# CURRICULUM VITAE OF DR. GERALD JEROME MAARMAN

#### PERSONAL INFORMATION

- Date of Birth: 24<sup>th</sup> of April 1984
- Email address: gmaarman@sun.ac.za

### **EMPLOYMENT HISTORY**

- 2019- present: Lecturer Division of Medical Physiology (NRF Y-2 Rated researcher)
- 2017-2019: Research Manager Desmond Tutu TB Centre (DTTC) Stellenbosch University
- 2014-2016: Postdoctoral research fellow University of Cape Town.

#### **PROFESSIONAL INVOLVEMENT**

- 2020: Radio interviews, ENCA interview (TV): Raising awareness on cardiopulmonary diseases (pulmonary arterial hypertension and right heart failure).
- 2019-present: FMHS Member of Dean's Advisory Committee on Transformation (DACT)
- 2018-present: FMHS Equality Champion
- 2000-present: Youth and Community development with SU, Scimathus, SASCAR, SAICA and local churches.

### **EDUCATION HISTORY**

**Ph.D.** (Medicine) Year received: 2011-2014 University of Cape Town

**PGDip:** Enrolled for a postgraduate diploma in Theology (SU) Currently enrolled: 2022

**MSc.** (Medical Physiology) Year received: 2010 University of Stellenbosch

**BSc. Hons.** (Medical Physiology) Year received: 2007 University of Stellenbosch

**BSc.** (Functional Human Biology) Year received: 2007 University of Stellenbosch

Matric (National Certificate, Grade 12) Year received: 2002 Eersterivier Secondary School

#### UNDERGRADUATE TEACHING

- Molecular biology (Life Forms 111)
  - MBChB, BSc Physiotherapy, BSc Dietetics phase 1.
  - Phase I Class size: ~ 400

- Cardiovascular Physiology (Fundamentals of Physiology 178)
  - B. Occ. Ther. first year
  - Class size: 73
- Physiology of the Cardiovascular System (271)
  - MBChB second year
  - Class size: ~ 300
- Gastro-intestinal tract Physiology (Allied Health Sciences 278)
  - 2nd year BSc Physiotherapy, BSc Dietetics and Bachelor of Nursing and Midwifery students
  - Class size: 136
- Musckuloskeletal Physiology (371)
  - MBChB third year
  - Class size: 328
- Immunology (Cellular Physiology F344)
  - F344 third year
  - Phase I Class size: 186
- Respiratory Physiology (271)
  - MBChB second year
  - Phase I Class size: 300

# POSTGRADUATE TEACHING

- Cardiopulmonary diseases and research, and academic writing
  - Honours BSc. Med. Sci students.
  - Class size: 15-17 students (per year)
- Implement administrative duties (marking, reviewing of assessments, reports).
- Examine MMed and BCh.D. students, focussing on cardiovascular physiology.

# **TEACHING ROLES & RESPONSIBILITIES**

- I generally conduct lectures together with tutorials, practicals, and assessments of students. However, since the start of the COVI-19 pandemic, I had to adapt to hybrid teaching which includes all the above in an in-person context as well as e-learning (via Microsoft Teams and podcasts) and online assessments via Sunlearn.
- Based on Bloom's Taxonomy, I have adapted my teaching style so that I ensure the student's understanding of basic principles, and them applying the knowledge in conjunction with complex and analytical thinking around problems, reasoning of interventions and critical thinking.
- I implement administrative roles including marking of scripts, reviewing of assessments, compiling of reports the Head of Division, committees, and module heads.
- I am an active member of the Renewed Curriculum Project Committee, at Tygerberg Medical School. I am responsible for the development of a robust curriculum, and I am the lead for the Cardiovascular Physiology component of the new Form and Function module, and the Health and Wellness module.

## STUDENT SUPERVISION

# 2018- present - (co-supervisor)

**Ph.D.** Miss. Melisse Erasmus Registration: January 2018 - South African Medical Research Council Anticipated graduation date: December 2021

2018-present - (co-supervisor)

**Ph.D.** Miss. Siddiqah George Registration: January 2015 - University of Cape Town Anticipated graduation date: December 2021

# 2022 (Main supervisor)

MSc.

