CURRICULUM VITAE: MARGUERITE BLIGNAUT

PERSONAL INFORMATION

Surname	Blignaut	ORCID ID	0000-0001-7645-9780
First names	Marguerite	Scopus H-factor	5
E-mail	mblignaut@sun.ac.za		

PERSONAL STATEMENT:

A dedicated and passionate researcher of mitochondrial function and cardio-metabolic disease, with a proven track record of first-author publications and presentations at international level, who works towards creating alternative *in vitro* models for cardiometabolic research. Successfully established local and international collaborations that included training in advanced cell culture methodology and microscopy.

CURRENT ROLE DESCRIPTION (RESEARCHER):

• <u>Research excellence:</u>

I am a principal investigator in the Division of Medical Physiology at Stellenbosch University, who focuses on the development of insulin resistant *in vitro* 2D- and 3D-cardiovascular cell culture models to refine and reduce *in vivo* animal models. I have established, and maintain, active transdisciplinary collaborations to develop, characterise and implement these models in pathological conditions. In 2024, I was awarded the Research and Excellence Innovation award in the Early career category by Stellenbosch University. I currently supervise 4 MSc students and co-supervise 1 PhD student. I have published as a first and corresponding author, and have presented my research locally and internationally, for which I received the prestigious SA Heart congress best oral presentation award in 2022. I trained in advanced cell culture and microscopy in the UK during my PhD and most recently initiated and led a collaborative research visit to the USA. I also regularly peer-review for international journals such as Cardiovascular Drugs and Therapy, and regularly examine post-graduate MSc theses and PhD dissertations internally and externally.

• <u>Teaching and training:</u>

I develop content and teach the mitochondrial metabolism and insulin resistance lecture series for the honours module. I also coordinate and present laboratory rotation modules, and have taught at undergraduate level for medical and allied health service students. Additionally, I developed and annually host a 5-day postgraduate Western blot training workshop (12 participants), and coordinate laboratory training sessions. Taken together, I have experience in course content development, teaching and training, and follow an enquiry-based teaching approach that encourages critical thinking.

Management and social impact:

I actively contribute towards lab management (cell culture, RNA and PCR), maintenance and implementation of good lab practice, writing and development of standard operating procedures (SOP's). This is enabled by my role as co-lead person of the research, ethics, good lab practice and journal club workstream within the Division of Medical Physiology. I have reviewed ethics applications internally and externally and serve on the internal Science Review committee. I also coordinate and chair weekly journal clubs. Most recently, I was elected to the South African Society of Cardiovascular Research (SASCAR) executive committee. I actively participate in outreach activities with Voorbrug Secondary school and other events organised by the Social Impact workstream on which I also serve.

HIGHEST QUALIFICATION OBTAINED

2019

PhD (Medical Physiology) – Stellenbosch University

Title: An investigation into the role of the ATM protein in the mitochondrial defects associated with the cardiovascular pathology resulting from insulin resistance

ADDITIONAL TRAINING AND PROFESSIONAL REGISTRATION

2024	Faculty of Medicine and Health Science Leadership Development Programme (certificate)
2023	Faculty of Medicine and Health Sciences transformational leadership workshop
2022	Completed Good clinical laboratory practice course (The global health network)
2021	Project management principles and practices (certificate, SU Business school)
2017	Introduction to SPSS statistical package (NQF Level 6)

OTHER WORK EXPERIENCE

2019 - 2020 Post-Doctoral Research Fellow: Division of Medical Physiology, Stellenbosch University

RESEARCH OUTPUTS:

PEER REVIEWED JOURNAL ARTICLES:

