

In this Issue...

In our cover story we summarise findings from the mucosal immunology team that indicates that women with persistent genital inflammation are at an increase risk for acquiring HIV infection.

On page 2 we highlight the visit of Drs John and Elaine Gallin aimed at strengthening clinical research capacity in South Africa and fostering ongoing collaboration with the NIH and US based Philanthropic organisations.

CAPRISA's participation in the Science budget exhibition in Cape Town and the Science Literacy Training Workshop designed for HIV and social activists is featured on page 3.



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Persistent genital inflammation increases HIV risk

Research conducted by the mucosal immunology team at CAPRISA indicates that the risk of HIV acquisition in South African women was significantly higher in those with persistently raised genital inflammatory cytokine concentrations (including HIV target cell-recruiting chemokines MIP-1 α , MIP-1 β and IP-10).

This study, which was led by Dr Lindi Masson, investigated whether genital inflammation influenced HIV acquisition.

Twelve selected cytokines, including 9 inflammatory cytokines and chemokines (IL-1 α , IL-1 β , IL-6, TNF- α , IL-8, IP-10, MCP-1, MIP-1 α , MIP-1 β), hematopoietic IL-7 and GM-CSF, and regulatory IL-10 were measured prior to HIV infection in cervicovaginal lavages from 58 HIV seroconvertors and 58 matched uninfected controls and plasma from a subset of 107 of these women from the CAPRISA 004 tenofovir gel trial.

HIV seroconversion was associated with raised genital inflammatory cyto-

kines. The risk of HIV acquisition was significantly higher in women with evidence of genital inflammation, defined by at least 5 of 9 inflammatory cytokines being raised [OR 3.2; 95% confidence interval 1.3-7.9; $p=0.014$] (Figure). Genital cytokine concentrations were persistently raised (for about one year before infection), with no readily identifiable cause despite extensive investigation of several potential factors, including sexually transmitted infections.

While a fraction of the genital inflammation may be attributed to asymptomatic STIs, the dominant cause of genital inflammation remains to be elucidated. Treatment of asymptomatic STIs and topical agents to modulate inflammation are potentially important mechanisms for reducing susceptibility to HIV infection, especially in young women, where the epidemic is most severe in Africa.

For further reading see:

Masson L, et al. Genital inflammation and the risk of HIV acquisition in women. *Clinical Infectious Diseases* 2015 ; DOI: 10.1093/cid/civ298

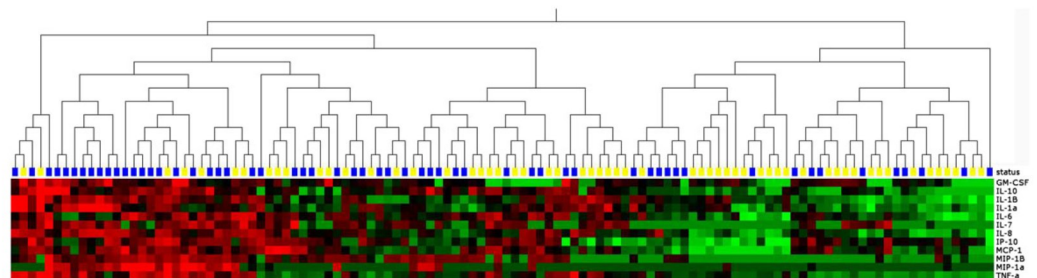


Figure . Unsupervised hierarchical clustering was used to visualize the variation in cytokine concentrations in individual women and to cluster women according to the similarities of their cytokine expression profiles (using Qlucore Omics Explorer). Women who later became infected with HIV ($n = 58$; blue blocks) had upregulated pre-infection cervicovaginal lavage cytokine concentrations and tended to cluster together, while women who remained HIV-uninfected had lower cytokine concentrations and also clustered together ($n = 58$; yellow blocks).



Strengthening clinical research capacity in South Africa

The Director of the Clinical Centre at the National Institutes of Health (NIH), Dr John Gallin, was in South Africa in May to co-host a workshop in Cape Town on Clinical Research with the South African Medical Research Council as part of ongoing efforts to strengthen local clinical research capacity. While in South Africa, Drs John and Elaine Gallin also visited Durban and met with representatives from CAPRISA and faculty from the University of KwaZulu-Natal (UKZN).



L-R: Dr Nesri Padayatchi Deputy Director CAPRISA, Dr John Gallin, Professor Quarraisha Abdool Karim Associate Scientific Director and Dr Elaine Gallin

Dr Gallin presented an overview of the NIH Clinical Research Centre and training opportunities for South African clinicians to the DVC and Deans of the College of Health Sciences.

