

# Health Sciences Research News

The University of the Witwatersrand  
Faculty of Health Sciences



May 2012

While a huge crisis exists both in the NHLS and in the provincial hospitals, our researchers continue to contribute to health through research. One must ask the question “For how long can they continue to do this?” The Wits Faculty of Health Sciences has a proud record of research, yet the existing crises are exacting massive demands on our staff. It is due to the **strength and scholarliness** of its **researchers** that the Faculty continues to produce **internationally competitive** and **relevant research** of the **highest quality**. We salute you!

Meanwhile, the Faculty continues to build muscle across the many disciplines its research encompasses. A particular cause for excitement is the recent approval of a **new research Programme** in the **School of Oral Health Sciences**, to be known as the **Systematic Review initiative for Evidence-based Minimum Intervention in Dentistry** (SYSTEM). The Programme will be led by **Dr Steffen Mickenautsch** (Project Leader) and **Associate Professor Jeff Yengopal** (Principal Project Researcher) – see the profile of Prof. Yengopal in this issue.

*Beu Kramer*

## LEADING RESEARCH NEWS

### TWO FINALISTS IN THE 2012 NSTF-BHP BILLITON AWARDS



The **National Science and Technology Forum (NSTF) Awards**, hosted in partnership with **BHP Billiton**, is the flagship project of the largest and most prominent multi-stakeholder representative forum for Science, Engineering, Technology and Innovation (SETI) in South Africa. The Awards encourage and reward excellence in Scientific Research, Technological Innovation, Education, Capacity Building, and Communication. It is an exceptional honour to be a finalist, given the quality of the nominees and the fact that all have made an outstanding contribution to SETI in South Africa. Two members of Faculty were announced as finalists for the **2012 NSTF-BHP Billiton Awards** at the 41<sup>st</sup> NSTF Plenary meeting held on 25 May:

**To an Individual for an outstanding contribution to SETI over a lifetime: Professor Emeritus Duncan Mitchell**, Honorary Research Fellow, Brain Function Research Group, School of Physiology

**To an Emerging Researcher for an Outstanding Contribution to SETI through Research and its Outputs – over a period of up to six years after award of a PhD or equivalent in research – sponsored by the NRF:**

**Associate Professor Yahya Choonara**, Research Manager: Wits Advanced Drug Delivery Platform, School of Therapeutic Sciences. The winners will be announced at a gala banquet to be hosted by the Minister of Science and Technology on 21 June 2012.

#### Who are you and what is your academic/scientific background?

I did my specialist training in Community Dentistry at the University of Stellenbosch. My field of interest was evidence based health care and I have been fortunate to attend training programs at the universities of Liverpool, Manchester, and the International Cochrane Collaboration. I have published extensively on this topic and have been invited to speak both at local and international locations. The highlight for me was being invited to give a lecture at Harvard University in 2010.



#### What is the nature of the research that you are currently undertaking?

Three focus areas form the basis of my research work: - child oral health; systematic reviews of clinical interventions/techniques in dentistry; and oral HIV/AIDS. My PhD study forms part of an international collaborative multicentre trial that investigates the anthropometric, developmental and velocity of weight gains in children with severe tooth decay who have immediate treatment versus those who have to wait for dental care. Systematic reviews of clinical trials are rated as the top form of evidence one can use to make clinical decisions or changes in policy. My work with Dr Steffen Mickenautsch is quoted extensively by international bodies such as the American Dental Association and the Forsyth Institute at Harvard which develop policy and clinical guidelines in the dental field. Our systematic reviews are registered with the International Prospective Register for Systematic Reviews (PROSPERO) and we are the first in dentistry to use new scientific tools, such as The Ottawa Method, developed to identify qualitative and quantitative signals indicating the need to update a systematic review. The focus on HIV relates to the effects of the oral manifestations of HIV/AIDS on the quality of life of infected patients.

#### What do you think is the most significant contribution you have made to research/science?

In the local and international context, I am regarded as an expert in the field of evidence based dentistry. I have been writing a monthly column entitled "Evidence based dentistry for clinical practice" in the *South African Dental Journal* for more than five years and it is pleasing to note that many practitioners have now adopted this approach in their daily practice. My published systematic reviews with other Wits colleagues have contributed to clinical guidelines and policies that are adopted throughout the world. My inputs into the National Oral Health Policy Document and Provincial Oral Health Strategy plans for most provinces have ensured that high quality evidence is used to make decisions on how best to deliver oral health services in a resource poor setting.

