



Foreword:

The concept behind this newsletter is that anyone with 15 minutes to spare can learn about the work of SATuRN.

The newsletter is presented as a PDF document with links to complete articles at the bioafrica.net website.

In this second issue of our newsletter we have included interesting news, blogs, reports, tweets, publications and training information produced by our network.

We hope you enjoy it and find it informative. We welcome any feedback about content or format.

Produced by: Tulio de Oliveira, Richard Lessells, Lungani Ndwandwe, Wolfgang Preiser, Gert van Zyl, Susan Engelbrech & Chris Seebregts

Highlights:

Report: 1st Nurses & Health Care Workers Drug Resistance Workshop

News: SATuRN at the 3rd SA TB conference

Upcoming event: SA HIV Clinicians Society Conference, CTICC, 25-28 November 2012

Upcoming event: 7th Southern African HIV & TB Drug Resistance & Clinical Management Workshop, CTICC, 28-29 November 2012

Featured Partner: Division of Medical Virology, Stellenbosch University

Featured Partner: New TB centre at the London School of Hygiene and Tropical Medicine

Art/Science: BioAfrica/SATuRN Art & Science section is launched

Brief: Our work and other related topics of interest



News: BioAfrica/SATuRN Art & Science section is open!

Author: Tulio de Oliveira - 2012-04-20

"In this exciting new section of bioafrica.net we feature creative projects that celebrate, investigate and/or communicate biomedical science. Here, we share blogs, news articles, tweets, audio and audiovisual media to increase public awareness of innovative collaborations between art and science."

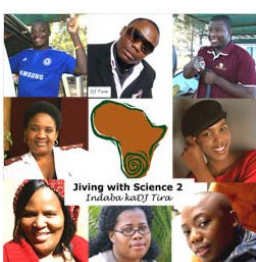
Link: <http://www.bioafrica.net/artscience.php>

Cartoon: HIV as a lion, CD4 as soldiers and ARVs make the soldiers stronger! (translated to Zulu)

Author: Tulio de Oliveira - 2012-04-14

"This series of presentations used cartoons that portray HIV as a lion (Ibhubesi translation in isiZulu), CD4 cells as soldiers (Amasosha, isiZulu translation) and that show how ARVs make the soldiers stronger as they provide them with armor. BioAfrica and SATuRN use art to present scientific facts. We are involved in many community engagement activities."

Link: <http://www.bioafrica.net/artscience.php?id=7>



Music: Jiving with Science CD 2 - Indaba kaTira - HIV testing, ARVs, positive living and HIV prevention

Authors: Astrid Treffry-Goatley, Mduduzi Mahlinza, John Imrie – 2012-04-13

"CD 2 is targeted at the youth in the community and includes a selection of popular hip-hop, house and RnB tracks. It is endorsed by the local star DJ Tira and features his songs and voice as the main character in the story. The narrative follows Tira on a journey by taxi as he travels to meet different people and chats to them about Africa Centre research, HIV testing, ARVs, positive living and HIV prevention."

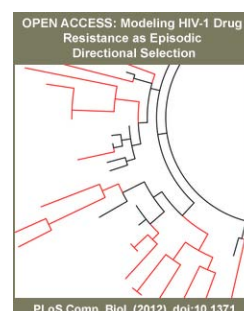
Link: <http://www.bioafrica.net/artscience.php?id=2>

Publication: Modeling HIV-1 Drug Resistance as Episodic Directional Selection

Authors: Ben Murrell, Tulio de Oliveira,

"A team from the SA MRC, Africa Centre, Stellenbosch and UCSD have developed new class of models that allow for the episodic and directional nature of adaptive evolution performs very well at recovering known drug resistance mutations. These evolutionary models can be useful at identifying unknown HIV and TB resistance-associated mutations."

Links: <http://www.bioafrica.net/publications.php?id=56>



Blog: National Strategic Plan 2012-2016: Integrating research and all sectors of society to fight HIV, STIs and TB in South Africa

Authors: , Lungani Ndwandwe, Tulio de Oliveira

"In preventing the spread of HIV, STIs and TB infections and to mitigate the impact of the dual HIV and TB epidemics in society, the Department of Health (DoH) has developed a National Strategic Plan (NSP) that will shape the department activities for the next 5 years, with regards to the handling of these diseases."

