

# SASBMB 2022

BIOCHEMISTRY MATTERS

originally SASBMB 2020



\*The views expressed in presentations made at the SASBMB Conference 2022 are those of the speaker and not, necessarily, of SASBMB.

Sunday, 23 January 2022	
17:30 – 18:00	<b>Opening Session</b> Chairperson: Wolf-Dieter Schubert Opening and Welcome Address <b>Paul Abidemi Kappo</b>
18:00 – 18h45	<b>Nobel Lecture</b> Chairperson: Stephanie Burton Innovation by evolution: Bringing new chemistry to life <b>Frances Arnold</b> <i>Caltech, USA</i>

Monday, 24 January 2022	
08:30 – 08:55	Exhibitor Presentation
08:55 – 09:00	Break
09:00 – 10:35	<b>Plenary Session</b> <b>Chair: Paul Abidemi Kappo</b>
09:00 – 09:50	<b>SASBMB Silver Medal</b> Metabolomics and its applications in plant sciences <b>Fidele Tuqizimana</b> <i>University of Johannesburg, South Africa</i>
09:50 – 10:35	<b>SASBMB Gold Medal</b> Life at the edge: The biochemistry and applied microbiology of extreme environments <b>Don Cowan</b> <i>University of Pretoria, South Africa</i>
10:35 – 10:40	Break

