

## In this issue...

Our feature story this month focuses on an evaluation of the point-of-care Xpert® HIV-1 viral load assay that provides results within 90 minutes.

On page 2 we highlight the Annual Directors' Forum of 15 DST-NRF Centres of Excellence hosted by CAPRISA and UKZN. We also congratulate Dr Sinaye Ngcapu on receiving a grant for a study on HPV and Ms Simone Richardson for being awarded an Exchange Fellowship that will enable her to gain experience at the Ackerman Laboratory in Dartmouth College in the US.

We congratulate Professor Quarraisha Abdool Karim on being awarded the Standard Bank's Top Woman in Science Award, Ms Adele Munsami on receiving the 2016 Victor Nell-SACNA Endowment and Professor Jerome Singh for his Gates Foundation grant on page 3.



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# Point-of-care HIV viral load assays to simplify care

In line with World Health Organisation recommendations and the UNAIDS 90-90-90 target, the South African Department of Health announced the implementation of the universal test and treat strategy for HIV positive patients from 1 September 2016. While ART coverage will rapidly expand to reach the more than 6 million people living with HIV in South Africa, successful lifelong therapy requires routine HIV viral load (VL) monitoring to ensure treatment adherence and control of drug resistance. Simpler, patient-centered and more cost-effective models of care are urgently required that focus on maintaining viral suppression, improve retention in care, and reduce the burden on HIV care providers and laboratories.

In this study, Garrett et al report on their early clinical experience evaluating the point-of-care Xpert® HIV-1 VL assay, which is processed on the GeneXpert® System (Cepheid, Sunnydale, California, USA) against the gold-standard Roche Taqman version 2 assay (Roche Diagnostics, Switzerland). The Xpert® HIV-1 VL is a fully automated real-time molecular cartridge-based assay with a linear range of 40 to 10 million copies/ml of HIV RNA, and can be run in a clinical setting providing a result within 90 minutes.

Investigating samples from 42 women participating in the CAPRISA 002 Acute Infection Study, Xpert® HIV-1 VL corre-



CAPRISA's Laboratory technician, Mr Keenan Govender, Enrolled Nurse, Ms Mandisa Msomi and Dr Nigel Garrett, demonstrating how to perform the Xpert® HIV-1 VL assay

lated strongly with the Taqman assay across the VL spectrum (Spearman  $\rho=0.94$ ,  $p<0.001$ , Figure 1). A Bland-Altman plot showed a mean difference between Taqman and Xpert® results of -0.10 log copies/ml (95% limits of agreement -0.59 to 0.39) with slightly higher values on Xpert®. Importantly, only one woman was misclassified using a VL threshold of 1000 copies/ml, the current threshold to trigger adherence counselling and treatment switches. This woman had a Taqman result of 1302 copies/ml and a Xpert® HIV-1 VL result of 792 copies/ml.

This first clinic-based validation provides some early evidence that point-of-care VL assays may be able to fill an important gap in the rapid scale-up of ART globally. Supported by funding from the National Institute of Health, US, the authors will next implement a chronic HIV care model that includes Xpert® HIV-1 VL testing and task-shifting from professional to enrolled nurses.

## For further reading see:

Garrett NJ, et al. Diagnostic accuracy of the point-of-care xpert HIV-1 viral load assay in a South African HIV Clinic. *JAIDS* 2016; 72(2):e45-48.

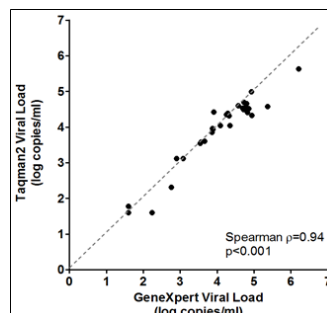


Figure 1. Correlation between Xpert® HIV-1 viral load and Roche Taqman version 2 assays



# DST-NRF Centres of Excellence Annual Directors' Forum

Over 100 of South Africa's leading researchers attended the Annual Directors' Forum for the country's 15 DST-NRF Centres of Excellence held on 25-26 August 2016 and was officially opened by Dr Albert van Jaarsveld, Vice-Chancellor of UKZN.

The Forum was hosted this year by the University of KwaZulu-Natal (UKZN) and CAPRISA and was held at the UNITE building on the UKZN Howard College campus. Dr Phil Mjwara, the Director-General of the Department of Science and Technology (DST) delivered the Keynote Address on 26<sup>th</sup> August. The forum, which showcases several of the country's leading scientists, included an exhibition where each Centre of Excellence (CoE) demonstrated the focus of their research, provided interactive displays, talks and the opportunity to meet and discuss science.

