextual factors can help or hinder implementation – ultimately helping to make effective interventions feasible, acceptable and sustainable within the settings they are intended to serve.

Fezo hopes to deepen her expertise in implementation science, mixed-methods research, co-design, and the evaluation and adaptation of complex health-system interventions, while building relationships across her Oxford and African networks. "I hope Oxford will equip me to become a two-way conduit between the Global North and Global South, not simply transferring knowledge in one direction, but connecting expertise, questions, resources and lived health-system realities across contexts."

She also intends to remain actively connected to CERI throughout her DPhil, particularly through SmartPath. "Because my research will remain grounded in African health-system priorities, I see CERI and Oxford as connected parts of the same journey rather than separate chapters."

Ultimately, Fezo wants to become a scientist who can move between research, health systems, communities and innovation while helping to build African-led solutions that influence policy and service delivery. But she also wants the opportunities she has received to create opportunities for others. "Africa has no shortage of talented and curious young scientists, but talent does not always meet opportunity," she says.

Her own journey has shown her what can happen when someone recognises potential and creates room for it to grow. "I am a product of this, where others ahead of me saw me, saw my potential, and opened doors for me."

Now, as another door opens at Oxford, she is thinking about those who will follow. "Most importantly, I want to become the kind of scientist who opens doors, builds collaborative teams and creates room for other people's ideas to flourish."



What is Leadership in Science?

Leadership Week opened the African STARS Fellowship with a focus on the self-awareness, purpose and relationships that shape effective leadership. Fellows Harriet Ng'ombe and Nzube Ekpunobi reflect on the lessons they will carry into their careers and the fellowship ahead.

Nzube Ekpunobi

Nzube Ekpunobi began Leadership Week with an understanding of leadership centred largely on responsibility, decision-making, and the ability to guide others. Over the course of the week, that perspective expanded. He came to see that leadership is not about always having the answers or being the person at the front of the room, but about self-awareness, listening carefully, understanding people, communicating with purpose, building trust, and creating an environment in which others can succeed.

For Nzube, this has particular significance in research, where scientific competence alone is not enough to build effective teams. Researchers work across disciplines, institutions, personalities and perspectives, and the ability to bring those differences together around a shared purpose is an important leadership skill in its own right. As he moves into the next phase of the African STARS Fellowship, Nzube is carrying several principles with him: to lead with intention, listen before responding, remain curious and recognise that meaningful impact can be created not only through his own work, but by enabling others to succeed.

Harriet Ng'ombe

For Harriet Ng'ombe, Leadership Week became much more than an introduction to leadership skills – it was an opportunity to reflect on herself, her journey, and the kind of leader she wants to become. One of her biggest takeaways was the importance of learning to lead yourself before leading others. Through sessions exploring personal leadership, purpose, and *Ubuntu*, she began thinking more deeply about the responsibility that comes with leadership and how greater self-awareness can influence the way we work with and support others.

The emotional intelligence session with Lewin Moodley particularly stayed with her, challenging her to consider how the different parts of her life connect and how understanding herself better can strengthen both her personal growth and her relationships. Harriet arrived ready to learn and left with a deeper understanding of herself and her leadership journey.

For her, the week was an investment in who the fellows are becoming as African leaders – with the next step being to put those lessons into practice and contribute to shaping the Africa they want to see.



Exploring the Future of Multi-Omics

KRISP hosted researchers and industry experts in Durban to explore emerging multi-omics technologies and their potential to shape future research.

text & photo: Paul Harris

KRISP recently welcomed researchers, scientists and industry experts to Durban for the regional Separations Multi-Omics Showcase Roadshow, hosted in partnership with Illumina. The event provided an opportunity to explore the rapidly evolving world of multi-omics and the technologies helping researchers move beyond individual layers of biological data towards a more integrated understanding of complex biological systems.

The programme showcased developments in next-generation sequencing, single-cell analysis, spatial biology and proteomics, while bringing together an impressive line-up of speakers from across the genomics, clinical research and life sciences communities.

Representing KRISP as the regional speaker, Dr Jennifer Giandhari reflected on what a decade of genomic surveillance has looked like in practice and the important role that scientific partnerships and technological innovation have played in supporting this journey.

