On the 11th March 2017, Shakira Choonara a PhD Fellow in the School of Public Health was announced Woman of the Year in Healthcare at the Woman of Stature Awards Ceremony held at Emperors Palace, Johannesburg. She was awarded a R5000 cash-prize sponsored by Nedbank. The annual event is co-ordinated by the Women of Stature network in South Africa. The Woman of Stature Awards aim to inspire and empower women from a variety of backgrounds and endeavours while also raising awareness and funds for charity. Shakira’s previous accolades include being named a European Union Development Days Young Leader for Health in 2015 and being selected as an Emerging Voice for Global Health in 2014. Shakira has also been featured on the Girls Globe for the 2017 International Women’s Day. In the above picture Shakira is the second person from the left hand side.

Professor Kramer elected as a Fellow of the American Association of Anatomists

Congratulations to Emeritus Professor Beverley Kramer from the School of Anatomical Sciences and the President of the International Federation of Association of Anatomists who was recently elected as a Fellow of the American Association of Anatomists (AAA). The rank of Fellow of the AAA is designed to honor distinguished members who have demonstrated excellence in science and in their overall contributions to the anatomical sciences.
Professor Amadi Ihunwo heads the Morphological Anatomy Division at the School of Anatomical Sciences. He is an Anatomist with a BMedSc (Hons) degree from the University of Port Harcourt, MSc (University of Calabar, Nigeria) and PhD (Mbarara University of Science & Technology, Uganda). His primary research interest is in Neurosciences. He has university experiences from Nigeria, Uganda and South Africa. In 2016 he was one of the recipients of the 2016 Exceptional Service Award by the Faculty of Health Sciences, Wits.

Professor Ihunwo’s research thrust is Adult Neurogenesis. Over five decades ago, it became accepted in the scientific community that there is generation of new neurons in the adult brain, ending a dogma that neurogenesis ceases after birth. Most investigations on this phenomenon were on various species and strains of laboratory rodents. His research thrust extended the investigation of adult neurogenesis to animals from the wild or rather, obtained from their natural environment. The thrust has so far investigated this phenomenon in over mammalian 70 species from over 13 taxonomic groups. He has extended the knowledge gained from this to the avian species and the human brain. Once new cells are generated, it becomes possible for the brain to undergo plasticity in dealing with environmental and pathological insults.

His mentors are his PhD supervisors Professors Frederick Kayanja from the Mbarara University of Science & Technology in Uganda and Professor Reinhard Schliebs formerly of the Paul Flechsig Institute for Brain Research, University of Leipzig, Germany.

Amadi loves spending time with his family and travelling.

**RESEARCH FINDINGS**

**A new malaria vector mosquito in South Africa**

Researchers from the Vector Control Reference Laboratory, Wits Research Institute for Malaria and the Centre for Emerging, Zoonotic & Parasitic Diseases, NICD, have discovered a new malaria mosquito in South Africa. Two adult females of the mosquito species *Anopheles vaneedeni*, one collected from an outdoor placed trap in Mpumalanga and another from a similar trap in northern KwaZulu-Natal, were recently found to be infected with *Plasmodium* sporozoites. This means that they were able to transmit malaria. *Anopheles vaneedeni* was, until now, considered medically unimportant although this species will readily take blood from humans.

Malaria in South Africa is based on well-coordinated insecticide based control programmes that employ the indoor residual spraying (IRS) technique. This method has proved especially successful and has enabled South Africa to adopt a malaria elimination agenda. Although the IRS technique produces a high level of vector control, some vector mosquitoes, such as *An. vaneedeni*, tend to rest outdoors and are therefore out of the reach of the IRS programmes. This helps to explain why low-level malaria transmission persists in some districts of South Africa’s endemic regions.


**RICH2 is implicated in viraemic control of HIV-1 in black South African individuals**

HIV-1-infected individuals have variable rates of disease progression and viral control. The study of individuals displaying these broad clinical phenotypes provides valuable insights into the biology and mechanisms of viral control and disease progression which informs rational design of novel therapeutics and vaccines.

The burden of the AIDS epidemic lies in sub-Saharan Africa however most studies investigating HIV control have focused on populations of European ancestry. One such study
(Le Clerc et al., 2011) found an intronic single nucleotide polymorphism (SNP) in RICH2 (rs2072255; 255i), in complete linkage disequilibrium (LD) with an exonic SNP (rs2072254; 254e), to be associated with progression to AIDS in Caucasian individuals. RICH2 links tetherin to the cortical actin network and the RICH2/tetherin interaction has been shown to be important for the downstream activation of NF-κβ and consequential promotion of proinflammatory responses.

