

SOUTH AFRICAN RESEARCH CHAIR IN PTSD

"hosted by Stellenbosch University, funded by the DST
and administered by NRF"

NEWSLETTER

3rd EDITION

BIostatISTICS IN MENTAL HEALTH- TRAINING FOR RESEARCHERS

The Department of Psychiatry had the privilege of hosting Biostatistics in Mental Health Introductory and Intermediate courses at the Tygerberg Campus from 30 June to 04 July 2014. The courses were attended by 22 participants, 8 from four Sub-Saharan African countries (Nigeria, Ghana, Kenya and Liberia) and 14 from South Africa. The courses each spanned 5 days focusing on biostatistics relevant to mental health and were facilitated by 2 facilitators from South

Africa (Prof. Martin Kidd and Dr. Justin Harvey) and 2 from the United States (Prof. Jim Anthony and Dr. Zhehui Luo).

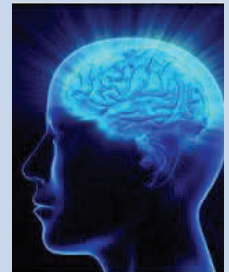
Pictured below are attendees and facilitators as well as delegates from PAmD and NIMH who sponsored the courses. SARCHI research staff attended the courses (*continued on page 2*)

FOCUS ON



Research Collaboration...Pg 2-3

RESEARCHERS IN PROFILE



Rolanda Londt.....Pg 4
Lindi Martin.....Pg 5
Melanie Bishop.....Pg 5
Jaco Rossouw.....Pg 5
Khethelo Xulu.....Pg 6
Monet Viljoen.....Pg 6

Conferences.....Pg 7
SARCHI AwardsPg 8





continued from page 1

(continued from page 1)

Ms. Melanie Bishop shares a bit about how she experienced the workshop.

“The Biostatistics workshop was very informative and enabled us to improve our skills in biostatistics in the context of mental health. The structure of the workshop enabled us to first re-cap on theory and then practically apply what we’ve learned. These practical sessions were very helpful in the learning process. Furthermore, I found the presenters to be experienced and well equipped in this field which made this workshop an excellent opportunity to learn about biostatistics. They were also very accessible to us if we wanted to approach them with questions. In conclusion, the combination of theory, practical sessions and experienced presenters made this workshop a great learning experience.”

Other feedback indicates that the training was seen as a very educative forum for mental health workers. It was regarded as “a great opportunity and useful”. The training was concluded on the final day with a bit of sightseeing for our foreign participants and facilitators.

Pictured below are attendees and facilitators



Visit to Prof Kirschbaum’s unit at Dresden University of Technology

“Prof Seedat and I visited Prof Kirschbaum’s unit on 22 October 2014, after attending the European College of Neuropsychopharmacology (ECNP) Congress in Berlin. Prof Kirschbaum’s unit specialises in stress research, with a focus on psychoneuroendocrinology. His laboratory has

Pictured from left...Prof. Clemens Kirschbaum, Prof. Soraya Seedat, Dr. Leigh Van Den Heuvel, Dr. Nina Alexander and Dr. Tobias Stalder



Research Collaboration with Dresden University of Technology

developed a liquid chromatography tandem mass spectrometry (LCTMS) method that allows for simultaneous identification of endogenous concentrations of seven steroid hormones (cortisol, cortisone, testosterone, progesterone, corticosterone, dehydroepiandrosterone (DHEA) and androstenedione) in human hair. Hair cortisol measurement may be a possible biomarker of chronic stress, reflecting cortisol secretion over longer periods of time. This is a novel approach to investigating hypothalamic-pituitary-adrenal axis function and its relation to stress. We met with Prof Clemens Kirschbaum, Dr Tobias Stalder and Dr Nina Alexander to discuss current and possible future collaborations. We reviewed the pilot data for hair samples sent from the Shared Roots and Rice studies and the analyses appeared to be successful” *(continued on page 3)*

continued from page 2

(from Page 2) "During the visit we were also shown their laboratory and taken through all the steps involved in hair sample preparation and analysis. The visit was an ideal opportunity to become more familiar with the processes involved and to strengthen our affiliations" (*Leigh Van Den Heuvel*)



Left are pictures of some beautiful buildings of Dresden's old Town (Aldtadt) that Leigh took.