10:40 - 12:25	<b>Combatting Viral Diseases</b> <b>Chair: Ntombi Gama</b>	<b>Phytomedicine and Drug Development</b> <b>Chair: Moganavelli Singh</b>	<b>Understanding and Treating Cancer I</b> <b>Chair: Adrienne Edkins</b>
10:40 - 11:10	The antibody response to SARS-CoV-2 – What have we learned in the last 2 years of this pandemic? <b>Thandeka Moyo-Gwete</b> <i>National Institute for Communicable Diseases, South Africa</i>	Biocontrol of <i>Fusarium</i> species utilising indigenous rooibos and honeybush extracts <b>Beauty E. Omoruyi</b> <i>Cape Peninsula University of Technology, South Africa</i>	Modulating cellular cholesterol for anticancer therapy <b>Mandeep Kaur</b> <i>University of the Witwatersrand, South Africa</i>
11:10 - 11:25	An investigation of the HIV Tat C31S and R57S mutation on peripheral immune marker levels in South African participants: A pilot study <b>Monray Williams</b> <i>North-West University, South Africa</i>	Developing proteolysis targeting chimera (PROTACs) for amyloid precursor protein modulation <b>Alex Delport</b> <i>University of KwaZulu-Natal, South Africa</i>	The c-Myc/TBX3 axis promotes cellular transformation of sarcoma-initiating cells <b>Victoria Damerell</b> <i>University of Cape Town, South Africa</i>
11:25 - 11:40	Production of secreted rotavirus VP6 by <i>Arxula adenivorans</i> as subunit vaccine candidate <b>Corinne Fourie</b> <i>University of the Free State, South Africa</i>	Evaluating the use of aqueous rooibos tea extracts as inhibitors of inflammation in UVB-irradiated skin keratinocytes <b>Hapiloe Maranyane</b> <i>Cape Peninsula University of Technology, South Africa</i>	Fluc-mRNA delivery to cervical cancer cells using Curcumin-Poly-L-lysine modified gold nanoparticles: A Proof of Principle Study <b>Jeaneen Venkatas</b> <i>University of KwaZulu-Natal, South Africa</i>
11:40 - 11:55	Management of paediatric patients with COVID-19 with a particular focus on Africa; findings and implications <b>Marshall Gowere</b> <i>University of Pretoria, South Africa</i>	Relevance of brown seaweed fucoidans as therapeutics for Type 2 diabetes mellitus (T2DM) and cancer progression <b>Blessing Mabate</b> <i>Rhodes University, South Africa</i>	The role of different Hsp70-Hsp90 Organising Protein (HOP) isoforms in cancer biology <b>Kelly Schwarz</b> <i>Rhodes University, South Africa</i>
11:55 - 12:10	Hop mediated regulation of PKM and cellular metabolism in KSHV infection <b>Elisa Kirigin</b> <i>Rhodes University, South Africa</i>	The hepatoprotective capacity of South African <i>Cyclopia intermedia</i> against selected ROS inducers <b>Shanika Reddy</b> <i>Nelson Mandela University, South Africa</i>	Analysis of Driver Gene Mutations in Oesophageal Squamous Cell Carcinoma <b>Hendrina Shipanga</b> <i>University of Cape Town, South Africa</i>
12:10 - 12:25	Computational evaluation of the inhibitory potential of phytocompounds from selected African botanicals against human host cell targets of SARS-CoV-2 <b>John Omo-Osagie Uhomobhi</b> <i>Durban University of Technology, South Africa</i>	The discriminatory metabolites and $\alpha$ -amylase and $\alpha$ -glucosidase inhibition of commercial green and purple teas [ <i>Camellia sinensis</i> (L.) O Kuntze] <b>Morne Tolmie</b> <i>University of Pretoria, South Africa</i>	Investigating the interaction of RBBP6, p53 and MDM2 in normal and cancerous cell lines <b>Bonnie Russell</b> <i>UNISA, South Africa</i>
12:25 – 12:30	Break		
12:30 – 13:30	Lunch, Poster Presentations, Commercial Exhibits, Personal Meetings		
13:30 - 15:15	<b>Molecular Structure and Function</b> <b>Chair: Carmien Tolmie</b>	<b>Hereditary and Degenerative Diseases</b> <b>Chair: Pontsho Moela</b>	<b>Environmental Biochemistry and Phytomedicine</b> <b>Chair: Ian Dubery</b>
13:30 - 14:00	Single Molecule Spectroscopy Reveals Secret Dynamics of phycobilisomes <b>Michal Gwizdala</b> <i>University of Pretoria, South Africa</i>	Treatment of mitochondrial disease pathology in a Leigh syndrome mouse model by metallothionein 1 overexpression: is there still a role for redox active compounds? <b>Francois van der Westhuizen</b> <i>North-West University, South Africa</i>	Discovery of novel enzymes with potential of antimicrobial activity <b>Sibongile Mtimka</b> <i>CSIR, University of KwaZulu-Natal, South Africa</i>
14:00 - 14:15	Insight into somatic angiotensin-I converting enzyme structure and dynamics revealed by cryo-electron microscopy <b>Lizelle Lubbe</b> <i>University of Cape Town, South Africa</i>	Continuous data reveals distinct patterns in metabolite levels along a mitochondrial disease severity scale <b>Marianne Venter</b> <i>North-West University, South Africa</i>	Computational insights into phenolics as leads against bacterial penicillin-binding protein 3 <b>Jamiu Olaseni Aribisala</b> <i>Durban University of Technology, South Africa</i>
14:15 - 14:30	Effect of promoter usage on recombinant eCG expression levels in stably-transfected CHO-K1 cells <b>Nkhasi Lekena</b> <i>University of the Free State, South Africa</i>	Systemic and tissue-specific metabolic alterations in a mouse model of Leigh syndrome <b>Karin Terburgh</b> <i>North-West University, South Africa</i>	Exploring the mechanism of action of two tick derived antimicrobial peptides, Os and Os-C, against planktonic <i>Candida albicans</i> <b>Mandelie Van der Walt</b> <i>University of Pretoria, South Africa</i>