Miss. Carmen Payne Registration: January 2021 University of Stellenbosch Anticipated graduation date: December 2023

# 2022 (Main supervisor)

MSc.

Miss Kgatla Thato Mmathapelo Registration: January 2021 University of Stellenbosch Anticipated graduation date: December 2024

# 2022 (Main supervisor)

MSc. Hons. Dr. Steve Jacobs (Special needs student) Registration: January 2021 University of Stellenbosch Anticipated graduation date: December 2021

# 2022 (Main supervisor)

MSc. Miss Sara Shaboodien Registration: January 2022 University of Stellenbosch Anticipated graduation date: December 2024

# 2021 (Main supervisor)

**BSc. Hons.** Dr. Steve Jacobs (Special needs student) Registration: January 2021 University of Stellenbosch Graduated: December 2021

# 2021 (Main supervisor)

**BSc. Hons.** Miss Cornel Vlok Registration: January 2021 University of Stellenbosch Graduated: December 2021

2021 (Co-supervisor) BSc. Hons. Miss Erin Robson Registration: January 2021 University of Stellenbosch Anticipated graduation date: April 2022

# 2021 (Main supervisor)

**BSc. Hons.** Miss Sara Shaboodien Registration: January 2021

University of Stellenbosch Graduated: December 2021

# 2019- (passed 72%, graduated March 2021) - (co-supervisor)

MSc.

Miss. Pamela Sithelo Registration: January 2018 University of Stellenbosch

# 2015 - (Graduated)

Hons.BSc.Med.Sci. - (co-supervisor) Miss. Brittany Andrew Registration: January 2015 - University of Cape Town Graduated: December 2015

## 2015 - (Graduated)

Hons.BSc.Med.Sci. - **(co-supervisor)** Miss. Prisca Osiki Registration: January 2015 - University of Cape Town Graduated: December 2015

## EXTERNAL DUTIES

- External examiner 4x PhD
- External examiner 4x MSc
- External moderator Exit level module FLGX 329 (2nd semester 2021), Cardiovascular Physiology applications, of the North-West University for 2021.
- Co-Editor Frontiers in Endocrinology 2021 impact factor 5.555

# **RESEARCH FUNDING**

## SUCCESSFUL

- Departmental post-doc funding: 200 000 (per year, 2-year period).
- Research assistant funding: 30 000 (once off).
- NRF support for Y-rated researchers: R100 000 (per year, 3 year-period).
- Technical assistance funding SU: 30 000 (once off).
- Postdoctoral researcher funding SU: 200 000 (one year).
- SA-MRC SIR: R600 000 (three-year period).
- SARC grant: R642 406 (two-year period).
- Early Career Research Award SU, Faculty of Medicine & Health Sciences = R 112 463 (once off).
- NRF Equipment Related Travel: R125 000 (once off).
- Harry Crossley Project Funding: R31 500 (once off).
- NRF incentive funding: R120 000 per annum (two years).
- Divisional research grant: R50 000 (once off).
- FMHS equipment grant: R784 000 (once off).

## OUTCOME PENDING

- PVRI research grant: R615 000.
- SARC: 800 000
- SAMRC EC: 500 000 (per annum, for 3 years).