The event also featured presentations from Dr Lukas Paul on the expanding possibilities of multi-omics, Prof Michael Pepper on molecular pathogenesis and biomarker discovery, Dr Theo Heyns on the translation of sequencing data into meaningful biological insights, and Dr Gary Prescott, who provided a glimpse into the future of proteomics.

For KRISP Lab Manager Dr Sureshnee Pillay, the event offered valuable insight into technologies that could shape future research. "The event was very worthwhile. They introduced new and fascinating technologies, such as the TruPath genome solution, which will make a large impact on how we approach our research going forward."

Dr Giandhari echoed the value of bringing the scientific community together, describing the opportunity to host

experts from across genomics, proteomics and clinical research for a full day of science in Durban as "genuinely special".

Beyond the presentations, the Ask the Experts session encouraged open discussion and engagement between researchers and technology specialists. For KRISP, the showcase highlighted the importance of continued collaboration and capacity building as multi-omics technologies open new avenues for scientific discovery.

With genomics, transcriptomics, proteomics and other biological data increasingly being studied together, the future of multi-omics promises richer insights and new possibilities for research.



SWEAT Africa: Beyond the Pitch

The SWEAT Africa Connect: Football Edition brought researchers, entrepreneurs, students and innovation organisations together for an afternoon on the pitch. Behind the friendly competition is a bigger goal: building an African innovation community that continues to connect, collaborate, and create opportunities.

text: Ameerah Crew & Katrine Anker-Nilssen photos: Jason Avron Samuels

Football has a way of bringing together people who might otherwise never meet. That was the idea behind the SWEAT Africa Connect: Football Edition, held on Friday, 21 August 2026, at the Lentelus Sportsground in Stellenbosch.

The tournament brought players and spectators from across Africa's research and innovation community together for an afternoon of football, conversation and networking.

Teams represented Fibertime, CubeSpace, LaunchLab, the South African Medical Research Council (SAMRC), Stellenbosch Network, GreenX Engineering, Urobo Biotech, Listen, Live and Learn (LLL) and CERi, with LLL ultimately emerging as champions.

But winning was not really the point.

"Why can't we connect the top tech companies in Africa with investors in a fun way?" said SWEAT Africa co-founder Prof Tulio de Oliveira.

The question captures an idea central to SWEAT Africa: bringing together people from different parts of the innovation ecosystem and creating opportunities for connections that might not happen in more formal settings.

SWEAT Africa was established to connect the people, ideas, expertise and investment needed to strengthen Africa's innovation ecosystem. Its inaugural festival, held in Stellenbosch in February 2026, brought together more than 440 participants from 15 African countries and 22 countries globally, including founders, students, investors, researchers and ecosystem builders.

Over two days, founders pitched to investors, researchers explored routes from science to market, and students gained access to people and networks that can often be difficult to reach. Alongside pitches, panels and investment discussions were informal gatherings designed to encourage conversation and relationship-building.

SWEAT Africa describes itself as a "community accelerator": not simply bringing people together for an annual event, but creating relationships and access that can help African ideas move forward.

That community has continued to meet through SWEAT Africa Connect. Throughout 2026, smaller gatherings have brought different parts of the ecosystem together in informal settings, from Biotech & Beers and padel to the latest Football Challenge.

In September, Cape HealthTech Connect will extend the approach into a sector-focused setting, bringing



researchers, clinicians, entrepreneurs, industry leaders, investors and funders together to explore collaboration and commercialisation.

While the formats differ, the purpose remains the same: creating opportunities for people to connect beyond institutional and sector boundaries. The Football Challenge brought that idea into a particularly informal setting. On the pitch, job titles and organisational hierarchies matter less. People play alongside one another, celebrate goals and continue conversations after the final whistle.

As community development specialist, Bushra Razack, reflected: "This event is such a great reminder that entrepreneurship and innovation doesn't happen in isolation. It happens when people come together, engage, share ideas, build trust and sports is such a great way to do it."

A contact made during an afternoon of football could become a collaborator, mentor, investor or source of expertise further down the line. In an innovation ecosystem where moving a promising idea forward can depend on finding the right person, creating opportunities for those encounters matters.