14:30 -14:45	Biochemical and structural characterization of ClpK from <i>Klebsiella pneumoniae</i> <b>Tehrim Motiwala</b> <i>University of KwaZulu-Natal, South Africa</i>	Genomic and metabolic evaluation of the HEK 293 cell line for use in genetic disease modelling of inherited fatty acid $\beta$ -oxidation disorders <b>Michelle Mereis</b> <i>North-West University, South Africa</i>	The protective effect of Rooibos in LPS-induced skin inflammation <b>Claudia Abrahams</b> <i>Cape Peninsula University of Technology, South Africa</i>
14:45 - 15:00	Homology modelling of <i>Trypanosoma brucei</i> major surface proteases and molecular docking of variant surface glycoproteins and inhibitor ligands for drug design <b>Lucky Marufu</b> <i>University of KwaZulu-Natal, South Africa</i>	Cell compartment-specific metabolic alterations in a mouse model of Leigh syndrome <b>Gunter Van der Walt</b> <i>North-West University, South Africa</i>	<i>In silico</i> docking and in vitro studies, identified curcumin, 18 $\alpha$ -glycyrrhetic acid, rosmarinic acid, and quercetin as inhibitors of $\alpha$ -glucosidase and pancreatic $\alpha$ -amylase and lipid accumulation in HepG2 cells – important type 2 diabetes targets <b>Kadima Tshiyoyo</b> <i>University of Pretoria, South Africa</i>
15:00 - 15:15	Structural and functional characterization of the secreted adhesin EtpA of enterotoxigenic <i>Escherichia coli</i> <b>Ntui Clifford Manyo</b> <i>University of Pretoria, South Africa</i>	Biased signalling of the non-peptide luteinising hormone receptor agonist, LHR-Chap <b>Monique Vermaak</b> <i>University of Pretoria, South Africa</i>	Probing the limits of photosynthesis in the Namib Desert <b>Tjaart Krüger (Michal Gwizdala)</b> <i>University of Pretoria, South Africa</i>
15:15 – 15:20	Break		
15:20 – 16:55	<b>Plenary Session</b> <b>Chair: Ed Sturrock</b>		
15:20 – 16:10	Structural basis of protein synthesis in eukaryotes: From basic principles to translation in coronavirus infected cells <b>Nenad Ban</b> <i>Swiss Federal Institute of Technology, Switzerland</i>		
16:10 – 16:55	Implications of insulin resistance and mitochondrial dysfunction in the pathogenesis of type 2 diabetes: Assessing the potential therapeutic effects of natural compounds <b>Sithandiwe Mazibuko-Mbeje</b> <i>North-West University, South Africa</i>		
16:55 – 17:00	Break		
17:00	Special Event		

<b>Tuesday, 25 January 2022</b>			
08:30 – 08:55	Inqaba Bioscience Presentation		
08:55 – 09:00	Break		
09:00 – 10:35	<b>Plenary Session</b> <b>Chair: Francois van der Westhuizen</b>		
09:00 – 09:50	Findings from the women's health initiative randomized controlled dietary modification trial and the women's health study challenge the prescription of the low-fat high-carbohydrate "heart-healthy" prudent diet, at least in postmenopausal women with insulin resistance <b>Timothy Noakes</b> <i>The Noakes Foundation, South Africa</i>		
09:50 – 10:35	<b>Mervin Meyer</b> <i>University of the Western Cape, South Africa</i>		
10:35 – 10:40	Break		
10:40 - 12:25	<b>Metabolism and Enzymology I</b> <b>Chair: Theresa Coetzer</b>	<b>Understanding and Treating Cancer II</b> <b>Chair: Karl Storbeck</b>	<b>Technical Biochemistry</b> <b>Chair: Samantha Gildenhuys</b>
10:40 - 11:10	An analysis of the effect of the galactomannan binding ability of $\beta$ -mannosidase, BtMan2A, on its activity and synergism with a $\beta$ -mannanase <b>Samkelo Malgas</b> <i>University of Pretoria, South Africa</i>	Characterization of novel inhibitors for triple negative breast cancer: Four needles in a haystack <b>Jo-Anne de la Mare</b> <i>Rhodes University, South Africa</i>	CSIR synthetic nanobiotechnology and biofoundry program <b>Deepak Balaji Thimiri Govindaraj</b> <i>Council for Scientific and Industrial Research, South Africa</i>
11:10 - 11:25	Natural variation in the 'control loop' of BVMOAFL210 and its influence on regioselectivity and sulfoxidation <b>Carmien Tolmie</b>	Identification of colon cancer stage specific N glycoproteins that may serve as novel prognostic or diagnostic biomarkers <b>Vivash Naidoo</b>	The isolation of <i>plasmodium falciparum</i> haem species for detection by HPLC-UV-vis <b>Keletso Maepa</b> <i>University of Cape Town, South Africa</i>

