



In this Issue

Our feature article this month focuses on the importance of chemokines as determinants of HIV acquisition.

On page 2 Prof Salim Abdool Karim and Aisha Abdool Karim argue that fake news is the new threat in the fight against AIDS and Prof Lynn Morris is profiled by Tony Kirby in *The Lancet Infectious Diseases*.

We announce two new collaborative studies that received funding from the National Institutes of Health and the Canadian Institutes for Health Research on page 3 and we congratulate CAPRISA Research Pharmacist Anushka Naidoo for being awarded the best presentation award at the 2017 International Conference on Tuberculosis Therapy.

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CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

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Genital-systemic chemokine gradients and risk of HIV in women

Research by the CAPRISA Mucosal Immunology research team was recently published in *JAIDS*. The study shows that mucosa-biased gradients of IP-10, macrophage inflammatory protein-1b, IL-8, and monocyte chemoattractant protein-1 are associated with an increased risk of HIV infection.

Understanding host predictors of HIV risk has important implications for risk profiling and design of better HIV prevention methods. Mucosal and systemic immune mediators have been independently associated with HIV acquisition risk, but the relationship between compartments remains unclear.

In this study the concentrations of 12 cytokines were compared in matched plasma and cervicovaginal lavages (CVLs) from 57 HIV-positive women before their acquisition of HIV (cases) and 50 women who remained uninfected (controls) during the CAPRISA 004 trial.

Although genital IP-10 concentrations were significantly higher in cases, plasma IP-10 concentrations were inversely associated with HIV risk. Comparing differences in mucosal and systemic cytokine concentrations between cases and controls, mucosa-biased gradients indicating higher CVL relative to plasma concentrations were observed for all 5 chemokines

in the panel. Four were significantly associated with HIV acquisition, including IP-10 (odds ratio [OR] 1.73, 95% confidence interval [CI]: 1.27 to 2.36), macrophage inflammatory protein-1b (OR 1.72, 95% CI: 1.23 to 2.40), interleukin (IL)-8 (OR 1.50, 95% CI: 1.09 to 2.05), and monocyte chemoattractant protein-1 (OR 1.36, 95% CI: 1.01 to 1.83). None of the other 7 cytokines tested predicted HIV risk. Decision tree analyses (figure) confirmed this association, with gradients of IP-10, IL-8, and granulocyte-macrophage colony-stimulating factor concentrations correctly classifying 77% of HIV outcomes.

These data underscore the importance of chemokines as determinants of HIV acquisition. Further studies to validate these findings could provide critical biomarkers for HIV risk profiling, allowing accurate classification of risk to implement more targeted HIV prevention strategies or conduct more rapid efficacy assessments of HIV prevention candidates. Translation of these findings through safe and effective manipulation of chemokine gradients, or by limiting their production or effects, could represent a novel and targeted host-directed HIV prevention modality.

For more information see: Liebenberg LJ, et al. Genital – Systemic chemokine gradients and the risk of HIV acquisition in women. *J AIDS* 2017;74:318–325.

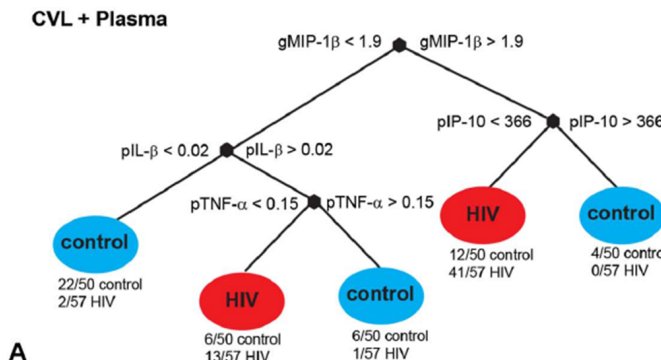


Figure. Decision tree analyses to identify the most influential combinations of genital and plasma, cytokine measurements associated with HIV outcome. Cytokine concentrations determined in cases (n = 57) and controls (n = 50) were modeled to include the concentrations of all 12 cytokines in genital and plasma specimens



Fake news: A new threat to the fight against AIDS

Fake news is emerging as a scourge; influencing amongst others, presidential elections and share prices. Recently a fake news story has re-emerged and is doing the rounds, aimed at deliberately undermining the fight against AIDS. Pretending to be genuine, an image of newspaper article with a photo of eminent scientist, Robert Gallo in his laboratory claims that he created HIV, the virus that causes AIDS, as “a secret weapon to wipe out the African race”. While the story is, without doubt, simply nonsense and lies, it plays on the fanciful imagination of those who persist in wanting to believe conspiracy theories about the west trying to destroy Africa.

