In this issue...

Our feature article this month focuses on a study aimed at identifying the innate immune correlates of TB recurrence in HIV positive ART-treated individuals with a history of previous successful TB treatment.

On page 2 we feature the first South African ‘Advancing HIV Cure Research Workshop’ which took place in Stellenbosch on the 6th October 2016 and congratulate our young colleagues who were invited to participate in the Nickelodeon Genius TV show.

We report on the DataFax training workshop hosted by CAPRISA during October and congratulate the editors (including Professor Quarraisha Abdool Karim) of the "Oxford Textbook of Global Public Health (6th edition)" on being acknowledged by the British Medical Association at the 2016 BMA Medical Book Awards evening on page 3.

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Correlation between IL-1β production and TB recurrence

Results from the HIV and tuberculosis (TB) treatment Programme were recently published in JAIDS. The study, which was led by CAPRISA’s Research Associate, Dr Christina Thobakgale, showed that the production of IL-1β by innate immune cells following Toll like receptors (TLR) and Bacillus Calmette-Guérin (BCG) stimulations correlated with differential TB recurrence outcomes in patients with a history of previous successful TB treatment.

The incidence rate of TB recurrence in the overall cohort was 4.07% (95%CI. 3.24-5.06). In this pilot study, 12 patients with a recurrent episode of TB (cases) were matched, based on age, sex, time on ART, and pre-ART CD4 count, with 12 participants who did not develop recurrent TB in 60 months of follow-up (controls).

All patients were known to be HIV infected on ART with a previously-defined history of successfully treated pulmonary TB. Cryopreserved peripheral blood mononuclear cells from time points prior to TB recurrence were stimulated with ligands for TLR including TLR-2, TLR-4, and TLR-7/8. Multi-colour flow cytometry and intracellular cytokine staining was used to detect IL-1β, TNF-α, IL-12 and IP10 responses from monocytes and myeloid dendritic cells (mDCs).

An elevated production of IL-1β from monocytes following TLR-2, TLR-4 and TLR-7/8 stimulation was associated with reduced odds of TB recurrence. In contrast, production of IL-1β from both monocytes and mDCs following BCG stimulation was associated with increased odds of TB recurrence, where the risk of recurrence increased by 30% in monocytes and 42% in mDCs respectively.

These findings show that expression of IL-1β from monocytes was the best predictor of TB recurrence and may indicate a functional defect in monocytes. In addition, the study showed that APC responses to BCG stimulation were associated with increased risk of TB recurrence and may mark an important difference in innate host response to TB in cases compared to controls.

TB remains a major cause of global morbidity and mortality, especially in the context of HIV co-infection, since immunity is not completely restored following ART. The identification of immune correlates of risk for TB disease could help in the design of host-directed therapies and clinical management. These results highlight differences in host response to TB.

For further reading see:
The first South African ‘Advancing HIV Cure Research Workshop’ took place in Stellenbosch on the 6-7th October 2016. The workshop was chaired by Professor Carolyn Williamson and Dr Melissa-Rose Abrahams from the Division of Medical Virology at the University of Cape Town (UCT) and Dr Nigel Garrett from CAPRISA, and was supported by the South African Medical Research Council and the Department of Science and Technology (DST). The workshop assembled key stakeholders and representatives involved in HIV cure research and related fields from institutions across the country and abroad with the goal to discuss the latest findings in the field - to identify gaps, and to set priorities for clinical translational cure research in South Africa.

Presentations included advancements in potential interventions to deplete or silence the latent viral reservoir such as the use of broadly neutralizing antibody therapies and gene silencing through targeted stem cell therapy, CRISPR/Cas9 or gene methylation, and the use of targeted radionuclide therapy (conventionally a cancer treatment) for visualizing and targeting anatomical reservoir sites using radioisotopes, and its potential use for assessing efficacy of reservoir clearance in cure trials. The UCT team presented new technologies for characterizing the size and sequence composition of the latent reservoir, including next-generation sequencing and digital droplet PCR, in women from the CAPRISA 002 Acute Infection cohort. This was followed by a presentation on the Females Rising through Education, Support, and Health (FRESH) acute infection cohort, and the proposal of future clinical studies using therapeutic vaccinations. Glaudina Loots (DST), a board member of the IAS Towards an HIV Cure Initiative, stressed the need for collaboration and inter-disciplinary research in particular, between early career HIV and cancer researchers.