	<i>University of the Free State, South Africa</i>	<i>University of the Witwatersrand, South Africa</i>	
11:25 - 11:40	Surface tethered xylosidase activity improves xylan conversion in engineered strains of <i>Saccharomyces cerevisiae</i> <b>Francois Kruger</b> <i>University of the Western Cape, South Africa</i>	The marine-derived antibiotic chromomycin A5 targets the oncogenic TBX2: a new strategy to treat breast cancer <b>Claire Bellis</b> <i>University of Cape Town, South Africa</i>	COVID-19 Pandemic: The importance of coordinated research and development efforts, multi-stakeholder relations and a need to support local innovation <b>Daniel Ndima</b> <i>CAPEBIO™, South Africa</i>
11:40 - 11:55	In silico docking and ADMET studies on clinical targets for type 2 diabetes correlated to <i>in vitro</i> inhibition of pancreatic alpha-amylase and alpha-glucosidase by rutin, caffeic acid, p-coumaric acid, and vanillin <b>Jamie McMillan</b> <i>University of Pretoria, South Africa</i>	The kisspeptin signaling pathway and its role in breast cancer biology <b>Udochi Felicia Azubuikwe</b> <i>University of Pretoria, South Africa</i>	Evaluation of the efficacy of ethanol leaf extract of <i>Helichrysum petiolare</i> Hilliard and B.L. Burt against skin aging <b>Jonas Sagbo</b> <i>Cape Peninsula University of Technology, South Africa</i>
11:55 - 12:10	Identification and characterization of <i>Sorghum bicolor</i> heme oxygenase genes and their role in conferring abiotic stress tolerance <b>Vivian Ikebudu</b> <i>University of the Western Cape, South Africa</i>	Assessment of the anti-cancer effects of the herbal medicine <i>Dodonaea viscosa</i> - strong antiproliferative activity shown against lymphoma cells <b>Aaliyah Saferdien</b> <i>University of Cape Town, South Africa</i>	Plant-based production of highly potent anti-HIV antibodies with engineered post-translational modifications <b>Advaita Singh</b> <i>Council for Scientific and Industrial Research, South Africa</i>
12:10 - 12:25	Comparison of different derivatization techniques for LC-MS/MS analysis of urinary oxidative stress markers <b>Shiné Volschenk</b> <i>North-West University, South Africa</i>	Marine-derived chromomycin A5: a novel strategy to treat TBX2-driven rhabdomyosarcoma <b>Mihlali Vuyo Mlaza</b> <i>University of Cape Town, South Africa</i>	Characterising the immunometabolic profile of HIV/TB co-infection in cohorts untreated and treated for HIV <b>Chandré Liebenberg</b> <i>North-West University, South Africa</i>
12:25 – 12:30	Break		
12:30 – 13:30	Lunch, Poster Presentations, Commercial Exhibits, Personal Meetings		
13:30 - 15:15	<b>Parasitic Diseases</b> <b>Chair: Jandeli Niemand</b>	<b>Molecular Cell Biology</b> <b>Chair: Raymond Hewer</b>	<b>Metabolism and Enzymology II</b> <b>Chair: Samkelo Malgas</b>