Dr Maria Paximadis from the Centre for HIV and STIs, School of Pathology and co-authors found that in black South Africans, LD between these two SNPs was low; however, a 254e minor allele was always present with a 255i minor allele but not vice versa. Furthermore, the combination of 254e major allele homozygosity and 255i heterozygosity (254eAA/255iGA) was significantly under-represented in HIV-1-infected ARV-naïve controllers with viral loads greater than 400 RNA copies/ml compared to both healthy controls and HIV-1-infected progressors. In silico analysis predicted loss of an exonic splice enhancer site with the 254e-G allele. These findings point to a role for RICH2 and tetherin in viraemic natural control of HIV-1.

Note: This work formed part of an Honours project conducted by Ms Refilwe N. Ngqobe registered in the Department of Molecular Medicine and Haematology, Wits University.

Figure Legend: Schematic showing: 1. Tetherin, a type II transmembrane protein with a unique topology that allows it to tether enveloped viruses to the surface of infected cells, thereby restricting virus release. 2. HIV-1 encoded Viral Protein U (Vpu) can counteract the effect of tetherin; however, neutralizing effect of Vpu is not absolute suggesting balance of tetherin and Vpu may be important in HIV-1 control. 3. RICH2 links tetherin to the actin cytoskeleton; depletion of RICH2 by RNAi affects NFκβ activation but not ability of tetherin to tether HIV particles. 4. A study in Caucasians found two SNPs (designated by blue and red dots) in complete linkage disequilibrium (LD), and the minor allele/s to be associated with accelerated disease progression (Le Clerc et al., 2011). In this study, conducted in black SA HIV-1-infected ARV-naïve controllers, progressors and healthy controls, low LD between SNPs were found, and combination (rs2072254AA/rs2072255GA) linked to viraemic (>400 RNA copies/ml) HIV-1 control.

Development of an injectable pseudo-bone thermo-gel for application in small bone fractures

Pariksha Kondiah from the Wits Advanced Drug Delivery Platform Research Unit and co-authors synthesized and evaluated a pseudo-bone thermo-gel for its physicochemical, physicomechanical and rheological properties, with its application to treat small bone fractures. The pseudo-bone thermo-gel was proven to have thermo-responsive properties, behaving as a solution in temperatures below 25 °C, and forming a gel when maintained at physiological conditions. Poly propylene fumerate (PPF), Pluronic F127 and PEG-PCL-PEG were strategically blended, obtaining a thermo-responsive delivery system, to mimic the mechanical properties of bone with sufficient matrix hardness and resilience. A Biopharmaceutics Classification System (BCS) class II drug, simvastatin, was loaded in the pseudo-bone thermo-gel, selected for its bone healing properties. In vitro release analysis was undertaken on a series of experimental formulations, with the ideal formulations obtaining its maximum controlled drug release profile for up to 14 days. Ex vivo studies were undertaken on induced 4mm diameter butterfly-fractured osteoporotic human clavicle samples. X-ray, ultrasound as well as textural analysis, performed on the fractured bones before and after treatment displayed significant bone filling, matrix hardening and matrix resilience. These characteristics of the pseudo-bone thermo-gel proved significant potential for application in small bone fractures.


RESEARCH NEWS AND EVENTS

Dr Reubina Wadee awarded R100 000 from the NHLS Research Trust

Congratulations to Dr Reubina Wadee from the Department of Anatomical Pathology, School of Pathology, for being awarded R100 000 from the NHLS Research Trust for her PhD research entitled “Endometrial Carcinoma: Microsatellite instability and suspected Lynch syndrome in the greater Johannesburg area
She has a keen interest in gynaecological pathology and is currently undertaking research in this field.

Dr Ameh Soter selected as a Lown Scholar

Dr Ameh Soter was selected as a Lown Scholar with the Bernard Lown Scholars Programme in Cardiovascular Health at the Harvard T. H. Chan School of Public Health, Boston. The Scholar’s Programme is designed to create an international cadre of talented health professionals who will use public health tools and strategies to prevent cardiovascular diseases and promote cardiovascular health in developing countries. The title of Dr Soter’s research is "Feasibility of an integrated approach to HIV and hypertension care in urban poor in Nigeria". Well done Dr Soter.