Link: <http://www.bioafrica.net/blogs.php?id=13>

Report: 1st Nurses & Health Care Workers Drug Resistance Workshop

One of the major challenges of any breakthrough in medical research or medical intervention is drug resistance. SATuRN's research has proved the unfortunate fact that HIV drug resistance in adults and children in rural areas is very common. In order to generate awareness of this subject, we organized and hosted our first nurses and health care workers HIV & TB drug resistance workshop.

This workshop was organized by the Africa Centre's and SATuRN's HIV drug resistance teams, with the support of a paediatrician, dietician, and social workers and in partnership with the Hlabisa Department of Health (DoH). The workshop was very well attended with 58 participants, which meant that we ran at our auditorium's full capacity.

News: 7th Southern African HIV & TB Drug Resistance & Clinical Management Workshop, CTICC, 28-29 November 2012

We will run our annual meeting together with the **SA HIV Clinicians Society Conference 2012** at the CTICC. The workshop is targeted at clinicians, virologists, nurses, medical students and researchers working in the public and private sector who are currently involved in the treatment of patients with ARVs and anti-TB medication in Southern Africa.

The workshop is free of charge but applicants are responsible for all accommodation and travel costs. A limited number of travel sponsorships will be available to clinicians that cannot afford the travel costs and who will contribute to the workshop.

The workshop generated great discussion and increased awareness of this subject: "This workshop has been helpful to me, especially since I work closely with patients on ARVs... my task is to educate patients about the importance of taking ARVs and most importantly let them know that taking ARVs is a long term commitment", said Mthunzi Mlambo, a clinic HIV counsellor. He continued to say "...This workshop has changed the way I will now deal with my patients, in particular on issues of disclosure and their viral load results".

Link: <http://www.bioafrica.net/report.php?id=12>

by Lungani Ndwandwe & Tulio de Oliveira

Keynote speakers:

Prof. Anne-Mieke Vandamme, REGA, Belgium
Prof. Mark A. Wainberg, McGill, Canada
Prof. Michael Jordan, WHO, Switzerland
Prof. Paul Van Helden, Stellenbosch, SA
Prof. Peter Godfrey-Fausset, LSHTM, UK
Prof. Robert Shafer, Stanford, US
Prof. Tobias Rinke de Wit, PharmAccess, ND
Prof. William Bishai, K-RITH, South Africa

Speakers:

Prof. Chris Seebregts, MRC, South Africa
Dr. Cloete Van Vuuren, UFS, South Africa
Prof. Francesca Conradie, Wits/Right2Care, South Africa
Dr. Gert Van Zyl, Stellenbosch, South Africa
Dr. Gillian Hunt, NICD, South Africa
Dr. Ricardo Camacho, Egas Moniz, Portugal
Dr. Richard Lessells, LSHTM, UK
Dr. Theresa Rossouw, UP, South Africa
Dr. Tulio de Oliveira, Africa Centre, South Africa and many others...

Links: <http://www.bioafrica.net/workshops/7thsaturnresistanceworkshop.html> , <http://www.sahivsoc2012.co.za>

Upcoming event: Sessions that include drug resistance at the 3rd SA TB conference. SATuRN will be tweeting live from the conference!



Tuesday 12 June

Pre-conference Satellite Session 1: Current TB Diagnostics and Implications for Policy