13:30 - 14:00	Environmental effects on the gut microbiota of the <i>Anopheles gambiae</i> complex (Diptera: Culicidae) <b>Shūné Oliver</b> <i>University of the Witwatersrand, South Africa</i>	The transcriptional repressor Blimp1/PRDM1 regulates the maternal decidual response in mice <b>Mubeen Goolam</b> <i>University of Cape Town, South Africa</i>	Selective inhibition of the C-domain of angiotensin-converting enzyme combined with inhibition of neprilysin <b>Ed Sturrock</b> <i>University of Pretoria, South Africa</i>
14:00 - 14:15	Studying the digestive vacuole lumen in <i>Plasmodium falciparum</i> <b>Larnelle Garnie</b> <i>University of Cape Town, South Africa</i>	ROS-independent activity of the novel artemisinin WHN-11 towards growth inhibition and cellular dysfunction in triple-negative breast cancer (TNBC) cells <b>Deborah Kajewole</b> <i>Rhodes University, South Africa</i>	An investigation into the possible sources of free radical generation in synthetic hormone metabolism <b>Elardus Erasmus</b> <i>North-West University, South Africa</i>
14:15 - 14:30	Uncovering the effects of the immune system and treatments on metabolic pathologies in the malaria infected host <b>Shade Horn</b> <i>Stellenbosch University, South Africa</i>	<i>In vitro</i> effect of a sirtuin inhibitor and its possible synergistic effect with a potential tubulin inhibitor on breast cancer cell lines <b>Sandisiwe Mahlangu</b> <i>University of Pretoria, South Africa</i>	Formulation of a xylanase additive for efficient arabinoxylan hydrolysis in broiler feeds <b>Lebogang Ramatsui</b> <i>Rhodes University, South Africa</i>
14:30 - 14:45	Glycolytic flux control of glyceraldehyde-3-phosphate dehydrogenase in <i>Lactococcus lactis</i> and <i>Plasmodium falciparum</i> <b>Tagwin Frantz</b> <i>Stellenbosch University</i>	Association between inflammation and oxidative stress of white and brown adipose tissues in db/db mice: A longitudinal study <b>Marakiya Moetlediwa</b> <i>North-West University, South Africa</i>	11 $\beta$ -Hydroxysteroid dehydrogenase type 1 modulates the activation of 11-oxygenated androgens by aldo-keto reductase 1C3 <b>Imken Oestlund</b> <i>Stellenbosch University, South Africa</i>
14:45 - 15:00	The biological interrogation of <i>Plasmodium falciparum</i> 's putative mitochondrial pyruvate carrier <b>Shante Da Rocha</b> <i>University of Pretoria, South Africa</i>	Identification and characterisation of small-molecule growth hormone-releasing hormone receptor antagonists <b>Tarryn Radomsky</b> <i>University of Pretoria, South Africa</i>	An analytical method to investigate the metabolites and co-factors of the methionine-homocysteine cycle in women using combined oral contraceptives and non-users <b>Tarien Jacobs</b> <i>North-West University, South Africa</i>