# PUBLISHED PAPERS

- 1. <u>MAARMAN, G.J.</u>, Lamont-Mbawuli K.T Adolescents in the South African context: The roles of the church, spirituality, and mentorship programmes in promoting motivation to overcome disadvantage. African Journal of Social Work, 2021. 11(2): p. 85-95.
- 2. <u>MAARMAN, G.J</u> and S. Lecour, Melatonin against pulmonary arterial hypertension: is it ready for testing in patients? Cardiovasc J Afr, 2021. 32(2): p. 111-112.
- 3. <u>MAARMAN, G.J</u> and S. Lecour, Melatonin against pulmonary arterial hypertension: is it ready for testing in patients? Cardiovascular Journal of Africa, 2021. 32(2): p. 111-112.
- 4. <u>MAARMAN, G.J.</u> Lamont-Mbawuli K., Adolescents in the South African context: The roles of the church, spirituality, and mentorship programmes in promoting motivation to overcome disadvantage. African Journal of Social Work, 2021. 11(2): p. 85-95.
- 5. **MAARMAN, G.J**. Could melatonin be an adjunct therapy for post-TB lung disease? Melatonin Research, 2021. 4(3): p. 432-441.
- Bell-Mandla, N.F., <u>MAARMAN, G.J</u>, et al., Improving Retention of Community-recruited Participants in HIV Prevention Research Through Saturday Household Visits; Findings from the HPTN 071 (PopART) Study in South Africa. BMC Medical Research Methodology, 2021: p. 1-17.
- 7. <u>MAARMAN, G.J</u>, J. Shaw, and B. Allwood, Pulmonary hypertension in majority countries: opportunities amidst challenges. Curr Opin Pulm Med, 2020. 26(5): p. 373-383.
- 8. <u>MAARMAN, G.J</u>, G. Chakafana, and K. Sliwa, World Heart Day: a World Heart Federation communique on the future of basic sciences and translational medicine in global cardiovascular research. Am J Physiol Lung Cell Mol Physiol, 2020. 319(3): p. L545-L546.
- 9. **MAARMAN, G.J**. A philosophical perspective on pulmonary hypertension: What is 'rare'? South African Journal of Science, 2020. 116: p. 1-1.
- 10. **MAARMAN, G.J**, Making a case for metallothioneins conferring cardioprotection in pulmonary hypertension. Med Hypotheses, 2020. 137: p. 109572.
- 11. Eshleman, S.H., <u>MAARMAN, G.J</u>, et al., Determination of HIV status and identification of incident HIV infections in a large, community-randomized trial: HPTN 071 (PopART). J Int AIDS Soc, 2020. 23(2): p. e25452.
- 12. **MAARMAN, G.J.** Pulmonary Hypertension and the Right Ventricle: The Roles of Mitochondrial Reactive Oxygen Species in Causing Further Right Ventricular Mitochondrial Changes, in Oxidative Stress in Heart Diseases, S. Chakraborti, et al., Editors. 2019, Springer Singapore: Singapore. p. 539-549.
- 13. <u>MAARMAN, G.J</u>, Chapter 14 Ischemia-reperfusion injury and the roles of excess fructose: Effects on the heart and other organs, in Molecular Nutrition: Carbohydrates, V.B. Patel, Editor. 2019, Academic Press. p. 237-245.
- 14. **MAARMAN, G.J**. Cardioprotection conferred by rooibos (Aspalathus linearis): A mini review to highlight a potential mechanism of action. South African Journal of Science, 2019. 115(7/8): p. 1-4.
- Sloot, R., <u>MAARMAN, G.J.</u> et al., Variation in HIV prevalence and the population-level effects of antiretroviral therapy in reducing tuberculosis incidence in South Africa. S Afr Med J, 2018. 108(8): p. 12370.
- 16. Nduhirabandi, F. and <u>MAARMAN, G.J</u>, Melatonin in Heart Failure: A Promising Therapeutic Strategy? Molecules, 2018. 23(7).
- 17. Madlala, H.P., <u>MAARMAN, G.J</u>, Ojuka, E. O., Fructose impairs mitochondrial respiration and substrate utilization in hepatocytes via the enzyme, glutamate oxaloacetate transaminase. Integrative Food, Nutrition and Metabolism, 2018. 5: p. 1-5.
- MAARMAN, G.J and R.J. Reiter, Melatonin therapy for blunt trauma and strenuous exercise: A mechanism involving cytokines, NFkappaB, Akt, MAFBX and MURF-1. J Sports Sci, 2018. 36(16): p. 1897-1901.