Wednesday 13 June

Track 1, Session 7: Diagnostics and Guidelines

Track 2, Session 6: Paediatric TB

Track 2, Session 8: Operationalising Xpert® MTB / RIF

Satellite Session 3, CDC: MDR/XDR: Clinical Perspective

Thursday 14 June

Track 1, Session 19: Diagnostic Development

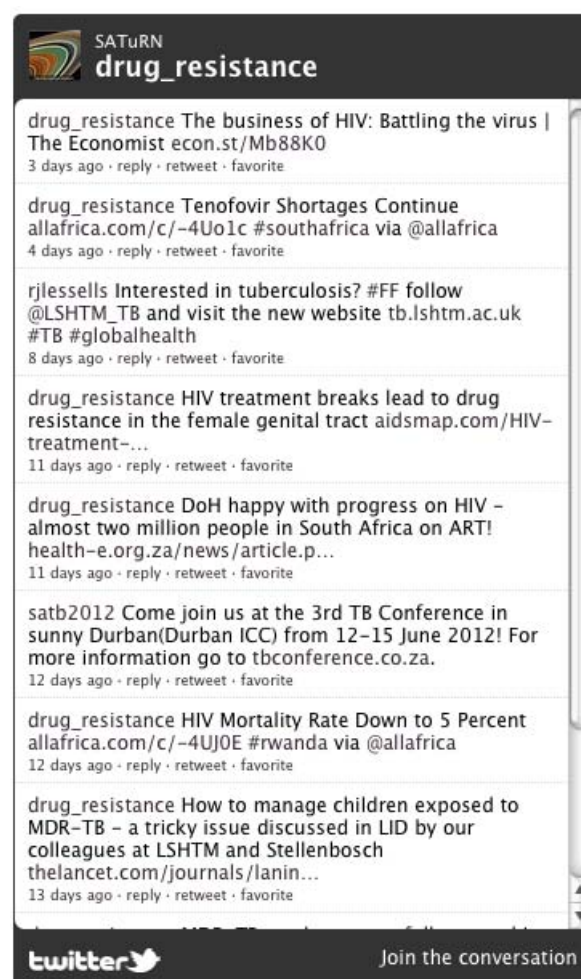
Track 1, Session 22: Second-line Drug Resistance

Track 2, Session 20: Understanding Our TB Epidemic

Track 2, Session 21: TB Surveillance Systems

Roundtable 9: Treatment of Mono-resistance

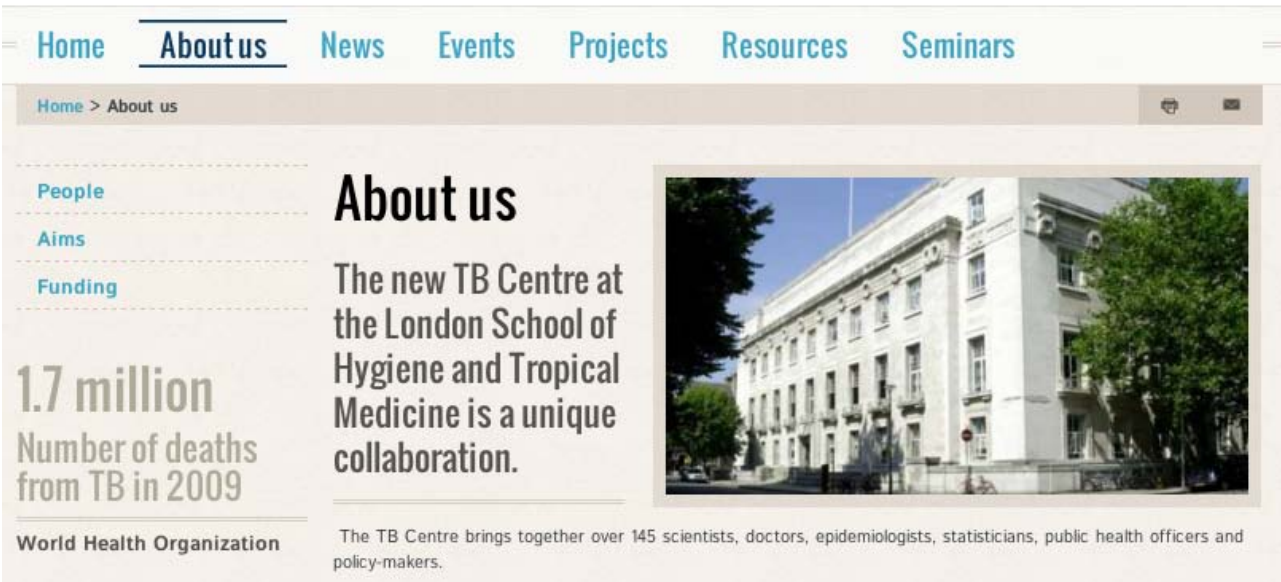
Symposium 4: Strategies for Meeting the MDR-TB Goals within the NSP for HIV, STI AND TB



SATuRN (@drug_resistance) will be tweeting at the 3rd SA TB Conference. Please follow us!

bioafrica.net/saturn

Featured Partner: New TB centre at the London School of Hygiene and Tropical Medicine



“The TB Centre at the London School of Hygiene & Tropical Medicine is a unique collaborative academic centre, representing the largest collection of researchers working on TB in Europe. Our internationally-recognised experts work across all aspects of global TB research from basic science in host and pathogen biology, through to clinical research including HIV/TB, MDR-TB, TB infection control and TB diagnostics, as well as epidemiology and public health, social science, financing and policy.”