15:00 - 15:15	Expression and characterization of a <i>Plasmodium falciparum</i> copper-binding protein (Sco1) <b>Javen Munsami</b> <i>University of KwaZulu-Natal, South Africa</i>	
15:15 – 15:20	Break	
15:20 – 16:55	<b>Plenary Session</b> <b>Chair: Pete Meissner</b>	
15:20 – 16:10	How basic science research beat COVID <b>Lynn Morris</b> <i>University of the Witwatersrand, South Africa</i>	
16:10 – 16:55	Enzyme synergism for the bio-economy: Bioproducts and biomedicine <b>Brett Pletschke</b> <i>Rhodes University, South Africa</i>	
16:55 – 17:00	Break	
17:00	SASBMB AGM	

<b>Wednesday, 26 January 2022</b>			
08:30 – 08:55	The Scientific Group Presentation		
08:55 – 09:00	Break		
	<b>Plenary Session</b> <b>Chair: Trudi O'Neill</b>		
09:00 – 09:50	'Know thy enemy': Malaria parasite biology as a catalyst for antimalarial drug discovery <b>Lyn-Marie Birkholtz</b> <i>University of Pretoria, South Africa</i>		
09:50 – 10:35	Cellular recycling in health and disease – Molecular principle of autophagy <b>Thomas Wollert</b> <i>Pasteur Institute, France</i>		
10:35 – 10:40	Break		
10:40 - 12:25	<b>Molecular Omics and Bioinformatics</b> <b>Chair: Riaan den Haan</b>	<b>Understanding and Treating Cancer II</b> <b>Chair: Mandeep Kaur</b>	<b>Metabolism, Enzymology and Structure</b> <b>Chair: Idowu Jonas Sagbo</b>
10:40 - 11:10	FAIR enzymology: how STRENDa can help you to make your data findable, accessible, interoperable and reusable <b>Johann Rohwer</b> <i>Stellenbosch University, South Africa</i>	Probing the effects of Retinoblastoma Binding Protein 6 (RBBP6) knockdown on the sensitivity of cisplatin in cervical cancer cells <b>Pontsho Moela</b> <i>University of Pretoria, South Africa</i>	Characterizing marathon-induced metabolic changes using (1)H-NMR metabolomics <b>Rachelle Bester</b> <i>North-West University, South Africa</i>
11:10 - 11:25	Metabolomes as a Measure of the Phenotype: The Case for Barley Cultivar Identification <b>Claude Yasmine Hamany Djande</b> <i>University of Johannesburg, South Africa</i>	The molecular mechanisms of cholesteryl ester transfer protein (CETP) as a drug resistance in breast cancer (BC) <b>Liang Gu</b> <i>University of the Witwatersrand, South Africa</i>	Effect of novel hinge insertions on drug binding and structural stability of the South African HIV-1 subtype C protease <b>Zaahida Sheik Ismail</b> <i>University of the Witwatersrand, South Africa</i>
11:25 - 11:40	Metabolomics of plant defense: The <i>Pseudomonas coronafaciens</i> - <i>Avena sativa</i> interaction <b>Chanel Joey Pretorius</b> <i>University of Johannesburg, South Africa</i>	The roles of miRNAs in cholesterol-mediated drug resistance in breast cancer <b>Gabriella Palma</b> <i>University of the Witwatersrand, South Africa</i>	A systematic investigation into the quantitative effect of pH changes on the upper glycolytic enzymes of <i>Escherichia coli</i> and <i>Saccharomyces cerevisiae</i> <b>Christiaan Johann Swanepoel</b> <i>Stellenbosch University, South Africa</i>
11:40 - 11:55	In silico screening for $\beta$ -haematin inhibitors active against <i>Plasmodium falciparum</i> <b>Leah Amod</b> <i>University of Cape Town, South Africa</i>	Repurposing drugs that target the interaction between HPV and TBX3 to treat cervical cancer <b>Saif Feroz Khan</b> <i>University of Cape Town, South Africa</i>	Exploring the host range of <i>Listeria monocytogenes</i> via the interaction of listerial internalin with E-cadherin domains from various mammalian hosts <b>Linience Maposa</b> <i>University of Pretoria, South Africa</i>

11:55 - 12:10	The use of machine learning for generation of <i>Plasmodium falciparum</i> hsp90 selective inhibitors <b>Thato Matlodi</b> <i>North-West University, South Africa</i>	Testosterone and 11-ketotestosterone are metabolized at different rates in prostate cancer cells leading to temporal differences in their androgenic response <b>Shona Murray</b> <i>Stellenbosch University, South Africa</i>	Mitigation of salinity stress in sorghum ( <i>Sorghum bicolor</i> L. Moench) using phytohormones <b>Gershwin Sias</b> <i>University of the Western Cape, South Africa</i>
12:10 - 12:25	Rhizosphere exo-metabolite profiling of PGPR-treated wheat cultivars ( <i>Triticum aestivum</i> ), and the investigation of the effects rhizosphere PGPR inoculation on the metabolism of above ground tissue <b>Manamele Dannies Mashabela</b> <i>University of Johannesburg, South Africa</i>	Investigating the effect of cholesterol depletion on the epithelial to mesenchymal transition of breast cancer cells <b>Shanen Perumal</b> <i>University of the Witwatersrand, South Africa</i>	
12:25 – 13:00	Lunch, Commercial Exhibits, Personal Meetings		
13:00	Closing and Student Prizes Paul Abidemi Kappo, Wolf-Dieter Schubert, Ntombenhle Gama		



**The  
Scientific  
Group**