Learners from disadvantaged schools and learners that excelled in maths and science had the opportunity to engage with scientists and post docs and gain valuable insight into the wide range of scientific careers of scientific careers.

Dr Thomas Auf der Heyde Deputy Director- General of the DST took learners on a scientific journey of South Africa's major research and innovation projects in his presentation on 25th August. The exhibition also provided an oppor-



L-R: At the Forum—Prof Salim Abdool Karim Director CAPRISA, Dr Phil Mjwara Director General Department of Science and Technology, Dr Gansen Pillay Deputy CEO Research and Innovation, Support and Advancement , National Research Foundation and Dr Albert van Jaarsveld Vice-Chancellor UKZN

tunity for interested undergraduate and postgraduate students to interact with post-docs and scientists from the CoEs to gain insight into the opportunities for further study and careers in research.



Dr Sinaye Ngcapu

## Scientist receives grant for HPV study

The Poliomyelitis Research Foundation [PRF] grant was awarded to Dr Sinaye Ngcapu, a Scientist at the CAPRISA Mucosal Immunology Laboratory. He has been funded for a period of 3 years to conduct research on the role of vaginal microbiome dybiosis in persistence and clearance of human papillomavirus (HPV) infections in young South African women. This study will elaborate on the ongoing HPV work to support the hypothesis that more diverse vaginal micro-

biomes (including bacterial vaginosis, BV) with mixed pathogenic microorganisms such *Gardnerella*, *Atopobium* and *Prevotella*) are associated with persistence of HPV infections while a Lactobacilli dominated microbiome predicts clearance. Through collaboration with Dr Heather Jaspan at the University of Cape Town, he has established 16s next generation sequencing technology in CAPRISA. This grant will enable him to continue his microbiome work on HPV in CAPRISA.



Ms Simone Richardson

## Science exchange fellowship for PhD

PhD Student, Simone Richardson, was recently awarded a CAVD Science Exchange Fellowship that will enable her to spend time in Margie Ackerman's laboratory at Dartmouth College in Hanover, US. The Ackerman laboratory has developed high throughput tools to evaluate the polyfunctionality of the antibody response with a particular interest in the role of the Fc region. Simone will

study whether modifying the Fc region of CAP256-VRC26.25 changes its ability to mediate neutralization, ADCC, phagocytosis, complement deposition and trogocytosis using the genetic Fc variants of IgG3 identified in donor CAP256. This is Simone's second fellowship. In 2014 she spent 3 months in the laboratory of Dr Galit. Simone is supervised by CAPRISA associate Prof Lynn Morris.



## Quarraisha Abdool Karim receives Top Woman in Science Award

CAPRISA's Associate Scientific Director, Professor Quarraisha Abdool Karim, was awarded the inaugural Top Woman in Science award at the 13<sup>th</sup> Standard Bank Top Women Awards held in Johannesburg on 18<sup>th</sup> August 2016. The award is made to a senior woman executive who has 'demonstrated exceptional performance using science and who has demonstrated admirable leadership, business acumen and strategic foresight.'

Professor Abdool Karim accepted the award with Drs Jinal Bhiman, Nonhlanhla Mkhize and Zanele Ditse, from the National Institute for Communicable Diseases and used the opportunity to profile the next generation of science leadership within the CAPRISA consortium, in whose capable hands the baton will be passed to.



L-R—Dr Zanele Ditse National Institute of Communicable Disease, Ms Lulu Mzili - General Manager: Marketing & Business Development AMSCOR, Professor Quarraisha Abdool Karim, CAPRISA, and Drs Jinal Bhiman and Nonhlanhla Mkhize from the NICD

## Endowment grant for neuropsychology study



Ms Adele Munsami

CAPRISA congratulates Adele Munsami, a study coordinator of the Advanced Clinical Care Programme (ACC) at CAPRISA, who received the 2016 Victor Nell-SACNA Endowment for the Study of Neuropsychology in South Africa.

The endowment is a one-time bi-annual grant aimed at providing financial assistance in support of post-graduate studies towards a qualification in psychology. Munsami a PhD student in Psychiatry, says her research will contribute to the area of neuropsychology in

South Africa, a relatively new and challenging frontier in addressing the HIV pandemic in the country.

The Endowment will be used as seed funding to adapt and contextualise a cognitive reserve and health literacy uptake of psychometric tools that will be translated into isiZulu, and used in a South African setting. It will allow suitable neurocognitive tests to be contextualised and used in this setting as well as broaden the neuropsychological knowledge base within the context of HIV/AIDS in South Africa.