“The TB Centre provides a focus for the School's long-established global research expertise in tuberculosis epidemiology, immunology, diagnosis and treatment. It will enable the development of enhanced international partnership, building on the success of 70 existing projects collaborating in more than 40 countries including the UK, South Africa, Uganda, Senegal, Malawi, India, Pakistan, China, Peru, and South Korea.”

Link: <http://tb.lshtm.ac.uk>

As can be seen on the website, the LSHTM TB Centre has scientists working and collaborating throughout Southern Africa (25 projects in South Africa alone). SATuRN is one of the collaborating projects and this year members of the centre will present at our annual workshop in Cape Town 28-29 Nov 2012.

TB Centre & SATuRN collaborative project at Hlabisa



Featured Partner: Division of Medical Virology, Stellenbosch University



The Division of Medical Virology at Tygerberg comprises a diagnostic section which, as part of the South African National Health Laboratory Service (NHLS), provides a state-of-the-art, SANAS-accredited virological diagnostic service for the population of the Western Cape province. Its diagnostic staff perform an average of 14,000 tests per month of which almost one half are HIV-related, mostly HIV viral load, infant PCR and combined antibody-antigen tests.

In addition, its academic staff pursue a number of well established research interests. These include the genomic diversity and molecular epidemiology of HIV; immunological aspects of HIV infection relevant to the development of vaccines and novel immunotherapeutic approaches; the diagnosis and monitoring of opportunistic infections, especially hepatitis B virus (HBV); and diagnostic and epidemiological aspects of emerging viral diseases.

When South Africa finally embarked on its antiretroviral roll-out programme in 2004, this turned into a major success. However, from the experience of developed countries where universal antiretroviral coverage became a reality in the mid-1990s, it had to be expected that with the programme coming of age, novel challenges would emerge. One of these is antiretroviral drug resistance .

Based on Prof. Susan Engelbrecht's longstanding interest in HIV diversity, Prof. Wolfgang Preiser's experience with diagnosing and managing drug resistance in the U.K. and in Germany (where resistance testing is part of routine patient management), and Dr. Gert van Zyl's first-hand clinical involvement and interest in epidemiology, the Division developed HIV drug resistance as a new research theme.

This theme comprises a number of different aspects. Because genotypic resistance testing through sequencing is technically demanding and commercially available assays are expensive and may not perform well in our setting, an *in house* method which is better yet cheaper than comparable commercial tests was developed as part of a Master's project and is now being used routinely.

Tygerberg Virology is currently one of only two NHLS laboratories performing routine diagnostic HIV drug resistance testing. It performs approximately 80 tests per month – no mean feat for a very demanding test which, in addition to the laboratory side, requires the complex task of interpreting results in the context of the individual patient's treatment history. The number of requests for this highly specialised service is expected to increase further once guidelines on resistance testing are released by the SA HIV Clinicians Society.

Featured Partner: Division of Medical Virology, Stellenbosch University

The Division is conducting systematic surveillance in different groups of patients. Given that the "public health approach" means that patients receive standardised antiretroviral treatment regimens, the aim is to generate reliable data to inform future changes to the treatment protocol.

It was found that of mothers who received a dual regimen for the prevention of mother-to-child transmission of HIV, combining short-course zidovudine with single-dose nevirapine, only half as many (17.1%) developed resistance to the latter compared to mothers not receiving the zidovudine component. This is another significant advantage of the combined regimen, in addition to reducing the risk of neonatal infection.

A high rate of resistance mutations was found in pre-treatment Tanzanian patients not fulfilling the WHO criteria for transmitted resistance threshold surveys. This suggests that baseline resistance may be more common than would be expected from such surveys alone. WHO is currently considering a revision of surveillance recommendations for transmitted HIV drug resistance, to take into account these findings.