Prof Kirschaum also visited the Department of Psychiatry in February this year and presented to the SARCHI group a lecture entitled:

"Stressed from head to toe: Hair Steroid deposition as a novel approach to measure chronic stress"

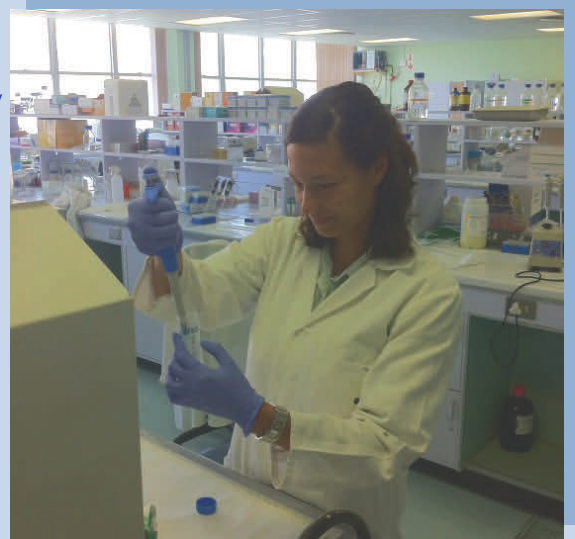
Pictured: From left

Ms. Monet Viljoen, Ms. Melanie Bishop, Mr. Khethelo Xulu, Dr. Gareth Nortje, Prof. Kirschaum, Dr. Georgina Spies, Mrs. Fatima Ahmed-Leitao, Dr. Stefanie Malan-Muller, Dr. Sian Hemmings, Prof. Soraya Seedat and Mr. Rohan Benecke

Staff/Student Profile

New Staff member **Rolanda Londt** (right) shares her experience as a newbie in our "Magic Lab".

"I recently started as the laboratory research assistant for the Department of Psychiatry at the Medicine and Health Science campus of the University of Stellenbosch in August 2014. My job entails routine extraction of DNA from saliva and blood samples, as well as additional lab experiments that are needed for specific projects and in general to provide technical support to ensure the smooth functioning of the lab and studies that the department is engaging in. I enjoy my job because I enjoy being in a research environment as well as working in a laboratory setting. The research environment provides a wonderful atmosphere as it is dynamic, shifting according to the demands of current research trends which encourages continuous advancement and learning. In addition, my job also exposes me to amazing researchers. This contributes greatly to the collective scientific knowledge and furthers our understanding of the many unanswered questions of life. I look forward to growing as a scientist by learning from their example."



Stefanie Malan-Muller (2nd from right) graduated with her PhD in Psychiatry. She is pictured here with her supervisor and co-supervisor, **Dr. Sian Hemmings** (far-right) and **Prof. Soraya Seedat**. (2nd from left), **Dr. Alitha Pithey** (far left) and **Dr. Akinsola Ojagbemi** (middle) also graduated.



Science, my lad, is made up of mistakes, but they are mistakes which is useful to make, because they lead little by little to the truth. *Jules Verne*



Staff/Student Profile

Below we highlight studies currently in progress or soon to commence.

Hormones in hair as possible predictive biomarkers of posttraumatic stress disorder in women who have been raped.

In South Africa, between 12-28% of adult women have been raped, and women are more likely to develop posttraumatic stress disorder (PTSD) following sexual assault or rape. The development of PTSD has also been linked to a dysfunctional hypothalamic-pituitary-adrenal (HPA) axis activity. Cortisol is one of the hormones of the HPA axis released in reaction to stress. The overarching aim of this study is to evaluate changes in cortisol levels and other steroid hormones (cortisone, testosterone, progesterone, cortisosterone, DHEA, and androstenedione) over time measuring levels in hair; and to evaluate the stress-response of people before and after a traumatic event, namely rape. This longitudinal study will form part of a MRC Flagship project entitled: "The impact of rape in women on HIV acquisition and retention and linkages to care: a longitudinal study" which is led by the Gender and Health Research Unit team (PI: Prof Naeemah Abrahams).