- 19. MAARMAN, G.J. Pulmonary arterial hypertension and the potential roles of metallothioneins: A focused review. Life Sci, 2018. 214: p. 77-83.
- 20. Kriel, J., <u>MAARMAN, G.J.</u> et al., Coordinated autophagy modulation overcomes glioblastoma chemoresistance through disruption of mitochondrial bioenergetics. Sci Rep, 2018. 8(1): p. 10348.
- 21. Allwood, B.W., **MAARMAN, G.J**, et al., Post-pulmonary tuberculosis complications in South Africa and a potential link with pulmonary hypertension: Premise for clinical and scientific investigations. S Afr Med J, 2018. 108(7): p. 12339.
- 22. Webster, I., <u>MAARMAN, G.J</u>, et al., Myocardial susceptibility to ischaemia/reperfusion in obesity: a re-evaluation of the effects of age. BMC Physiol, 2017. 17(1): p. 3.
- 23. <u>MAARMAN, G.J</u>, et al., Novel putative pharmacological therapies to protect the right ventricle in pulmonary hypertension: a review of current literature. Br J Pharmacol, 2017. 174(7): p. 497-511.
- 24. <u>MAARMAN, G.J</u>, et al., Review of a causal role of fructose-containing sugars in myocardial susceptibility to ischemia/reperfusion injury. Nutr Res, 2017. 42: p. 11-19.
- 25. <u>MAARMAN, G.J.</u> and K. Lamont-Mbawuli, A review of challenges in South African education and possible ways to improve educational outcome as suggested by decades of research. Africa Education Review, 2017. 14(3-4): p. 263-289.
- 26. <u>MAARMAN, G.J</u>, et al., Melatonin protects against uric acid-induced mitochondrial dysfunction, oxidative stress, and triglyceride accumulation in C2C12 myotubes. J Appl Physiol (1985), 2017. 122(4): p. 1003-1010.
- 27. MAARMAN, G.J, Editorial commentary: "Discovery of a Murine Model of clinical pulmonary arterial hypertension: Mission impossible?" by Dai and Zhao. Trends Cardiovasc Med, 2017. 27(4): p. 237-238.
- 28. <u>MAARMAN, G.J</u>. Natural Antioxidants as Potential Therapy, and a Promising Role for Melatonin Against Pulmonary Hypertension. Adv Exp Med Biol, 2017. 967: p. 161-178.
- 29. <u>MAARMAN, G.J</u>, Mendham, AW, Madlala, HP, Ojuka EO., Excessive consumption of fructosecontaining sugars: An emerging threat for developing nations? Journal of African Association of Physiological Sciences 2017. 4: p. 71-80.
- 30. Ojuka, E., <u>MAARMAN, G.J.</u> et al., Measurement of beta-oxidation capacity of biological samples by respirometry: a review of principles and substrates. Am J Physiol Endocrinol Metab, 2016. 310(9): p. E715-23.
- 31. Madlala, H.P., <u>MAARMAN, G.J</u>, and E. Ojuka, Uric acid and transforming growth factor in fructoseinduced production of reactive oxygen species in skeletal muscle. Nutr Rev, 2016. 74(4): p. 259-66.
- 32. **MAARMAN, G.J**, et al., Melatonin as a preventive and curative therapy against pulmonary hypertension. J Pineal Res, 2015. 59(3): p. 343-53.
- 33. Kelly-Laubscher, R.F., <u>MAARMAN, G.J</u>, et al., Cardiac preconditioning with sphingosine-1-phosphate requires activation of signal transducer and activator of transcription-3. Cardiovasc J Afr, 2014. 25(3): p. 118-23.
- 34. **MAARMAN, G.J**, et al., A comprehensive review: the evolution of animal models in pulmonary hypertension research; are we there yet? Pulm Circ, 2013. 3(4): p. 739-56.
- 35. **MAARMAN, G.J**, et al., Effect of chronic CPT-1 inhibition on myocardial ischemia-reperfusion injury (I/R) in a model of diet-induced obesity. Cardiovasc Drugs Ther, 2012. 26(3): p. 205-16.

# **UNDER PEER REVIEW**

- 1. **MAARMAN G**, Reiter RJ, Melatonin improves mitochondrial coupling efficiency in myotubes exposed to excess fructose, *South African Journal of Science*, February 2022.
- 2. <u>MAARMAN G</u>, Sithelo P, Blignaut M, Windvogel S, Huisamen B, Marais E, Strijdom H, Rooibos (Aspalathus linearis) induced cardioprotection is underpinned by cardiac mitochondrial pathways: what is missing and what is the way forward? *Cardiovascular Journal of Africa*, February 2022.
- 3. <u>MAARMAN G</u>, Butrous G, Lecour S, Wang YX, the intriguing effects of melatonin on mitochondrial bioenergetics and metabolism of healthy C2C12 myotubes, *Physiological Reports*, February 2022.
- 4. **MAARMAN G**, and Butrous G, the role of the microbiome in pulmonary hypertension: Is melatonin

the missing link? Pulmonary Circulation, February 2022.