#### Did you have a particular mentor or supervisor who inspired you in research?

I have been inspired by the work ethic and mentorship provided by colleagues such as Professor Sudeshni Naidoo (UWC), and those at Wits - Dr Mickenautsch, Professor MJ Rudolph and Professor CP Owen.

#### What do you do when you're not busy at work and carrying out cutting-edge research?

I am with my family and for a real thrill, you can find me "flying" on my superbike!

**Read one of Jeff's papers:** Mickenautsch S & Yengopal V (2012). Anticariogenic effect of xylitol versus fluoride - a quantitative systematic review of clinical trials. *International Dental Journal*, **62**: 6-20.

### When treatment success lies in the lingo

**Restless Legs Syndrome**, or RLS; not what the fidgety little person sitting behind you at the movies has, but the deeply frustrating, uncomfortable and insistent urge to move your legs in response to an unusual sensation, often once you are just settling into bed.

RLS is a neurological condition which delays sleep onset, causing sleep deprivation, and may increase the risk of cardiovascular disorders, depression and anxiety. Unlike the related sleep disorder periodic limb movements (which are not under voluntary control) people with RLS *choose* to move their legs in response to the sensation of discomfort. As long as they keep moving their legs, they experience relief. Although the mechanism is poorly understood, dopamine agonists have been found to be an effective treatment. The condition affects more women than men.

Apart from this, little is understood of the condition, and it often goes misdiagnosed or undiagnosed as there are other conditions which can 'mimic' RLS. The 'symptoms' may sound vague and could equally be the result of leg cramps or peripheral neuropathy, except that there are key characteristics which set this syndrome apart and make it identifiable. The health care practitioner being consulted, however, needs to know what to listen for.

Many patients experience difficulty describing RLS sensations to their doctors. RLS was formally described in the 1940s and many of the previous descriptions of RLS date back that far, using words such as "irritating", "painful", and "an urge to move". However, language is dynamic, and the words used by patients today may be very different. **Sam Kerr**, a researcher in the **Brain Function Research Group** (School of Physiology), noted the need for an update of the official description and embarked on a study designed to help health practitioners successfully identify and treat RLS.

To find out how modern-day RLS sufferers describe their symptoms, Sam interviewed 40 people, of all ages and from different race groups, living in Johannesburg. Using questionnaire-based data, she established that the words most frequently used by people with RLS to describe the feelings in their legs were "restless", "uncomfortable" and "a need to stretch". These terms are different to those that appear in the RLS diagnostic criteria. Inclusion of these descriptors in the diagnostic criteria may improve diagnostic accuracy of RLS.

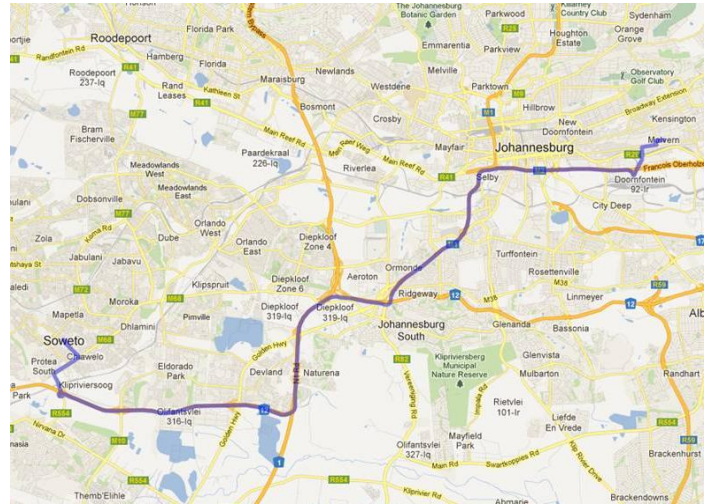
Sharing these results with healthcare practitioners is the next step Sam has embarked on. The study was published in the top international journal, *Sleep Medicine*, and was featured in articles in the *Sunday Independent* and *The Saturday Star*. Sam has also presented her results at the World Congress of Neurology in Morocco, and will soon be sharing them at the Society for Neuroscience meeting in the USA.