The Connect series is therefore part of a bigger SWEAT Africa story: building a network that remains active between its flagship gatherings.

That community will come together on a larger scale

again on **16 and 17 March 2027**, when **SWEAT Africa** returns to Stellenbosch.

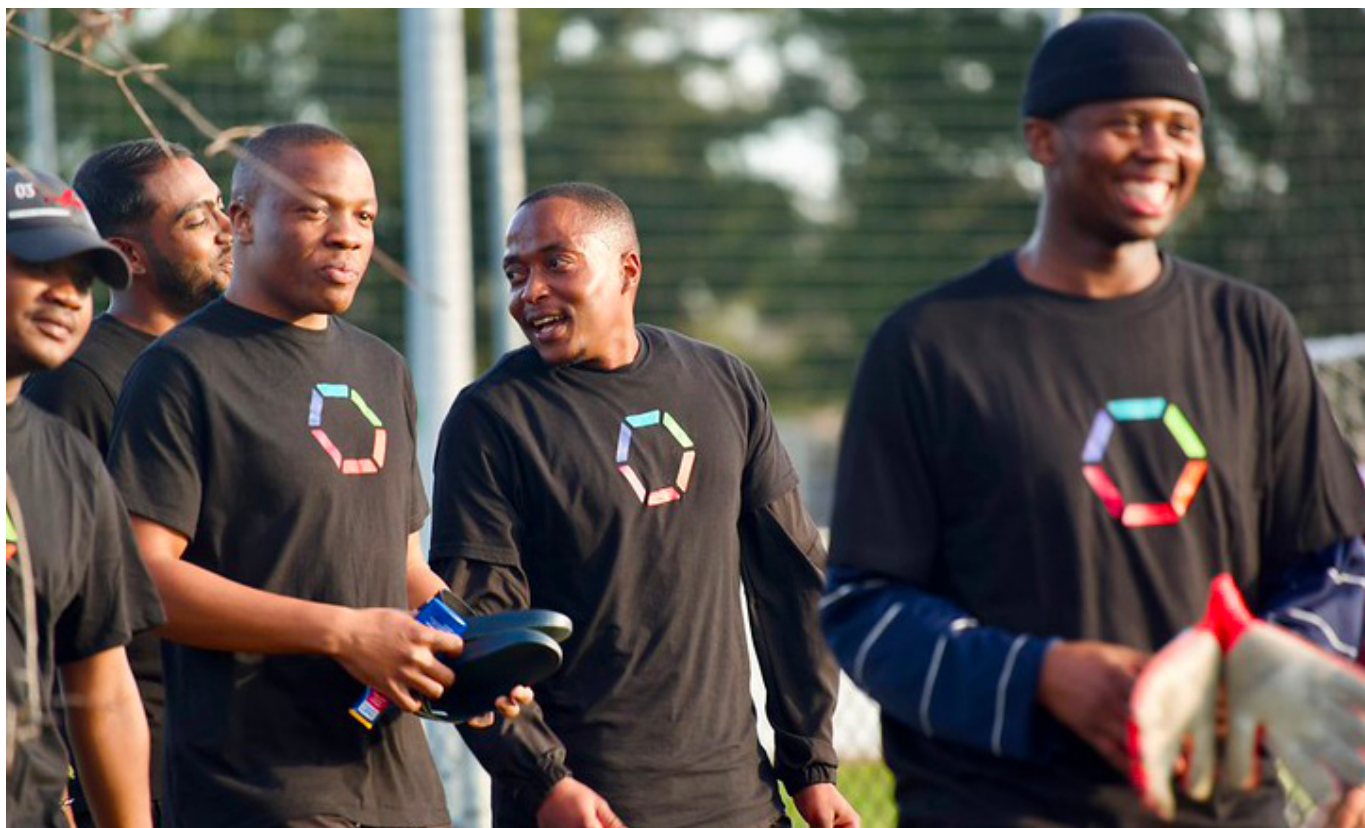
The gathering will bring founders, investors, researchers, students and ecosystem builders together across sectors including fintech, biotech, agritech, healthtech, edtech, artificial intelligence, clean energy, mobility and the circular economy.

