



## DR. MEGAN CAIRNS (PHD)

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### EDUCATION

#### NATIONAL SENIOR CERTIFICATE – 4 DISTINCTIONS (ENGLISH, AFRIKAANS, LIFE SCIENCES, LIFE ORIENTATION)

Danville Park Girls' High School (Jan 2011 – Dec 2015)

*Achievements: Principal's Scholarship – Academics (2011)*

*Grade 8 Mentor (2014)*

*Prefect (2015)*

*Full Academic Colors (2015)*

*M L Thompson Trophy for Creative Writing (2015)*

#### BACHELOR OF SCIENCE (BSC) – HUMAN LIFE SCIENCES (BIOLOGY)

Stellenbosch University (Jan 2016 – Dec 2018)

*Achievements: Inducted into Golden Key International Honors Society (2017)*

*5 Dean's Merits*

*10 modules passed with distinction*

*Acceptance into 3 Honors Programs (Physiological Sciences, Genetics, and Human Genetics) at Stellenbosch University*

#### HONS BSC IN PHYSIOLOGICAL SCIENCES

Stellenbosch University (Jan 2019 – Dec 2019)

*Achievements: Acceptance into Master's Program at Stellenbosch University (2019)*

#### MSC IN PHYSIOLOGICAL SCIENCES (CUM LAUDE)

Stellenbosch University (Jan 2020 – March 2022)

*Achievements: Acceptance into Ph.D. Program at Stellenbosch University (2021)*

#### PHD IN MEDICAL PHYSIOLOGY

Stellenbosch University (Jan 2022 – Dec 2024)

*Achievements: Wyndham competition winner at PSSA 2024*



### PUBLICATIONS

**Title:** Chronic stress and endothelial dysfunction: mechanisms, experimental challenges and way ahead

**DOI:** 10.1152/ajpheart.00244.2020

**Title:** The dual role of the hexosamine biosynthetic pathway in cardiac physiology and pathophysiology

**DOI:** 10.3389/fendo.2022.984342



### SKILLS

Leadership

Public speaking

Critical thinking

Interpersonal communication

Microsoft Office Suite

Scientific writing

Animal handling (rodent)

*ex vivo* heart perfusions

Western blotting

Plate-based protein assays – oxidative stress

High-resolution respirometry – Oroboros®



### SHORT COURSES

**International Computer Driver's License (ICDL) – ICDL South Africa**

**Lexden Leadership Course – Lexden Leadership**

**Introductory Course in Laboratory Animal Science – University of Cape Town**

**Thesis Writing Workshop – Stellenbosch University**



### CREDENTIALS

**The President's Award (Bronze Level)**

Member of **Golden Key International Honor Society**

**South African Veterinary Council (SAVC) authorization** for daily welfare, handling, restraint, anesthesia, and euthanasia of rodents.

**Title:** The impact of chronic stress on intracellular redox balance: a systems level analysis  
**DOI:** 10.14814/phy2.15640

**Title:** The effects of chronic stress on rat heart function following regional ischemia: a sex-dependent investigation  
**DOI:** 10.1152/ajpheart.00424.2024

**Title:** An investigation into the sex dependence of post-reperfusion cardiac mitochondrial function and redox balance in chronically stressed rats  
**DOI:** 10.14814/phy2.70185

**Title:** Chronic stress elicits sex-specific mitochondrial respiratory functional changes in the rat heart  
*Under review – Physiological Reports*

**Title:** The role of chronic stress in the pathogenesis of ischemic heart disease in women  
**DOI:** 10.1002/cph4.70000

Member of the **Physiological Society of Southern Africa (PSSA)**



## CONFERENCE OUTPUTS

- 2021** South African Heart Congress (SASCAR)
- 2021** African Association of Physiological Sciences – Physiological Society of Southern Africa (AAPS-PSSA) Wyndam Competition
- 2023** Faculty of Medicine and Health Sciences Annual Academic Day – Poster Presentation
- 2024** Physiological Society of Southern Africa (PSSA) Wyndam Competition – **Winner**
- 2024** Faculty of Medicine and Health Sciences Annual Academic Day – Oral Presentation
- 2024** South African Medical Research Council (SAMRC) Biomedical research and Innovation Platform (BRIP) symposium – Oral Presentation
- 2024** South African Heart Congress (SASCAR) – Oral presentation
- 2025** Cardiometabolic Health and Diabetes Africa Congress – Oral Presentation



## EXPERIENCE

### POSTGRADUATE PHYSIOLOGICAL SCIENCES SOCIETY – VICE-PRESIDENT

**Stellenbosch University – Department of Physiological Sciences**

*Jan 2021 – Dec 2021*

Duties included organizing welcome and year end functions for postgraduate students and providing an intermediary between students and staff.

### CO-SUPERVISOR

**Stellenbosch University – Department of Physiological Sciences and Division of Medical Physiology**

*Jan 2020 – Current*

Duties include assisting with writing and laboratory work for the thesis of numerous students at the Honors and Masters levels, as well as providing advice and a soundboard for ideas and concerns.

#### POSTGRADUATE STUDENT MENTOR

**Stellenbosch University – Division of Medical Physiology**

*2023 – current*

Duties include assisting with the integration of new students into the Tygerberg post-graduate environment by providing personal and scientific advice, and offering a means of addressing any concerns pertaining to issues within the context of the Division of Medical Physiology.

#### TEACHING ASSISTANT

**Stellenbosch University – Faculty of Medicine and Health Sciences**

*Jan 2024 – Dec 2024*

Responsibilities encompassed facilitating group discussions, answering student queries, marking assignments, and providing constructive feedback to enhance learning outcomes, as well as administrative tasks such as mark capturing.

#### SOCIAL IMPACT INITIATIVE VOLUNTEER

**Stellenbosch University – Faculty of Medicine and Health Sciences**

*Jan 2022 – current*

Provided hands on education and training interventions (including both formal and informal education based initiatives) to learners enrolled in the Open Doors to Future Possibilities and GenS programs at the Faculty of Medicine and Health Sciences, where they were exposed to various aspects of research from the theory behind the experiments to the practical nature of conducting different aspects of lab work.

#### POSTDOCTORAL RESEARCH FELLOW

**Stellenbosch University – Faculty of Medicine and Health Sciences**

*Jan 2025 – current*

Conducted independent and collaborative research, designing experiments, collecting/ analyzing data, and advancing methodologies. Authored/ co-authored peer-reviewed publications in high-impact journals and presented findings at conferences to disseminate research outcomes. Supervised junior students, provided technical guidance and training in specialized techniques. Participated in limited teaching roles and coordinated project timelines, resources, and administrative tasks to meet research milestones.