The NIH Clinical Research Training Program is a highly respected model which offers 'the best and the brightest' students the opportunity to spend a year at the NIH-campus for an intensive clinical or translational research project. The participants, known as Fellows, are paired with senior NIH physician-scientist mentors on projects that are similar to their interests. Dr Gallin explained that the Fellows had the opportunity to gain practical experience in laboratories, clinics and wards with leading NIH researchers. Emphasis is placed on translational research, i.e., the evolution of basic research into patient therapies.

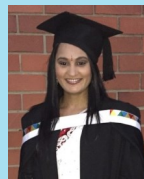
Dr Elaine Gallin, now a special advisor to QE Philanthropies, was the first Program Director for Medical Research at the Doris Duke Charitable Foundation. During her tenure she made a visionary investment in establishing the Doris Duke Medical Research Institute at the Nelson R Mandela School of Medicine. "The subsequent expansion of research infrastructure by the NIH and the HHMI and the impact it has made on knowledge generation and capacity building of a new generation of clinical researchers is testament to Elaine Gallin's profound vision 15 years ago." said Professor Quarraisha Abdool Karim CAPRISA's Associate Scientific Director.

They also visited the Vice-Chancellor of UKZN, Dr Albert van Jaarsveld who shared his vision of using science and technology for social transformation.



Salim Abdool Karim (centre) visited FHI360 in May and gave a talk on exploring new collaboration opportunities with our long-time collaborators at FHI360. Also in the photo are (from L-R): Kathy Hindson, Laneta Dorflinger, Amanda Troxler, Ward Cates, Kristine Torjesen and Kavita Nanda.

Congratulations to Mr Hilton Humphries (top), Project Director for the Vulindlela Adolescent Sexual Reproductive Health Service Delivery Programme, on his recent appointment to the University KwaZulu-Natal's Biomedical Research Ethics Committee and Ms Yajna Duki (bottom), a Quality Assurance Officer at CAPRISA, who recently graduated with a Master's Degree in Medical Science.





Science and Innovation: Driving Forces for Future Growth

The 2015 Science budget vote exhibition was held at Parliament in Cape Town on 21 May 2015. The theme of the exhibition was "Science and Innovation: Driving forces for future Growth". Exhibitors showcased projects supported by the Department of Science & Technology. This included CAPRISA, the Council for Scientific and Industrial Research, the National Research Foundation, the Human Sciences Research Council, the Technology Innovation Agency, the South African National Space Agency, and the Academy of Science of South Africa.

The Minister of Science and Technology, Dr Naledi Pandor, as well as grade 6-10 learners from various schools in the Cape Town area toured the exhibit to learn about science.

As the designated DST-NRF Centre of Excellence in HIV Prevention, CAPRISA was represented at the exhibit by Dr Tanuja Gengiah. CAPRISA's Demonstrations included new technologies for HIV prevention in women were showcased from completed, current and planned clinical trials at CAPRISA.



Dr Tanuja Gengiah, Head of Pharmacy at CAPRISA with Minister Naledi Pandor at the Science Budget vote Exhibition

CAPRISA hosts scientific literacy workshop with the TAC, Sonke Gender Justice and Section 27



CAPRISA's scientists Mr Hilton Humphries, Dr Janet Frohlich and Dr Leila Mansoor, together with Ms Gethwana Mahlase of Comosat, facilitated the training workshop at the CAPRISA Vulindlela Clinical Research site for members of TAC, Sonke Gender Justice and Section 27

CAPRISA conducted training on scientific literacy with Sonke Gender Justice, TAC and Section 27 over three days in May. The training consisted of a day at the Vulindlela Research Clinic to get a sense of the research process and to meet with community activists for an interactive session on outreach work in a rural community. The second and third day consisted of didactic sessions on the current state of the HIV epidemic, an update on microbicides and HIV prevention science, acute HIV Infection, early ART, HIV vaccines and cure and an update on HIV and TB treatment.