-Melanie Bishop (new PhD student)

My PhD study involves research in a sample of healthy secondary school learners, representative of Cape Town. A total of 1149 learners from 29 schools have participated in the first part of the study. The second phase of the study is successfully underway and involves learners from the first phase with varying levels (i.e. high and low) of childhood trauma and anxiety proneness. The main focus of this study is to investigate the thinking and reasoning ability, brain activity as well as the genes that may increase the risk for the development of anxiety disorders in these adolescents. I have noticed that of all the assessments that the learners undergo, the vast majority really enjoy the fun tasks (i.e. the neurocognitive tests) that they complete in order for us to determine their thinking and reasoning ability. Overall, the learners' enthusiasm to eagerly participate in this study has made this research a pleasant and enriching experience.

-Lindi Martin(PhD Candidate)

We are conducting a RCT treatment study to evaluate the effectiveness of Prolonged Exposure treatment for adolescents with PTSD. The comparative treatment is supportive counselling. To date we have completed a

small pilot study and we are one year into the main study. The study follows a trend internationally to bring treatment to communities (high schools), especially underserved communities. A further addition is to through task shifting make highly skilled interventions available to a larger community that typically have less to no access to these treatments. The study aims to demonstrate that counsellors (registered nurses) can provide effective treatment to adolescents who present with Post-traumatic Stress Disorder (PTSD) or sub-threshold PTSD. This study is both challenging and rewarding at the same time. The study staff contacts schools in our surrounding areas, explaining to educators and other members of staff what the purpose of our study is and how the learners would benefit from it. Establishing a good rapport with the school staff is pivotal for the success of the recruitment/study process. With the permission of the education department and the school, study staff then present to the school during an assembly where they explain the study to the learners.

Recruitment for the study can be a challenge. Some of the problems we met with are:

- High schools that were not keen to be part of the study, thus refusing to give permission for us to present to the learners.
- Learners who had an identified trauma but were too concerned to be linked to the study due to fear of negative peer evaluation.
- Learners who had an identified trauma but had never disclosed this information to their parents/siblings and as a result wanted to participate on the study without parental consent, which is not possible.
- Learners who wanted to participate in the study due to ongoing trauma/abuse at their homes. (Recommendations were made to assist these learners by referring to appropriate agencies)
- Problem of finding a dedicated contact person at some schools, thus making it difficult to set up appointments with learners for initial and follow up appointments.
- Many of the recruits did not meet the criteria for the study.

However, we have had many success stories where learners have reported that with the help of the counsellors and the treatment, their symptoms and lives have improved greatly. We are both made aware of the plight of adolescents and honoured to be witness to the value we are able to add to some of the participant's lives.

-Jaco Rossouw(PhD Candidate), Irene Mbanga (Research Nurse) and Tracy Jacobs (Research Assistant)

Staff/Student Profile

Khethelo Xulu (pictured below) joined the SARCHI research group in 2014, and started work on his PhD which is a collaborative investigation with German researchers from the University of Konstanz. He explains his project titled: "Understanding and treating trauma and violence related pathologies in South African Townships: Emergence and modifiability of epigenetic and neural memories of traumatic stressors and appetitive offending."

"This project essentially involves researching the molecular aetiology of posttraumatic stress disorder (PTSD) and aggressive behaviour, focusing on understanding epigenetic modifications. Maladaptive neuroplastic reorganisation due to continuous stressors becomes intrinsically featured in the body's defensive systems, altering their functional characteristics in long-lasting and self-perpetuating forms of memories. Life-threatening experiences create a 'fear network' – a highly inter-connected web of sensory, emotional, cognitive, interoceptive and contextual memories. However, given the critical role that social-environmental triggers play in the development of both aggression and PTSD, gene-environment interactions are likely to be crucial in understanding the molecular aetiology of these phenotypes. Epigenetic mechanisms govern the manner in which the genome responds to environmental triggers. In the quest to

treat and contain trauma-related illnesses, identifying the causal factors for violence-related trauma is of utmost importance.