First WITS Mine Health and Safety Research Group Seminar

The first seminar for Mine Health and Safety was held on 22 February 2017. It was a pioneering initiative between the Centre for Sustainability in Mining and Industry, the Wits Mining Institute, and the Wits School of Public Health; and proved to be well-received by approximately 30 attendees. The morning-long seminar brought together researchers and postgraduate students from across Wits to share their mine health and safety-related research, encouraging networking and exploring potential for collaborations. Six Wits postgraduate students from various disciplines presented their research, focusing on the causes and effects of health and safety issues in the mining industry. A wide range of topics covered lung autopsy findings, dust suppression methods, rock mass behavior, ventilation modelling, and early warning of diesel exhaust exposure. As the conclusion, it was proposed that future seminars be held twice yearly, and that a half day be dedicated to presentations from postgraduate students, followed by a half day theme-based topic, with industry participation.
Carnegie-WITS Alumni Diaspora Programme visitor

Mrs Roshni Khatri, a senior lecturer from the Northampton University in the UK and a Carnegie-WITS Fellow, paid her second visit to WITS in the week of 13 – 16 March 2017. She presented a very successful two-day Creating Aligned interactive Educational Resource Opportunities (CAiERO) workshop.

The CAiERO workshop was attended by lecturers from the Department of Occupational Therapy, School of Clinical Medicine and the Faculty of Education. This workshop introduced a step-by-step method to transform traditional lectures and modules to e-learning. It follows proper curriculum development principles. Mrs Khatri was excellent in providing helpful hints and ideas in using electronic resources and applications. An evaluation will be done to capture the value the workshop had to participants.

Mrs Khatri and Professor Daleen Casteleijn (from the Department of Occupational Therapy) also spent time working on their data analysis of a Q-methodology project that focuses on the conceptual mapping of the Vona du Toit Model of Creative Ability, and its alignment with the International Classification of Functioning, Disability and Health.

The Brain Matters Seminar Series

The Brain Matters Seminar Series is a follow up to the Why the Brain Matters Colloquium that was held at the Johannesburg Institute of Advanced Studies (JIAS) from September to December 2016. In trying to foster collaborations across institutions, these seminars will be a joint initiative between JIAS and the DST-NRF Centre of Excellence in Human Development (CoE) at the University of the Witwatersrand. The initiative is additionally supported by the Southern African Neuroscience Society (SANS) and the Wits Cortex Club and is being organised by two of the colloquium participants, Dr Sahba Besharati and Dr Tanya Calvey from the University of the Witwatersrand. A primary focus of the seminar series is to stimulate interest and build capacity in neuroscience research among young and established scientists.

The launch of the Brain Matters Series took place at the School of Public Health, Faculty of Health Sciences, University of the Witwatersrand on Thursday, 23 March 2017. It was well attended by neuropsychologists, neuroscientists, psychiatrists, philosophers, radiologists, biomedical engineers, epidemiologists, neurosurgeons, neurologists as well as staff and students from The University of the Witwatersrand, the University of Johannesburg and the University of
Pretoria. The speakers were Professor Linda Richter (Director CoE Human Development), Professor Peter Vale (Director JIAS), Professor Willem Hendrik Gispen (Utrecht University; Director of Why the Brain Matters Colloquium), Dr Tanya Calvey (Wits School of Anatomical Sciences; Secretary of the Southern African Neuroscience Society) and Dr Shaba Besharati (Post-doctoral Fellow CoE Human Development).

The event also marked the launch of the Wits Cortex Club. The Wits Cortex Club is a joint initiative with Oxford University and the University of Cape Town and has been registered with the Medical Students' Council in order to expose medical and health science students to local and international neuroscience research.

The first two lectures of the Brain Matters series were announced at the launch. Professor Linda Richter also announced that the CoE Human Development will sponsor a 3 year bursary for a PhD student as an outcome of the Brain Matters Series. For further information visit: https://www.wits.ac.za/coe-human/news-and-events/.

Thank you to all who contributed to this issue.
Do you have any significant research news you would like us to include, or comments you would like to make? Please contact Nomfundo.sibiya@wits.ac.za (news items to reach us by 14 April 2017)

The newsletter was edited by Professor Maria Papathanasopoulos and Nomfundo Sibiya