Three CAPRISA colleagues judged the Nickelodeon’s Genius Kwa-Zulu Natal’s regional competition on 13th October. Dr Sinaye Ngcapu, Mr Ross Cromarty and Ms Cheli Kambaran judged the three rounds of the competition aimed at young school learners passionate about maths and science. There were 15 teams of 3 students from a range of schools in Kwa-Zulu-Natal. The two winning teams progressed into the national Nickelodeon Genius competition and walked away with R50000 cash reward for the team and a selection of text books from Cambridge University donated to their respective schools.

“This competition provided a fantastic platform for young students to showcase their mathematic and scientific skills and enthusiasm for these fields. The teams that progressed to the later rounds showed strong team ethic and quick thinking, said Ross Cromarty. The competition will be screened on the Nickelodeon TV channel.
Public Health textbook lauded by the British Medical Association

Professor Quarraisha Abdool Karim associate Scientific Director at CAPRISA is one of four Editors of the “Oxford Textbook of Global Public Health (6th edition)” acknowledged by the British Medical Association (BMA) at the recent 2016 BMA Medical Book Awards evening. The book received a certificate as a “Highly Recommended” textbook in the Public Health category. The textbook, published by Oxford University Press, comprises 1,888 pages bound in 3 volumes was published in February 2015. The four editors of this 6th edition textbook are Roger Detels, Martin Gulliford, Quarraisha Abdool Karim and Chorh Chuan Tan.

The BMA Medical Book Awards are held annually to recognise outstanding contributions to medical literature. Books are awarded prizes and commended in 20 categories. The BMA judging panel assess books for their applicability to audience, production quality and originality. Professor Pali Hungin, BMA President, was guest of honour at the 2016 awards evening held at BMA House in September 2016.

Prof Abdool Karim donated a complete set of the book to the UKZN Research office. The books can be accessed at the EG Malherbe Library at the UKZN Howard College campus.

Data management staff had the opportunity to interact with leading experts on DataFax Clinical Trial Management systems over four days in October and gain insights into the latest developments in the field. The co-founders of DF/Net Research, Inc., Lisa Ondrejcek and Darryl Pahl delivered training workshops and a presentation on the DataFax Clinical Trial management system used by CAPRISA and global organisations. CAPRISA hosted the DataFax User Group (DFUG) 2016 training workshop on 17th, 18th October at which DF/Net staff from the US and Canada conducted intensive training sessions over two days showcasing new features of DataFax software. On 19th October CAPRISA’s Director Professor Salim Abdool Karim opened the 22nd Annual DataFax User Group Conference held at the Maharani hotel and on 21st October CAPRISA PIs and UKZN researchers had an opportunity to attend a presentation of the system which included several international case studies.

Dialogue on DataFax Clinical Trial Data Management Systems

Opinion: Who do you love? Finding treasure at the last day of R4P

The Global Advocacy for HIV Prevention (AVAC) compiled five “Treasures” taken from R4P on the final day of conference. The CAPRISA 256 antibody is listed as treasure 3 described aptly by Prof Penny Moore as “a South African national treasure”. The article can be accessed at: http://www.avac.org
Scientific papers published in 2016


"continuation from previous newsletter"

### Scientific Reviews

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<tr>
<th>Abstracts submitted for review</th>
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# for month, * since committee initiation

### iSpotU and Achievement awards

The CAPRISA iSpotU Innovation Award recognises and rewards employees who contributed in an exceptional manner in respect of innovation, which demonstrate that “There Is a Better Way” of doing a task, process or system. The Achievement Award rewards and recognises employees or teams for accomplishments and achievements which received recognition from an external credible individual and/or organisation. Recipients of the award during October included:

**CAPRISA Innovation Award**
Zanele Mkhize from the CAPRISA eThekwini Clinic received her award for showing exemplary leadership in engaging with study counsellors and participants alike to achieve a higher quality counselling process, including in depth discussions and consistent and accurate counselling records. Pam Job (HR) and Denoln Naidoo (IT) received their award for initiating a project to implement online completion of certain HR forms with the intention to make greater use of technology and move away from manual completion of forms, resulting in reducing the time taken from requisition to approval. Panji Pillay from the DDMRI Laboratory received her award for taking the initiative to develop the SoftCup Processing work flows and also improved the SOPs and developed troubleshooting scenarios that are user friendly for all lab staff to follow.