

BIOGRAPHICAL SKETCH: MARGUERITE BLIGNAUT (2019-2024)

PERSONAL INFORMATION

Surname	Blignaut	ORCID ID	0000-0001-7645-9780
First names	Marguerite	Scopus H-factor	6

PERSONAL STATEMENT:

I am a dedicated and passionate researcher with experience in mitochondrial, cardiovascular, genetic, and biochemical laboratory-based research, with a proven track record of first-author publications and presentations at international level. I have successfully established local and international collaborations. My research focus on the development of insulin resistant *in vivo* animal and *in vitro* 2D- and 3D-cardiovascular cell culture models to characterise mitochondrial dysfunction. I often peer-review for international, accredited journals, and am directly involved in lab management, student supervision and teaching at post-graduate level.

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
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ADDITIONAL TRAINING AND PROFESSIONAL REGISTRATION

2021	Project management principles and practices (certificate, SU Business school)
2017	Introduction to SPSS statistical package (NQF Level 6)
2016 - current	South African Veterinary Council (SAVC): Laboratory animal technologist (AL16/15486)

OTHER WORK EXPERIENCE

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

PEER REVIEWED JOURNAL ARTICLES:

Blignaut, M., Espach, Y., Lochner, A., Huisamen, B. (2024) Acute inhibition of Ataxia Telangiectasia Mutated Protein kinase (ATM) improves cardiac function during early reperfusion through attenuation of mitochondrial respiration. *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

POPULAR SCIENCE ARTICLE:

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

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

Blignaut, M., Groenewald, BJ., Southway, S., Pieterse, J., Theart, R. *Development of a novel 3D-cardiovascular model to investigate mitochondrial function*. Society for Advanced Cell Culture Modelling in Africa Conference 2023, North West University, Potchefstroom, South Africa, 9-11 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 (2023)

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
- MSc: 7 students
- PhD : 2 students

SUCCESSFUL GRANT APPLICATIONS:

- **2023-2025**: NRF Thuthuka research grant: Novel, high throughput cardiomyoblast and human cardiac spheroid models for drug screening in obesity-induced cardiovascular pathologies
- **2022**: Early Career Research grant; Faculty of Medicine and Health Sciences, Stellenbosch University
- **2020-2024**: Small equipment grant funding, Stellenbosch University mainly towards establishment and upgrades of the molecular biology laboratory and cell culture laboratories

INTERNATIONAL AND LOCAL COLLABORATIONS:

- Self-initiated international collaboration with Rutherford Appleton Laboratories, Science and Technology Facility Council in Didcot, Oxfordshire. This Newton-funded collaboration has yielded one publication and a four month visit to RAL in January 2018 and a follow up visit in September 2019. Received training in advance microscopy and 3D cell culture.
- Collaboration with Walter Sisulu University on gut microbiota changes in obesity (2020-current).
- Collaboration with the Division of Molecular Biology and Human Genetics, Dept of Biomedical Sciences, Stellenbosch University on cardiotoxicity of TB drugs (2021-current).

AWARDS:

BURSARIES AND FELLOWSHIPS:

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

TRAVEL GRANTS AND SCHOLARSHIPS:

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| 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:

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| 2022 | SA HEART conference-best oral presentation (overall winner) |
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LEADERSHIP ROLES

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| 2019 - 2020 | Vice-chairperson (Faculty of Medicine and Health Sciences) of the Postdoctoral Society, Stellenbosch University |
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