**Kerr S**, McKinon W and Bentley A (2012). Descriptors of restless legs syndrome sensations. *Sleep Medicine*, **13**(4): 409–413.



Sam is a Doctoral candidate supervised by **Dr Alison Bentley and Dr Warrick McKinon**. This research was featured in *The Saturday Star* on 21 April and *Sunday Independent* on 28 May. Our thanks go to Sam for her assistance with this article.

Children's access to high quality education is one of the core determinants of their educational attainment and economic wellbeing in later life. Sadly, the public schooling system in South Africa is not equally resourced across all areas. Recent research led by **Dr Julia de Kadt**, a Postdoctoral Fellow in the **MRC/Wits Developmental Pathways for Health Research Unit**, explored school choices made by families living in the Soweto-Johannesburg area, and the distances they were willing to allow children to travel on a daily basis, in pursuit of better schooling. The study also attempted to understand which children were most likely to engage in extensive travel, and which schools the families were choosing in favour of those closest to home.



Using data collected for the Birth to Twenty Cohort (n = 1 428), Julia measured the distance travelled by primary school children each day to school and back, and found that over a quarter of children travelled more than 5km in each direction, every day. Just over 18% travelled more than 10km each way. Only 40% of children were attending a school in the same suburb as their home, and only 20% were attending the school that was the shortest distance from their home.

Children who travelled further to school typically attended better-resourced and better-performing schools than children who attended schools closer to home. Children travelling greater distances to school usually were travelling from homes in township areas to historically advantaged schools in suburban Johannesburg. This generally required substantial economic investment, to cover transport costs and higher fees. It also required extensive parental involvement, to obtain a place for a child in a school, and to organise transport. Children travelling substantial distances to school were more likely to come from relatively well-off families, and to have relatively well-educated mothers.

The results of this study highlight the value which South African families place on education, and support other studies which indicate that access to high quality education in South Africa is increasingly shaped by socio-economic status rather than race.

Julia comments, "One of the most interesting findings for me was how few children are attending 'local' schools. Even amongst the children who are not travelling substantial distances (i.e. less than 3km), very few are attending the schools closest to their home, or even in their suburb. This suggests to me that even parents & families who can't afford to send their children to historically advantaged schools in suburban Johannesburg are still engaging in school choice, and are not just sending their children to the school nearest to their home. These results have important implications for policy, as school funding policies and school governance policies are based on the assumption that children are attending schools very close to their homes. Additional research on the motivations for school choice and the implications of substantial travel to school for young children is urgently needed in order to determine the best policy response for South Africa."

*Thanks to Julia for her extensive assistance with this article. The research was also recently featured in the Saturday Star, under the title "Success is a far away place".*

### PRESTIGIOUS RESEARCH LECTURE – NO MORE MALARIA?

Thursday 17<sup>th</sup> May saw **Associate Professor Thérèse Coetzer** and **Professor Maureen Coetzee** present the seventh lecture in the **Prestigious Research Lecture Series**, titled “Towards malaria eradication: Myth or reality?”. The event was opened by **Professor Ahmed Wadee** (Dean of the Faculty), who has long served with both researchers.

Three parties are involved in the complex triangle skillfully maintained by a particularly devious organism belonging to the genus *Plasmodium*. The most common and deadly species in this genus, responsible for causing malaria in millions of humans in Africa, is *falciparum*. Professor Coetzer (**Plasmodium Molecular Research Unit**) explained how this parasite is constantly adapting, making sure that it draws the maximum from the two hosts it needs to complete its lifecycle: humans, and mosquito species belonging to the genus *Anopheles*. Our immune systems respond in various ways – one defense has been to destroy infected red blood cells when they reach the spleen. In answer, the crafty parasite found a way to make the infected cells adhere to vessel walls, leaving the parasite to multiply in relative peace. Constantly a step-ahead, *Plasmodium* is a difficult enemy to tackle, but advances in genomics over the last decade may finally enable us to locate chinks in its armour. Currently, we have effective treatments for malaria (as long as the infection is detected timeously) but with the first signs of resistance starting to appear, we need to find effective new weapons soon if we are to get ahead in this arms race.