- Bester, D., **Blignaut, M**., Huisamen, B. ATM facilitates autophagy and protects against oxidative stress and apoptosis in response to ER stress in vitro (2024). *Biochemical and Biophysical Research Communication*. 732: 150422
- **Blignaut, M.,** Espach, Y., Lochner, A., Huisamen, B. Acute inhibition of Ataxia Telangiectasia Mutated Protein kinase (ATM) improves cardiac function during early reperfusion through attenuation of mitochondrial respiration (2024) *Cardiovascular Drugs and Therapy*, under review.
- Lochner, A., **Blignaut, M**. Mitochondrial dynamics in myocardial ischemia/reperfusion injury: Effects of melatonin (2022) *Melatonin Research*. 5, 3: 335-373. https://doi.org/10.32794/mr112500136.
- Blignaut, M., Harries, S., Lochner, A., Huisamen, B. Ataxia-Telangiectasia Mutated protein kinase: potential master puppeteer of oxidative stress-induced metabolic recycling (2021) Oxidative Medicine and Cellular Longevity, https://doi.org/10.1155/2021/8850708.
- Dube, K., Dhanabalan, K., Salie, R., **Blignaut, M**., Huisamen, B., Lochner, A. Melatonin has profound effects on mitochondrial dynamics in myocardial ischaemia/reperfusion (2019) *Heliyon* 5 (10), e02659
- Blignaut, M., Loos, B., Botchway, SW., Parker, AW., Huisamen, B. Ataxia-Telangiectasia Mutated protein kinase is located on the inner mitochondrial membrane of rat cardiac mitochondria (2019) *Scientific Reports*, 9, 4782. DOI:10.1038/s41598-019-41108-1
- Blignaut, M., Espach, Y., van Vuuren, M., Dhanabalan, K., Huisamen, B. Revisiting the cardiotoxic effect of chloroquine (2019) *Cardiovascular Drugs and Therapy*; 33(1):1-11. DOI:10.1007/s10557-018-06847-9
- Le Roux, JJ., Blignaut, M., Gildenhuys, E., Mavengere, N., Berthouly-Salazar, C. The molecular ecology of biological invasions: What do we know about non-additive genotypic effects and invasion success? (2013) Biological Invasions, 16, 997–1001. DOI: 10.1007/s10530-013-0568-y
- Blignaut, M., Ellis, A., Le Roux, J.J. Towards a transferable and cost-effective plant AFLP protocol (2013) *PLoS* ONE, 8(4). e61704. doi:10.1371/journal.pone.0061704

BOOK CHAPTER:

Blignaut, M. (2012) Review of Non-coding RNAs and the epigenetic regulation of gene expression: Drivers of Natural Selection by Kevin Morris (editor). Epigenetics, 7:6

POPULAR SCIENCE ARTICLES:

Blignaut, M (2020) Why it's vital to look beyond the hype about repurposed malaria drugs. The Conversation. <u>https://theconversation.com/why-its-vital-to-look-beyond-the-hype-about-repurposed-malaria-drugs-139153</u>

INTERNATIONAL CONFERENCES (ONLY SELECTED 1ST AUTHOR PRESENTATIONS LISTED):