Fake news is not new – just a reincarnation of what was previously called “propaganda” or “disinformation”. What is new, however, is the way the internet and social media has given these age-old enemies of the truth, an opportunity to spread uncontrollably to every corner of the globe almost instantaneously. These platforms currently provide an unfettered avenue to spread lies and falsehoods without identification or consequences for the purveyors of fake news.

Of deep concern is the detrimental impact fake news on health issues can have on the wellbeing and lives of million of people, particularly the poor and vulnerable in society. Fake news is particularly dangerous when reports on HIV/AIDS proliferate falsehoods about the epidemic and puts our society at greater risk. South Africa is in a particu-

larly precarious position, given that the Thabo Mbeki era has influenced sectors of the South African population to consider and, in some instances, believe outrageous conspiracies on HIV and AIDS. AIDS denialism and far-fetched claims of prevention and treatment for HIV/AIDS has made the South African population more susceptible to misinformation about the epidemic.

These fake claims about the origins of HIV only serve to draw the focus away from the reality of the HIV/AIDS epidemic, such as the increasing number of adolescent girls and young women being infected with HIV in South Africa. In this context, distractions with falsehoods undermine current research underway to develop an HIV vaccine and new ways to help women protect themselves from HIV. The current online landscape allows everyone a space to have their say and state their opinions, an important facet to freedom of speech and freedom of expression. However, it is important to note that an opinion should be supported by facts and is not a means through which to spread misinformation. In a time where citizen journalism is on the rise, it is the responsibility of the individual to be circumspect and refrain from baseless content that can have serious ramifications.



Dr Robert Gallo

This is an excerpt from the original article written by Professor Salim Abdool Karim Director CAPRISA and Ms Aisha Abdool Karim CAPRISA Research Placement, published in The Daily News on 8th February 2017.

Passionate about HIV vaccine research

The February issue of *The Lancet Infectious Diseases* published a profile on Professor Lynn Morris, Head of the HIV Research section of the Center for HIV and STIs at the National Institutes of Communicable Diseases (NICD) and CAPRISA Research Associate. In an interview with Tony Kirby, Professor Morris speaks about her goal of being part of the team that discovers an HIV vaccine and her highly acclaimed scientific work on broadly neutralising antibodies. Dr John Mascola, Director of the Vaccine Research Center and member of the CAPRISA scientific advisory board, said, “When we do finally learn how to make an effective HIV vaccine, it is like-

ly that we will look back at Lynn’s work as the pivotal first step toward understanding how to generate protective antibodies against HIV.”

The full article by Tony Kirby can be accessed here: [http://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(17\)30021-X/abstract](http://www.thelancet.com/journals/laninf/article/PIIS1473-3099(17)30021-X/abstract)



Prof Lynn Morris, CAPRISA Research Associate heads the HIV Research section of the Center for HIV and STIs at the NICD in South Africa.



A new grant to study vaginal insertion practices



Prof Jo-Ann Passmore

A new study that focuses on mucosal injury from sexual trauma (MIST) was recently awarded to principal investigators Professor Jo-Ann Passmore from CAPRISA and Dr Heather Jaspan from the Seattle Children's Research Institute. This National

Institutes of Health grant, over a four year period, will fund the scientists' work to investigate socio-behavioural, physiological and biological factors associated with vaginal insertion practices, specifically tobacco and alum, in women at high risk for HIV infection.

The study, which commenced in 2017, will include a cohort of 300 adolescents and 100 adult women from Vulindlela in KwaZulu-Natal. "The behavioral, physiological and immunological factors that may render younger women more vul-

nerable to HIV acquisition than older women are not well understood," explains associate Professor Passmore who heads the HIV Mucosal Immunology group in the Division of Medical Virology at UCT.

Professor Passmore says that "the skewing of HIV risk towards young women is likely fueled by high rates of intimate partner violence; high levels of male control in a woman's current relationship; and a preference for dry sex (vaginal insertion practices to dry/tighten the vagina)". This cohort study aims to evaluate the reproductive anatomical, immunological and microbiological characteristics following both consensual vaginal sex, sexual violence and intravaginal product use in female adolescents compared to older women, at 48 hours following sex (to define biomarkers of mucosal trauma) and at 7 days post exposure (to assess wound healing and epithelial barrier repair).

Accolade for CAPRISA's Research Pharmacist

CAPRISA's Senior Research Pharmacist, Ms Anushka Naidoo, scooped the best presentation award at the 19th International Conference on Tuberculosis Therapy (ICTT 2017), hosted by the World Academy of Science, Engineering and Technology. Her presentation focussed on the effect of rifampicin and efavirenz on moxifloxacin concentrations when co-administered in patients with drug susceptible tuberculosis (published in the Journal of Antimicrobial Chemotherapy 2017:doi:10.1093/jac/dkx004).