The other angle of attack is that of targeting the other host, the vector mosquitoes. Professor Coetzee (**Malaria Entomology Research Unit** and **South African Research Initiative Chair: Medical Entomology & Vector Control**) explained how populations of vector species have been effectively controlled in the past, but how the mosquitoes too have developed resistance to many of the insecticides used since the early 1930s. DDT is still the most effective pesticide we have, but it has fallen out of favour due to concerns over its impact on the environment and on humans. Pyrethroids are the mosquito-killer of choice, sprayed onto houses and used in impregnated bed nets, but these will not keep the mosquito populations in check indefinitely. New pesticides must be developed or alternative strategies for managing vector populations found. New strategies are under investigation (such as fungus-based pesticides and genetically-modified mosquitoes), but it will be some time before these can be taken into the (battle) field.

**Professor Lucille Blumberg**, a Deputy Director of the **National Institute for Communicable Diseases** and an expert on the treatment of malaria was a gracious and astute critical commentator. **Yvonne Chaka Chaka**, WHO/UNICEF Goodwill Ambassador, Rollback Malaria Ambassador and President of the **Princess of Africa Foundation**, was our special guest, closing the event with her trademark sparkle. She commended the researchers on their efforts, saying how knowing of their tireless work motivates her in her

work as ambassador. She then broke out in song, urging the audience to ask, “What have I done today to make me proud?”.

Will we see the eradication of malaria? The enormity of the task cannot be underestimated, but as long as we have champions such as these, inspiring the next generation to carry on the fight, there is hope that we will gain and hold the advantage over one of Africa's biggest killers.

From left: Professor Maureen Coetzee, Professor Lucille Blumberg, Yvonne Chaka Chaka and Professor Theresa Coetzer.

## NRF SUPPORTS PHYSIOLOGY & OT RESEARCH AT WITS

The **Brain Function Research Group** (School of Physiology) has had a particularly good run of late: **Dr Hilary Lease** (Postdoctoral Fellow, USA) was awarded a prestigious **Innovation Postdoctoral Fellowship** from the National Research Foundation; **Dr Robyn Hetem** (Researcher) and **Dr Leith Meyer** (Honorary Research Fellow in the BFRG and previous Director of the Central Animal Service at Wits) have both received 2012 **Thuthuka grants (Post-PhD track)** from the National Research Foundation, following very complimentary reviewer reports.

**Dr Daleen Casteleijn** (Department of Occupational Therapy) also received a **Thuthuka grant (Post-PhD track)** from the National Research Foundation.

## MEMBERSHIP OF FRED HUTCHINSON CANCER RESEARCH INSTITUTE

**Associate Professor Glenda Gray (Perinatal HIV Research Unit)** has been appointed a **Joint Member** of the **Vaccines and infectious Disease Division** of the **Fred Hutchinson Cancer Research Institute**. Appointment to the rank of Member requires outstanding mature scholarship, excellence in research and national or international recognition, and is equivalent to a full Professorship.

## FACULTY RESEARCH DAY & PG EXPO

Remember to diarise the Faculty Research Day and PG Expo – **Wednesday 19 September!**

**Substantial prizes/travel awards** will be given for the best poster, best oral presentation and best student oral presentation in each of the five thematic areas. Further information can be found online at [www.witsresearchday.co.za](http://www.witsresearchday.co.za).

Please note that **registration is a separate process** – the registration form can be completed and submitted online.

Queries: **Mr Moraba Meela** (Moraba.meela@wits.ac.za or 011 717 2023).

## POSTGRADUATE HUB – CH BARAGWANATH ACADEMIC HOSPITAL



The Hub is open to all postgraduate students registered in the Faculty. Apart from a quiet lounge area for reading, the Hub has several computers connected to the Wits network. Keep an eye open for the **monthly lunch time** talks hosted by Associate Professor Elena Libhaber.

The Faculty Research Offices also offers statistical support to postgraduate students based at Bara. For further information, [visit our webpage](#).

*The new research poster outside the PG Hub at the Wits Learning Centre at Chris Hani Bara Academic Hospital (sponsored by the Faculty Research Office).*