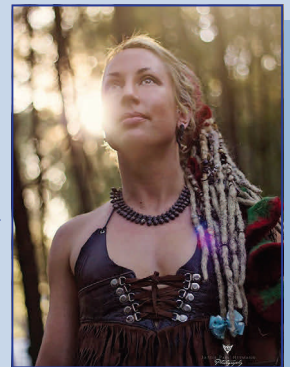
In this study, former young offenders will be treated with a psychological intervention, an adaptation of narrative exposure therapy (NET), modified specifically for violent offenders, known as the Narrative Exposure Therapy for forensic offender rehabilitation (FORNET). Epigenetic

modifications will be investigated longitudinally with an aim to identify biological prognostic and diagnostic markers for treatment outcomes."



Monet Viljoen (below) who is also registered for her PhD describes her study relating to anxiety and trauma in adolescents.

"Anxiety disorders are among the most prevalent of psychiatric disorders across all age groups with the onset typically in childhood or early adolescence and the risk for developing an anxiety disorder increasing with childhood maltreatment. However, little is still known about biomarkers of resilience in relation to anxiety, especially when trauma-exposed adolescents are implicated. Therefore, better elucidation of the physiological and immunological underpinnings may improve understanding of effective treatments of youth at risk for the later development of anxiety disorders. Our aim is to characterise the central and peripheral neuroendocrine and immunological profiles in older adolescents with low and high childhood trauma exposure and low and high anxiety-proneness. We will also assess the moderating influence of measures of resilience on neuroendocrine and immune function in these adolescents. We hypothesise firstly that high anxiety prone adolescents will present with hypoactivation of the HPA-axis and a pro-inflammatory profile potentiating cell-mediated immunity, while inversely affecting the humoral immune response. Secondly, in high trauma exposed and low anxiety prone adolescents, markers known to be associated with resilience will be present and will modulate the peripheral endocrine- and immune systems in a favourable manner."



Monet Pictured with Dr. Gareth Nortje and Ms. Melanie Bishop prepping participants for TSST testing





Conference Feedback

"The 7th Biennial Congress of The International Society of Affective Disorders was hosted in the beautiful German city of Berlin, from the 28th to 30th April 2014. The theme of the congress this year was "Affective Disorders: Integrated approaches for the 21st Century". The ISAD Biennial Conference is the most important gathering of the Affective Disorders community and is now recognised as an outstanding international meeting. This year the meeting was fairly small but the programme included talks by international experts in the field like Allan Young, Patel Vikram, Thomas Schlaepfer, Charles Nemeroff, Alan Schatzberg, Ned Kalin, Rainer Rupprecht and many more. The scientific programme included oral and poster presentations covering affective disorders, namely unipolar and bipolar depression, GAD, and more specific anxiety disorders such as agoraphobia, panic disorder and social phobia, OCD and PTSD. I presented a poster entitled: "Effects of HIV and childhood trauma on brain morphometry and neurocognitive function" which were some of the preliminary imaging results from the longitudinal HIV trauma study. This was the only poster presentation at this meeting based on research in the context of HIV infection. The meeting provided a great platform to present these results to peers and to meet and talk to top researchers in the field" (**Dr. Georgina Spies**)

"Conferences can vary a lot! I was lucky enough to present results from my review of traditional healers in mental disorders at two international conferences this year: one of the biggest and one of the smallest. The World Psychiatric Congress in Madrid had presenters from over 100 countries and over 3000 attendees, with about 13 parallel tracks spread over 5 days. I presented in 8 minutes to a room of about 20 people. The talk was well received, and some business cards were swapped. The conference was always busy and exciting, but the size inevitably made it somewhat impersonal and frenzied. Compare this to the 4th Annual Malawi Mental Health Conference, also held in September, which had presenters from a smattering of African countries and the UK, with only about 100 attendees, and a single track over 2 days. Ironically, at this tiny conference I had 15 minutes to present to a packed room of over 50 people. My talk was followed by a real traditional healer, and the combined presentation generated much more enthusiastic discussion than in Madrid. Each day's talks extended well into the early evening. Any thoughts of creating parallel sessions next year were instantly squashed by the African delegates who enthusiastically refuse to have to choose what to miss. They want to hear every single speaker, even if it means carrying on into the evening. This conference was much more personal, and indeed, much more memorable. This was unexpected – but it may serve as a reminder that smaller conferences have their unique charms" (**Dr. Gareth Nortje**)

Dr. Stefanie Malan Muller had the great opportunity to be one of the attendees of the EMBL advanced course on whole transcriptome data analysis, a very informative workshop hosted by the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany from 24 – 26 June 2014.

"I was also fortunate to receive EMBL's Corporate Partnership Programme (CPP) fellowship to cover travel expenses. The course was presented by two scientists, professor Benes, who runs the sequencing facility at EMBL, and prof Calogero, a bioinformaticist from Italy. Both professors have years of experience with next generation sequencing (NGS) and professor Calogero has also designed a partial user-interface programme for analysing NGS data. This is especially useful for biologists that struggle to do the more complex command line analyses. During this course they taught us how to use this user-interface programme to analyse our RNA sequencing data in order to identify differentially expressed genes and microRNAs. Professor Benes also provided in depth information regarding the planning of RNA/transcriptome/microRNA NGS experiments and which platforms and products work best for which applications. This course was of particular interest to me since we have generated a large set of RNAseq and miRNAseq data. This workshop was not only a great opportunity to gain experience in NGS data analysis, but also to meet other scientists in the field."



SARCHI Awards 2014

SARCHI students were awarded this year with a number of competitive scholarships, bursaries and fellowships.

Well done to everyone !!!!!

Ms. Susanne Bakelaar

Hendrik Vrouwes Bursary

NRF Innovation Doctoral Scholarship

Mr Rohan Benecke

NRF SARCHI Grant holder Master's Bursary 2014

Harry Crossley Bursary

Dr. Stefanie Malan-Müller

NRF Innovation Post-Doctoral Scholarship

Biological Psychiatry Research Career Award

Harry Crossley Bursary

Ernst and Ethel Eriksen Trust Bursary for 2014

Ms. Lindi Martin

NRF Innovation Doctoral Scholarship 2014

Hendrik Vrouwes Scholarship 2014

Harry Crossley Bursary 2014

Mr. Jaco Rossouw

SURMEPI Grant

Dr. Georgina Spies

Dean's Post-Doctoral Fellowship 2014

MRC Postdoctoral Fellowship 2014

Was nominated for the AU-TWAS Young Scientist National Awards in South Africa for 2014

Ms. Monet Viljoen

Hendrik Vrouwes Bursary

Mr. Khethelo Xulu

HW Truter Bursary

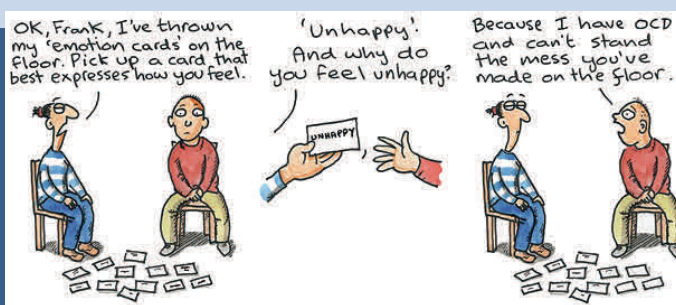
Oppenheimer Memorial Trust Award

NRF SARCHI Grant holder PhD Bursary 2014



To me there has never been a higher source of earthly honour or distinction than that connected with advances in science. *Isaac Newton*

Dose of Witticism.....



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