Scientific papers published in 2015

- 25* **Masson L, Passmore JA, Liebenberg LJ, Werner L, Baxter C, Arnold KB, Williamson C, Little F, Mansoor LE, Naranbhai V, Lauffenburger DA, Ronacher K, Walz G, Garrett NJ, Williams BL, Couto-Rodriguez M, Hornig M, Lipkin WI, Grobler A, Abdool Karim Q, Abdool Karim SS.** Genital inflammation and the risk of HIV acquisition in women. *Clinical Infectious Diseases* 2015 ; DOI: 10.1093/cid/civ298
- 26 **O'Donnell M, Pillay M, Pillay M, Werner L, Master I, Wolf A, Mathema B, Coovadia Y, Mlisana K, Horsburgh R, Padayatchi N.** Primary capreomycin resistance is common, and associated with early mortality in extensively drug-resistant tuberculosis (XDR-TB) patients in KwaZulu-Natal, South Africa. *JAIDS* 2015; doi: 10.1097/QAI.0000000000000650
- 27 Kaul R, Prodger J, Joag V, Shannon B, Yegorov S, Galiwango R, **McKinnon L.** Inflammation and HIV Transmission in Sub-Saharan Africa. *Curr HIV/AIDS Rep* 2015; DOI 10.1007/s11904-015-0269-5
- 28 **Ngcapu S, Masson L, Sibeko S, Werner L, McKinnon LR, Mlisana K, Shey M, Samsunder N, Abdool Karim SS, Abdool Karim Q, Passmore J-AS.** Lower concentrations of chemotactic cytokines and soluble innate factors in the lower female genital tract associated with the use of injectable hormonal contraceptive. *Journal of Reproductive Immunology* 2015; 110 (2015) 14–21.
- 29 Jacobson KB, Tate M, Eksteen F, Moll A, **Padayatchi N, Friedland G, Shenoi S.** Care of the patient with XDR-TB who has failed treatment. *Lancet Respiratory Medicine* 2015; 3(4):269-70.
- 30 **O'Donnell MR, Pym A, Jain P, Munsamy V, Wolf A, Karim F, Jacobs WR, Michelle H, Larsene.** Novel Reporter Phage for Detection of Mycobacterium tuberculosis and Rifampicin Resistance in a Population Where HIV Is Endemic. *Journal of Clinical Microbiology* 2015; 53(7): doi:10.1128/JCM.03530-14.
- 31 **Padayatchi N, Naidu N.** Paediatric chemoprophylaxis for child contacts of patients with drug-resistant tuberculosis: Are current guidelines effective in preventing disease? *South African Medical Journal* 2015;105(4):328-329.
- 32 Scheepers C, Shrestha RK, Lambson BE, Jackson KJ, Wright IA, Naicker D, Goosen M, Berrie L, Ismail A, **Garrett N, Abdool Karim Q, Abdool Karim SS, Moore PL, Travers SA, Morris L.** Ability To Develop Broadly Neutralizing HIV-1 Antibodies Is Not Restricted by the Germline Ig Gene Repertoire. *Journal of Immunology* 2015;194(9):4371-8.

*continuation from previous newsletter

Scientific Reviews

Abstracts submitted for review		Manuscripts submitted for review		Ancillary studies submitted for review	
Total#	Cumulative ^a	Total#	Cumulative ^a	Total#	Cumulative ^a
0	326	1	209	3	61

for month, ^a since committee initiation

Conference & Workshop Reminders

Conference	Dates	Deadlines		Website
		Abstracts	Registration	
International Conference on HIV and AIDS - London, United Kingdom	25-26 May 2015	25 Nov 2014	25 Jan 2015	https://www.waset.org/conference/2015/05/london/ICHA
7th South African AIDS Conference - Durban, South Africa	9-12 Jun 2015	20 Jan 2015	22 May 2015	http://www.saids.co.za/
8th IAS Conference on HIV Pathogenesis, Treatment and Prevention (IAS 2015) - Vancouver, British Columbia, Canada	19-22 July 2015	27 Jan 2015	25 Feb 015	http://www.ias2015.org/
46th Union World Conference on Lung Health - Cape Town, South Africa	2-6 Dec 2015	24 Apr 2015	20 Aug 2015	http://capetown.worldlunghealth.org/
World STI & HIV Congress - Brisbane, Australia	13-16 Sept 2015	13 April 2015	31 August 2015	http://www.worldsti2015.com/ehome/index.php?eventid=91027&
International Conference on AIDS & STI in Africa (ICASA) - Hammamet, Tunisia	8-13 Nov 2015	May 2015	29 Oct 2015	http://icasa2015tunisia.org/



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



CAPRISA is the UNAIDS Collaborating Centre for HIV Research and Policy



CAPRISA hosts a MRC HIV-TB Pathogenesis and Treatment Research Unit

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