- Blignaut, M., Groenewald, BJ, Southway SOS. (2024) A novel 3D-cardiovascular model for rapid, highthroughput drug-screening applications. 24th Annual SA Heart[™] Congress, Sandton Convention Centre, 8th-10 November.
- **Bilgnaut, M.** (Invited speaker, 2024) *My top 10 tips for young scientists* (CVD Imbizo; 2024). 24th Annual SA Heart™ Congress, Sandton Convention Centre, 8th-10 November
- **Blignaut, M.** (Invited speaker, 2024) *Basic to advanced Microscopy technologies that can be used for advanced cell modelling*. SACCMA workshop series hosted by Zeiss, 15 October
- Blignaut, M., Groenewald, BJ., Huisamen, B., Chellan, N (2023) A novel 3D-cardiovascular model to characterise mitochondrial dysfunction in cardio-metabolic disease development. SA Heart, Vol. 20 No. 1, 76
- **Blignaut, M.,** Groenewald, BJ., Southway, S., Pieterse, J., Theart, R. (2023) *Development of a novel 3Dcardiovascular model to investigate mitochondrial function.* Society for Advanced Cell Culture Modelling in Africa Conference, North West University, Potchefstroom, South Africa, 9-11 October
- Blignaut, M., Theart, R., Huisamen, B. (2022) An evaluation of mitochondrial dynamics and mitophagy in an in vitro and in vivo model of obesity. 22nd Annual SA Heart™ Congress, Sandton Convention Centre, 27-30th October
- Blignaut, M., Loos, B., Botchway, SW., Parker, AW., Huisamen, B. (2019) Ataxia-Telangiectasia Mutated is located in cardiac mitochondria and impacts oxidative phosphorylation. 18th International Ataxia-Telangiectasia Workshop, Houston, Texas, USA. 1-4 May
- Huisamen, B., **Blignaut, M**., Engelbrecht, A-M., Lochner, A. (2019) ATM regulates cardiac mitophagy. 18th International Ataxia-Telangiectasia Workshop, Houston, Texas, USA. 1-4 May
- **Blignaut, M.,** Lochner, A., Engelbrecht, A-M., Huisamen, B (2019). Ataxia-telangiectasia mutated (ATM) protein kinase mediates autophagy and mitochondrial dynamics in the heart, 47th Physiology Society of Southern Africa Annual Conference, ICC, East London, 18-21st August
- **Blignaut, M**., Lochner, A., Engelbrecht, A-M., Huisamen, B. (2019) Cardiac autophagy and mitophagy in obesity is mediated by ATM. 4th European-SA Cardiovascular Workshop held in conjunction with 6th International New Frontiers in Cardiovascular Research workshop, STIAS, Stellenbosch, 1-4th April
- Blignaut, M., Lochner, A., Huisamen, B. (2017) The role of mitochondrial ATM in cardiac oxidative phosphorylation and obesity. Keystone Symposium on Mitochondria, Metabolism and Heart, Santa Fe, New Mexico, USA, May 8 - May 12th

STUDENT SUPERVISION:

- **BSc honours:** 12 students graduated
- **MSc**: 8 students graduated, 4 ongoing (primary supervisor of 4)
- **PhD** : 1 student graduated, 1 ongoing (co-supervisor)

SUCCESSFUL GRANT APPLICATIONS:

- 2025-2027: MRC Early Investigators Programme award
- 2023-2025: NRF Thuthuka research grant

- 2022: Early Career Research grant; Faculty of Medicine and Health Sciences, Stellenbosch University
- 2017: Harry Crossly Foundation project funding (SU-PT-16/10-00012); Stellenbosch University

AWARDS:

BURSARIES AND FELLOWSHIPS:

2019-2020	NRF Innovation Fund Post-doctoral fellowship
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2017-2018 Harry Crossley PhD bursary

TRAVEL GRANTS AND SCHOLARSHIPS:

2024	SA Heart travel grant for conference attendance
2023	SA Heart travel grant for conference attendance
2022	FCVB young investigators travel grant (declined due to travel restrictions)
2017	Keystone Symposia Scholarship; Keystone Symposium on Mitochondria, Metabolism and Heart, Santa Fe, New Mexico, USA (five scholarships awarded globally)

PRIZES:

2024	SU Research and Innovation Excellence awards: Early career researcher category
2022	SA HEART conference-best oral presentation (overall winner)
2017	First prize - Oral presentation; Department of Biomedical Sciences Annual Research day
2012	Popular Science publication winner: New Voices in Science competition, Stellenbosch University

LEADERSHIP ROLES

2025	Member of the Scientific organising committee for SACCMA conference 2025
2025	Member of the Scientific organising committee for SA HEART conference 2025
2024	Member of the South African Society of Cardiovascular Research (SASCAR, affiliate of SA Heart) executive committee
2019 - 2020	Vice-chairperson (Faculty of Medicine and Health Sciences) of the Postdoctoral Society, Stellenbosch University
2006	Vice-chairperson of the Natural Science Student Council, Stellenbosch University
OTHER:	

Ant species named after me (*Tetramorium margueriteae*) by Dr. Nokuthula Mbanyana. Reference: Mbanyana, N., Garcia, FH., Robertson, HG., Le Roux, JJ (2018) A taxonomic revision of seed harvester ants of the Tetramorium solidum group (Hymenoptera: Formicidae) in southern Africa. European Journal of Taxonomy 454: 1–59