Overall however the results obtained so far are encouraging, demonstrating that antiretroviral drug resistance is not yet a major problem for most South African HIV patients. However, as the South African public sector treatment programme grows and the treated cohort "matures", more patients will develop resistance. In parallel, a larger proportion of new infections will then be acquired from those failing therapy and harbouring resistant virus.

Publication: Deep sequencing shed light on low levels of PI resistance in patients with poor adherence

A team from the Universities of Stellenbosch, the Western Cape and California-San Diego performed deep sequencing revealing a low abundance of PI-resistant HIV variants in 5 of 7 patients who failed a second-line lopinavir/ritonavir based regimen, which probably do not emerge to become predominant due to inadequate drug pressure in patients with inadequate adherence.

Link: <http://www.ncbi.nlm.nih.gov/pubmed/22457522>

Division of Medical Virology, Department of Pathology, Faculty of Medicine and Health Sciences, Stellenbosch University and National Health Laboratory Service (NHLS) Tygerberg PO Box 19063, Tygerberg 7505, SOUTH AFRICA

Tel: +27 21 938 9353, Fax: +27 21 938 9361

Link: <http://www.sun.ac.za/virology>
contact: Mrs Sal van Zyl, E-mail: sal@sun.ac.za

By Wolfgang Preiser (Professor and Head),
Gert van Zyl (Senior Specialist) & **Susan Engelbrecht** (Professor and Senior Scientist)



Featured open access publications!



Modeling HIV-1 Drug Resistance as Episodic Directional Selection.

Murrell B, de Oliveira T, Seebregts C, Kosakovsky-Pond SL, Scheffler K, on behalf SATuRN, PLoS Comput Biol, 8(5):e1002507 (2012)



Deep sequencing reveals minor protease resistance mutations in patients failing a protease inhibitor regimen.

Fisher R, van Zyl GU, Travers SA, Kosakovsky Pond SL, Engelbrech S, Murrell B, Scheffler K, Smith D. J Virol. 2012;86(11):6231-7

Training course title, location and date

- | | |
|----------|---|
| Aug 2012 | 17th International Bioinformatics Workshop on Virus Evolution and Molecular Epidemiology
University of Belgrade, Faculty of Medicine, Belgrade, Serbia , 27 - 31 August 2012 |
| Nov 2012 | SA HIV Clinicians Society Conference 2012 , Cape Town International Convention Centre (CTICC), Cape Town, South Africa , 25-28 November 2012 |
| Nov 2012 | 7th Southern African HIV / TB Drug Resistance & Clinical Management Workshop , Cape Town International Convention Centre (CTICC), Cape Town, South Africa , 28-29 November 2012 |

For more information on how to participate in SATuRN activities please contact:

Dr. Tulio de Oliveira, Africa Centre for Health and Population Studies, UKZN, South Africa.

Tel : +27 35 550 7500, Fax: +27 35 550 7565, e-mail : tdeoliveira@africacentre.ac.za

Prof. Chris Seebregts, South African Medical Research Council, South Africa.

Tel: +27 21 938 0318, Fax: +27 86 683 2449, e-mail: chris.seebregts@mrc.ac.za

Funded by:



wellcome trust

IDRC



CRDI

CSIR

our future through science

Disclaimer: The SATuRN consortium wishes to express its gratitude to the following funders for their generous support for the production of this report: European Commission (EC), Centers for Disease Control and Prevention (CDC funding for SoPH/UWC and CAPRISA), President's Emergency Plan for AIDS Relief (PEPFAR), International Development Research Centre (IDRC), Council for Scientific and Industrial Research (CSIR) Swiss / South Africa initiative and the Wellcome Trust.

The SATuRN newsletter is published as open access under a Creative Commons ShareAlike 3.0 Unported (CC BY-SA 3.0) license (<http://creativecommons.org/licenses/by-sa/3.0/>) and is available in printed format as well as electronically as PDF, Web-format, etc. The contents of this report and the opinions expressed herein are solely the responsibility of the authors and do not necessarily represent the official views or policies of any of the funders.