The study was conducted within the Improving Retreatment Success Clinical (IMPRESS) trial, which compared the pharmacokinetics of moxifloxacin during co-treatment with rifampicin or when dosed alone in African patients with drug suscepti-

ble, recurrent tuberculosis, the majority of whom were HIV co-infected and on efavirenz-based ART. "The conference was a really great opportunity to share our study findings with the TB research community," said Naidoo. She said receiving the best presentation award "was really exciting and an honour for myself and the study team."

The ICTT is considered the premier interdisciplinary forum for the presentation of new advances and research results in the field of tuberculosis therapy.



Ms Anushka Naidoo

Role of interferon exposure in acquisition of HIV

Dr Lyle McKinnon, a CAPRISA Research Associate, was recently awarded a grant from the Canadian Institutes for Health Research to investigate mucosal type I IFN desensitization and the risk of HIV acquisition. The project is a collaboration between the University of Manitoba, University of Nairobi and CAPRISA and includes co-investigators Dr Tom Hope, Professor at Northwestern University; Dr Thomas Murooka, Associate Professor at University of Manitoba; and Steven Bosinger, Director of the Yerkes Functional Genomics Team Emory University.

This study will investigate whether prolonged

expression of type I interferons in the female reproductive tract increases HIV risk by impairing HIV target cells in their ability to upregulate antiviral interferon pathways, thereby increasing their ability to support HIV replication at the time of HIV exposure in the mucosa. This study will contribute to research regarding how the immune system is exploited by HIV at the time of virus transmission and will provide information on the role of interferon exposure in acquisition of HIV. The research produced by this study has the potential to provide a better understanding of HIV transmission and could have important implications on risk profiling in clinical interventions.



Scientific papers published in 2017

- 8* **Garrett NJ**; McGrath N; **Mindel A**. Advancing STI care in low/middle-income countries: has STI syndromic management reached its use-by date? *Sexually Transmitted Infections* 2017; 93(1):4-5.
- 9 **Thobakgale C**, Naidoo K, **McKinnon LR**, Werner L, **Samsunder N**, **Abdool Karim SS**, Ndung'u T, Altfeld M, **Naidoo K**. Interleukin 1-beta (IL-1 β) production by innate cells following TLR stimulation correlates with TB recurrence in ART-treated HIV infected patients. *J Acquir Immune Defic Syndr*. 2017 ; 74(2):213-220.
- 10 Doria-Rose NA, Altae-Tran HR, Roark RS, Schmidt SD, Sutton MS, Louder MK, Chuang GY, Bailer RT, Cortez V, Kong R, McKee K, O'Dell S, Wang F, **Abdool Karim SS**, Binley JM, Connors M, Haynes BF, Martin MA, Montefiori DC, **Morris L**, Overbaugh J, Kwong PD, Mascola JR, Georgiev IS. Mapping Polyclonal HIV-1 Antibody Responses via Next-Generation Neutralization Fingerprinting. *PLoS Pathogens* 2017; 13(1):e1006148. doi: 10.1371/journal.ppat.1006148.
- 11 **de Oliveira T**, **Kharsany ABM**, Gräf T, Cawood C, Khanyile D, Grobler A, Puren A, Madurai S, **Baxter C**, **Abdool Karim Q**, **Abdool Karim SS**. Transmission networks and risk of HIV infection in KwaZulu-Natal, South Africa: a community-wide phylogenetic study. *Lancet HIV* 2017; 4(1):e41-e50. doi: 10.1016/S2352-3018(16)30186-2.
- 12 **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 & Behavior*. 2017; 21(2): 462-469.
- 13 **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 & Behavior* 2017: doi:10.1007/s10461-016-1432-8.
- 14 **Liebenberg LJ**, **Masson L**, Arnold KB, **McKinnon LR**, **Werner L**, Proctor E, **Archary D**, **Mansoor LE**, **Lauffenburger DA**, **Abdool Karim Q**, **Abdool Karim SS**, **Passmore JS**. Genital – Systemic chemokine gradients and the risk of HIV acquisition in women. *J Acquir Immune Defic Syndr* 2017;74:318–325.

*continuation from previous newsletter

Scientific Reviews

Abstracts submitted for review		Manuscripts submitted for review		Ancillary studies submitted for review	
Total#	Cumulative [^]	Total#	Cumulative [^]	Total#	Cumulative [^]
0	382	1	212	0	74

for month, [^] since committee initiation

12TH INTERNATIONAL WORKSHOP ON

HIV TRANSMISSION

PRINCIPLES OF INTERVENTION

PARIS, FRANCE • 21-22 JULY 2017

Don't miss the opportunity to attend the 12th International Workshop of HIV Transmission, which is scheduled to take place on July 21 and 22, 2017 in Paris, France, prior to IAS 2017. Should you wish to attend, please contact Cheryl Baxter cheryl.baxter@caprisa.org

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

CAPRISA is the UNAIDS Collaborating Centre for HIV Research and Policy

Partner institutions: