

SPONSORED BY



National
Research
Foundation

12TH ANNUAL BRIP SYMPOSIUM

18 & 19 October 2022

Scientific Programme

Time: 18th October 8:45 – 16:00
19th October 8:55 – 13:30

Venue: SAMRC Conference Centre
Auditorium & Virtual | MS Teams

Day 1
Tuesday, 18 October 2022

8h15 – 8h45

Registration

8h45 – 9h00

Welcome and Opening Address by the
President and CEO of the SAMRC, Prof
Glenda E. Gray

POSTER PRESENTERS

1. Sarah Jacobs (PhD)
2. Lihle Moyakhe (PhD)
3. Samira Ghoor (PhD)
4. Dolly Kgakishe (PhD)
5. Mhlali Mlaza (PhD)
6. Sanele Khoza (PhD)
7. Temitope Ajani (PhD)
8. Tshedimosho Kgoadi (MSc)
9. Tshwarelo Mohale (MSc)
10. Sinazo Zingani (MSc)
11. Johara Khan (MSc)
12. Sivuyile Langa (MSc)
13. Polette Aphanh (MSc)
14. Thobile Ngqaneka (MSc)

For enquiries email:

BRIP.symposium@mrc.ac.za

Session 1

Session Chairs:
Drs Pieter Venter & Stephanie Dias

9h00 – 9h30



Keynote speaker:

Prof Liesl Zühlke, Vice-president Extramural Research & Internal Portfolio, SAMRC: *South African perspectives on paediatric cardiology and rheumatic heart disease*

9h30 – 9h45

Evaluation of *Lessertia frutescens* and *Echinacea purpurea* hepatotoxic effects using HepG2/C3A spheroids and Wistar rats

9h45 – 10h00

Maintaining endogenous levels of coenzyme Q is necessary to protect against palmitate-induced oxidative damage in cardiac muscle cells

10h00 – 10h15

Alteration of PGC1- α in the mitochondrial homeostasis of cardiomyocytes under hyperglycemia. Role of the GLP-1R activation

10h15 – 10h30

Rationally designed trinuclear benzimidazole-based ruthenium(II) complexes in chemo- and photodynamic therapy

10h30 – 11h00

Poster Presentations: 1-6

11h00 – 11h30

Tea/coffee

Sthembile Sithole

(MSc)

Sinenhlanhla Mthembu

(PhD)

Jairo Lumpuy-Castillo

(MSc)

Athi Welsh

(PhD)

Session 2

Session Chairs:
Drs Kholofelo Malemela & Yonela Ntamo

11h30 – 12h00



Keynote speaker:

Dr Seeiso Koali, Research Integrity Office, SAMRC: *Research integrity and responsible conduct of research*

12h00 – 12h15

A pilot study: The documentation of *Schistosoma mansoni* infection in a recently established rhesus macaque model of HIV/AIDS

12h15 – 12h30

The effect of metformin and hydrochlorothiazide on the hepatic metabolism of ivermectin

12h30 – 12h45

Obesity, diabetes and age-related changes in adipocyte morphology and gene expression in cardiac, retroperitoneal, and inguinal fat depots from *db/db* mice

12h45 – 13h00

Poster Presentations: 7-9

13h00 – 14h00

Lunch

Asisipho Mzukwa

(PhD)

Thuli Mtambo

(MSc)

Thembeke Nyawo

(PhD)

Session 3

Session Chairs:

Drs Lawrence Mabasa & Tarryn Willmer

14h00 – 14h30



Keynote speaker:

Prof Chih-Pin Chuu, Institute of Cellular and System Medicine, National Health Research Institutes, Taiwan:
Aspalathus linearis exhibits anti-inflammation effects on HUVEC cells and zebrafish model via regulation of metabolism pathways

14h30 – 14h45

The involvement of mitochondrial pathways in pulmonary arterial hypertension as a tuberculosis sequela in a South African cohort

14h45 – 15h00

The anti-migrative and anti-adhesive effects of *Thymus vulgaris* methanolic extract on MDA-MB-231 breast cancer cells

15h00 – 15h15

Poster Presentations: 10-12

Postdoc Forum

15h15 – 15h25

Aspalathus linearis suppresses survival and proliferation of human enzalutamide-resistant prostate cancer cells via inhibition of c-Myc and androgen receptor stability

15h25 – 15h35

The acetone extract of *Tarhonanthus camphoratus* – possess anti-migratory, anti-invasive, and anti-adhesive properties

15h35 – 15h45

Seroprevalence of SARS-CoV-2 antibodies and associated risk factors in the student population at Nelson Mandela University

15h45 – 15h55

Retinal Vessel Caliber Features Predict 10-year Cardiovascular Risk with ~88% Accuracy in a Western Cape Study Population

15h55 – 16h00

Discussion and closing for the day

Carmen-Marie Payne

(MSc)

Tubake Sebei

(MSc)

Dr Ying-Yu Kuo

(Postdoc)

Dr Bernice Monchusi

(Postdoc)

Dr Kaitlin Sprong

(Postdoc)

Dr Frans Everson

(Postdoc)

Day 2

Wednesday, 19 October 2022

8h40 – 8h55

Registration/log-in

8h55 – 9h00

Welcome:
Prof Christo Muller, Chief Specialist Scientist, BRIP

Session 4

Session Chairs:

Drs Kwazi Gabuza & Jyoti Sharma

9h00 – 9h30



Keynote speaker:

Prof Basil Leonard, Managing Director – EQ Leadership (Pty); Part-time Faculty – Stellenbosch Business School and USB-ED: *The role of emotional intelligence in developing future leaders*

9h30 – 9h45

Characterizing the shared genetic influences between schizophrenia and subcortical brain regions

9h45 – 10h00

The effect of long-term high-fat diet feeding on intestinal health of aged vervet monkeys

10h00 – 10h15

Ubiquinone (CoQ) ameliorates mitochondrial bioenergetics & apoptosis in an *in vitro* model of doxorubicin-induced cardiotoxicity

10h15 – 10h30

Establishment of a H9c2 cardiomyoblast spheroid model

10h30 – 10h40

Poster Presentations: 13-14

10h40 – 11h15

Tea/coffee

Olivia Wootton

(PhD)

Ronaldo Mukhari

(MSc)

Sharnay Naidoo

(MSc)

Barend Groenewald

(MSc)

Session 5

Session Chairs:

Drs Funanani Mashau & Babalwa Jack

11h15 – 11h45



Keynote speaker:

Prof Fabio di Lisa, Department of Biomedical Sciences, University of Padova, Italy: *The role of mitochondrial dysfunction and reactive oxygen species in cardiovascular disease*

11h45 – 12h00

Phytochemical Profiling, Cytotoxicity Assessment and Molecular Mechanism of Action of Traditional "uMhlabelo" Methanolic Extracts

12h00 – 12h15

Usefulness of selected published host transcriptomic signatures in discriminating Tuberculosis from Lower Respiratory tract and latent Infection in a low-endemic hospital-based setting

12h15 – 12h30

Investigating the Relationship Between Systemic Inflammation (hsCRP) and Retinal Arteriolar Geometric Features in a Western Cape Study Population

12h30 – 12h45

Investigating the co-operation between the human papillomavirus (HPV) oncoproteins E6/E7 with the oncogenic T-box transcription factor 3 (TBX3) to promote cervical cancer

12h45 – 13h15

Discussion, judges' deliberations

Kwandile Mbhele

(MSc)

Bih Chendi

(PhD)

Jody Abrahams

(BSc Hons)

Carly Burmeister

(MSc)

13h15 – 13h30

Prize giving and closing:

Dr Mongezi Mdhuli, Chief Research Operation Officer in the office of the SAMRC President

Lunch

KEYNOTE SPEAKERS



Prof Liesl Zühlke

(Vice-president Extramural Research & Internal Portfolio, South African Medical Research Council SAMRC)

Professor Liesl Zühlke is the Vice-President of the South African Medical Research Council- Extramural Research and Internal portfolio (ER-IP), a paediatric cardiologist in the Division of Paediatric Cardiology at Red Cross War Memorial Children's Hospital and director the Children's Heart Disease Research Unit focused on family-centred research into Children's Heart Diseases of relevance in Africa. Her research projects span Congenital and Rheumatic Heart Disease, HIV in adolescents, Grown-up Congenital Heart Disease and cardiac disease in women of childbearing age. She was the 2018 recipient of the MRC/Dfid African Research Leader Award, a finalist in the 22nd National Science and Technology Forum (NSTF)-South32 Awards for the category: TW Kambule-NSTF Award: Researcher and is designated one of the top three international scholars in RHD research. She was the 2020 recipient of the NRF award for public engagement with research. In addition to her medical degrees, Liesl holds an MPH in clinical research methods and PhD both from the University of Cape Town as well as an MSc in Health Economics, Outcomes and Management of Cardiovascular Sciences from the London School of Economics.

Prof Zühlke is a past-president of the South African Heart Association, past-president of the Paediatric Cardiac Society of South Africa, and outgoing chair and co-chair of the PASCAR PANPACH (Paediatric and Congenital Cardiology) and Rheumatic Heart Disease Task Forces respectively. Internationally she serves as President of Reach (Rheumatic Heart Disease, Evidence, Advocacy, Communication and Hope), is a board member of the World Heart Federation, a medical advisory committee member of Children's Heart Link, an international advisory committee member of Global ARCH as well as an executive member of SAVAC, the global Strep A vaccine consortium.

Liesl is passionate about the prioritisation of women and children in the Global health agenda, both as co-creators and recipients of efforts to improve the lives of women and children across the world. She was the only commissioner from Africa included in the Lancet Commission for Cardiovascular Disease in women, and has published over scientific 160 papers, reports and book chapters with over 40 000 citations.



Dr Seeiso Koali

(Research Integrity Officer at the SAMRC)

Dr. Seeiso Koali is the Research Integrity Officer at the South African Medical Research Council (SAMRC). He provides guidance and advice about policies, ethics guidelines and procedures associated with research integrity as well as handling reported cases on breach of research norms/standards and possible research misconduct. He also organises training in Ethics and Good Clinical Practice for the SAMRC staff and ensuring compliance to regulatory requirements that govern responsible conduct of research. Koali holds PhD in Bioethics (University of Witwatersrand); MSc Med Bioethics & Health Law from the (University of Witwatersrand, Steve Biko Centre for Bioethics); M. Phil in Biomedical Ethics (Stellenbosch University); PGD in Public Health (University of Western Cape), Honours in Philosophy (National University of Lesotho) and B.A. in Philosophy from the (Urbaniana Pontifical University, Rome Italy). Before joining the SAMRC, Koali was a senior lecturer at the National University of Lesotho, Department of Philosophy. Among other courses, he taught Medical Ethics, Bioethics, Introduction to Applied Ethics and Introduction to Moral Philosophy. Koali has also served as a member of Institutional Review Board at Baylor College of Medicine Children's Foundation-Lesotho in (2013-2016).



Prof Chih-Pin Chuu

(Institute of Cellular and System Medicine, National Health Research Institutes, Miaoli County, Taiwan)

Prof. Chuu's research focusses on the study of the molecular mechanisms regulating the disease progression of prostate cancer (PCa), as well as the development of novel therapeutic strategy for advanced PCa. Prof. Chuu's lab studies the roles of androgen receptor (AR) signaling, epigenetic regulatory proteins, and liver X receptor (LXR) signaling in cancer metastasis, the development of castration-resistant prostate cancer (CRPC), cancer metabolism rewiring, cancer stemness, and the development of resistance against docetaxel, enzalutamide or abiraterone acetate in PCa using human cell lines, animal models, and clinical samples in collaboration with urologists from KMU, TVGH, and TAFGH. Prof. Chuu collaborates with the Medical Research Council of South Africa to investigate the application of green rooibos (*Aspalathus linearis*) extract (GRT) on regulation of gut microbiota, prevention of diabetes, and its anticancer effects on PCa. For the institutional mission of cardiovascular research, Prof. Chuu's lab investigates the effects of GRT, caffeic acid phenethyl ester (CAPE), and Taiwanese green propolis on prevention of inflammation or ischemia of blood vessels as well as hypercholesterolemia. Prof. Chuu set up the second Micro-Western Array (MWA) system, a high-throughput Western blotting array, in the world in NHRI core facility. Prof. Chuu's lab uses MWA for research on cancer biology, cardiovascular diseases, and Alzheimer's disease.



Prof Fabio di Lisa

(Department of Biomedical Sciences, University of Padova, Italy)

Prof. Di Lisa has provided significant contributions elucidating the role of mitochondrial dysfunction in cardiac diseases. He started his scientific activity characterizing mitochondrial alterations in ischemia/reperfusion and substrate utilization, especially highlighting the role of carnitine. Considering that findings obtained in isolated mitochondria might not always reflect the behavior of these organelles in situ, in the early nineties he started investigating mitochondrial function in isolated cardiomyocytes. He found that the mitochondrial membrane potential is maintained during anoxia using ATP produced by glycolysis, so that mitochondria changes from ATP producers into avid ATP utilizers. He also demonstrated that myocardial failure could be the result of a reduced Ca^{2+} uptake rather than Ca^{2+} overload. The interest in Ca^{2+} homeostasis triggered Di Lisa's interest in proteolysis of myofibrillar proteins. He demonstrated that calpain-catalyzed cleavage of troponin I and T is modulated by their phosphorylation, and their fragments are linked by transglutaminase as a result of Ca^{2+} overload occurring upon post-ischemic reperfusion. Myofibrillar proteins were also found to represent binding sites for cytosolic proteins redistributing during ischemia because of acidosis and ATP depletion. By developing methods to study the PTP in isolated cells and intact hearts Prof. Di Lisa characterized the occurrence of transient and prolonged openings demonstrating that the latter modality is involved in cell death. In addition, PTP opening was causally related to NAD depletion and loss of viability induced by reperfusion. Derangements of mitochondria and myofibrillar proteins paved the way for studies on oxidative alterations and ROS formation. After highlighting tropomyosin as a target of oxidative stress in reperfused hearts, Prof. Di Lisa demonstrated that the oxidation of myofibrillar proteins correlates linearly with contractile impairment. This relationship that applies to various experimental models and human heart failure has been extended to muscular dystrophy. Concomitantly, bridging the gap between contractile proteins and mitochondria he provided evidence that reactive oxygen species are produced mostly within mitochondria, and especially by p66Shc and monoamine oxidases (MAO). Moving from ischemia/reperfusion injury to myocardial failure, MAO was shown to contribute to maladaptive remodeling highlighting also the potential therapeutic efficacy of MAO inhibition. This concept has been further documented in muscular dystrophy.



Prof Basil C. Leonard

(Managing Director – EQ Leadership (Pty); Part-time Faculty – Stellenbosch Business School and USB-ED)

An inspirational and highly sought-after motivational facilitator of Leadership, Emotional Intelligence and Personal Mastery in both the Private and Public Sectors. A well-qualified professional (BComm, MDiv, DTh, MPhil - Futures Studies) from local (UWC and Stellenbosch) and international (Westmont and Trinity) universities. Prof Leonard continues to facilitate at different universities as well as in many private companies