Plans include live pitch sessions with investor feedback, mentorship and masterclasses, and curated networking designed to encourage collaboration and investment. For founders, that can mean finding investment, expertise or strategic partners. For researchers, it can create pathways between science and the market. For students, it provides access to people and organisations they may otherwise have few opportunities to meet.

The challenge now is to deepen those connections: linking research with markets, capital with context, and innovation with the systems capable of turning promising ideas into impact.

The scale may be growing, but the principle remains much the same as the one playing out at Lentelus Sportsground: put people who might have something to offer one another in the same space, give them a reason to connect, and see what can grow from there.

Sometimes, that connection begins with an investment pitch or a research idea. And sometimes, it begins with a football.



Media Coverage

Our work showcased in videos and featured on radio/TV.

Ahead of the Tumor: Pro-VC Lecture

In this Pro-VC Open Lecture, Prof Pieter van Rooyen, co-founder of xTenure, explores a new approach to multi-cancer early detection. Rather than relying on costly genomic sequencing, xTenure uses AI and predictive intelligence to determine who should be screened, when and under what conditions, with the aim of making early detection more accessible and affordable..

Watch the full video here: <https://www.youtube.com/watch?v=uV9U8bdfmFM8&t=7s>



From Lab Bench to Boardroom

Filmed during SWEAT Africa 2026, Urmi Prasad Richardson reflects on her journey from scientist to global business leader, sharing lessons on mentorship, translating science into scalable solutions, and building the right ecosystem to turn a vision into impact.

Watch the full video here: <https://www.youtube.com/watch?v=8FNMwfon6co>

Cape HealthTech Connect 2025

Cape HealthTech Connect is a dynamic ecosystem of health and medical technology startups, researchers, and enterprises in the Western Cape of South Africa, with a strong focus on the Cape Town and Stellenbosch regions. The event is organised by Centre for Epidemic Response and Innovation (CERI), LaunchLab CERI-BIO, Stellenbosch Network, and INNOVUS at Stellenbosch University.

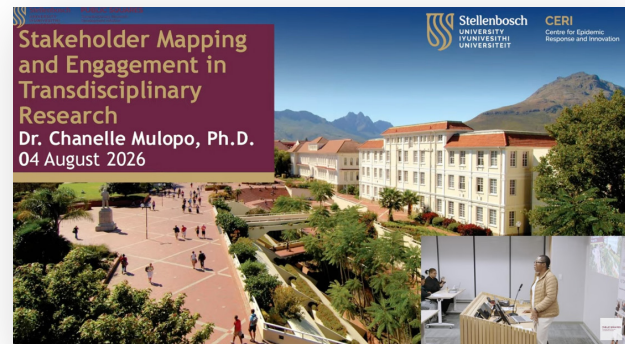
Watch the full video here: <https://www.youtube.com/watch?v=1CGIQSszPXRm>



Stakeholder Mapping & Engagement in TDR

The most impactful research begins by bringing the right voices to the table from the very beginning. Delivered by Dr. Chanelle Mulopo, our third Public Squares Lecture focuses on Stakeholder Mapping & Engagement in a systematic process that helps researchers identify the people, groups, and organisations that can shape, or are shaped by, their research. By engaging the right stakeholders from the outset, researchers can ensure their work is relevant, inclusive, and equipped to address real-world challenges.

Watch the full video here:
youtube.com/watch?si=vpHu9mMnIWkyHtU_&v=IcThg6nFEQA&feature=youtu.be



Summer Series: Women's Health in Africa

This Women's Health in Africa seminar, held in November 2025, brings together Karin Davidson and Chris de Villiers to explore anaemia and postpartum haemorrhage, highlighting how better care, local innovation and improved access can strengthen health outcomes for women across Africa. Hosted by CERi at Stellenbosch University.

Watch the full video here: <https://www.youtube.com/watch?v=jerj1qpsmH0>

SWEAT Africa Padel Connect

SWEAT Africa Connect events bring together researchers, entrepreneurs, students and innovation organisations to sweat, network, and advance innovation in Africa.

Watch the full video here:
<https://www.youtube.com/shorts/pO6MtCO4nQI>



The Future of Genomics is Being Shaped in Africa



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