## Gates Foundation funds ethics study

A grant "to develop and articulate African ("Southern") perspectives on the ethical, legal, social, and cultural implications of synthetic biology, and in particular, gene drive applications," was awarded by the Bill and Melinda Gates Foundation to Professor Jerome Singh, Head of Ethics at CAPRISA.

The grant, a total of \$402,000 over a two year period, will "enable the artic-

ulation of African perspectives on synthetic biology, especially in regard to gene drive applications. Drawing on indigenous African knowledge systems, such articulation will allow for the expression of indigenous, contextual, and nuanced Southern perspectives on synthetic biology, specifically, gene drive applications," explained Prof Singh.



Professor Jerome Singh



## Scientific papers published in 2016

- 39\* **Garrett NJ**, Drain PK, **Werner L**, **Samsunder N**, **Abdool Karim SS**. Diagnostic accuracy of the point-of-care xpert HIV-1 viral load assay in a South African HIV Clinic. *JAIDS* 2016; 72(2):e45-48.
- 40 **Upfold M**, **Grobler A**, Suleman F, **Mansoor LE**. Measurement of Vaginal Microbicide Adherence Using Visual Inspection as Compared to Ultra Violet Light Assessment of Returned Empty Gel Applicators. *AIDS and Behavior*. 2016 Jun 29. doi: 10.1007/s10461-016-1465-z [Epub ahead of print]. <http://www.ncbi.nlm.nih.gov/pubmed/27357499>
- 41 **Waxman AM**, **Humphries H**, **Frohlich J**, **Dlamini S**, **Ntombela F**. Young women's life experiences and perceptions of sexual and reproductive health in rural KwaZulu-Natal South Africa. *Culture, Health and Sexuality* 2016 Oct;18 (10):1122-36. doi: 10.1080/13691058.2016.1182215.
- 42 **Daftary A**, Hirsch-Moverman Y, Kassie GM, Melaku Z, Gadisa T, Saito S, Howard AA. A qualitative evaluation of the acceptability of an interactive voice response system to enhance adherence to isoniazid preventive therapy among people living with HIV in Ethiopia. *AIDS and Behavior* 2016 May 24. Doi:10.1007/s10461-016-1432-8 [Epub ahead of print].
- 43 **Archary D**, Seaton KE, **Passmore JS**, **Werner L**, Deal A, Dunphy LI, Arnold KB, Yates NL, Lauffenburger DA, Bergin P, **Liebenberg LI**, **Samsunder N**, Mureithi MW, Altfeld M, **Garrett N**, **Abdool Karim Q**, **Abdool Karim SS**, **Morris L**, and Tomaras GD. Distinct genital tract HIV-specific antibody profiles associated with tenofovir gel. *Mucosal Immunology* 2016 May; 9(3): 821–833.
- 44 Koofhethile CK, Ndhlovu ZM, Thobakgale-Tshabalala C, Prado JG, Ismail N, Mncube Z, Mkhize I, Van der Stok M, **Yende-Zuma N**, Walker BD, Goulder PJ, Ndung'u T. CD8+ T cell breadth and ex vivo virus inhibition capacity distinguish between viremic controllers with and without protective HLA class I alleles. *Journal of Virology* 2016 July; 90 (15):6818-31.
- 45 **Padayatchi N**, **Naidu N**, **Yende-Zuma N**, **O'Donnell MR**, **Naidoo K**, Augustine S, Zumla A, Loveday M. Implementation and Operational Research: Clinical Impact of the Xpert MTB/RIF Assay in Patients With Multidrug-Resistant Tuberculosis. *JAIDS* 2016 September; 73(1):e1-7.

\*continuation from previous newsletter

## Scientific Reviews

Abstracts submitted for review		Manuscripts submitted for review		Ancillary studies submitted for review	
Total#	Cumulative <sup>^</sup>	Total#	Cumulative <sup>^</sup>	Total#	Cumulative <sup>^</sup>
0	354	3	233	0	74

# for month, <sup>^</sup> since committee initiation

## Conference & Workshop Reminders

Conference	Dates	Deadlines		Website
		Abstracts	Registration	
<b>HIV Research for Prevention</b> - Chicago, Illinois, USA	17-20 Oct 2016	11 Apr 2016	1 Jul 2016	<a href="http://hivr4p.org/">http://hivr4p.org/</a>
<b>24th Conference on Retroviruses and Opportunistic Infections (CROI 2017)</b> - Seattle, Washington	13-16 Feb 2017	28 Sept 2016	17 Jan 2017	<a href="http://www.croiconference.org/">http://www.croiconference.org/</a>



National Research Foundation

CAPRISA hosts a DST-NRF Centre of Excellence in HIV Prevention



UNAIDS

CAPRISA is the UNAIDS Collaborating Centre for HIV Research and Policy



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