- 5. **MAARMAN G** and Lecour S, Time to explore the therapeutic potential of Rooibos (Aspalathus linearis) against experimental pulmonary arterial hypertension? *Journal of Herbal Medicine*, February 2022
- 6. **MAARMAN G**, Reviewing the suitability of mitochondrial transplantation as therapeutic approach for pulmonary hypertension in the era of personalised medicine, *American Journal of Lung and Cellular Physiology*, February 2022.
- 7. <u>MAARMAN G</u>, Basic sciences in higher education, and teaching approaches in the context of 21stcentury advances, *South African Journal of Higher Education*, February 2022. *ACCEPTED FOR PUBLICATION, IN PRODUCTION.*

# IN PREPARATION

- 1. Shaboodien S, Vlok C, Strijdom H, Marais E and <u>MAARMAN G</u>, Rooibos induced cardioprotection is mediated via improved mitochondrial bioenergetics and metabolism, February 2022.
- 2. Sithelo P, Lopes J, Strijdom H, Marais E and <u>MAARMAN G</u>, Rooibos induced cardioprotection in a H9C2 model of angiotension-II induced hypertrophy and apoptosis, February 2022.
- 3. <u>MAARMAN G</u>, Francisco P, Reviewing the roles of the microbiota in the pathogenesis and progression of pulmonary arterial hypertension, December 2021.

# CONFERENCE OUTPUTS (PEER-REVIEWED)

- 1. <u>MAARMAN G</u>, Shaw J, Allwood, Recent developments in clinical PAH research at Tygerberg Hospital, South Africa: preliminary data, PVRI Annual Congress, Peru, April 2020.
- 2. <u>MAARMAN G</u>, Brittany Andrew, D Blackhurst, Ojuka E, Melatonin recues uric acid-induced mitochondrial impairment and oxidative stress in C2C12 myotubes Khütai Austria, 7-13<sup>th</sup> July 2016.
- 3. <u>MAARMAN G</u>, Brittany Andrew, D Blackhurst, Ojuka E, Uric acid impairs mitochondrial respiration, elevates triglycerides, reduce aconitase activity: Melatonin counteracts these effects, Experimental Biology, San Diego California, United States of America, April 2016.
- MAARMAN G, Sliwa K and Lecour S, Characterisation of mitochondrial function in a model of pulmonary arterial hypertension and right ventricular failure, 5<sup>th</sup> Annual International Mitochondrial Physiology School, Cape Town, South Africa May 2015.
- 5. Marais E, Huisamen B, <u>MAARMAN G</u>, Lochner A, Cardiovascular abnormalities in aged, diet- induced obese rats, to be presented at the Physiology Society of Southern Africa, 35th Annual Congress, Johannesburg South Africa 2015.
- F. Thienemann, L. Blauwet, R. Burton, K. Tibazarwa, <u>MAARMAN G</u>, A. Dzudie, A. O. Mocumbi, K. Sliwa, HIV-associated pulmonary hypertension in a densely populated, peri-urban township in Cape Town, South Africa: clinical presentation and survival, To be presented at the European Society of Cardiology (ESC) Annual meeting in Barcelona Spain, 30th August until 3rd of September 2014.
- 7. <u>MAARMAN G</u>, Blauwet L, Blackhurst D, Sliwa K and Lecour S, Cardioprotective effect of melatonin on cardiac function and oxidative stress in pulmonary arterial hypertension, International Society of Heart Research, Barcelona, Spain, 2014.
- 8. <u>MAARMAN G</u>, Blauwet L, Sliwa K and Lecour S, Effects of melatonin treatment on cardiac function in a model of pulmonary arterial hypertension, Pan-African Society of Cardiology Congress, Dakar, Senegal, 2013.
- MAARMAN G, Blauwet L, Lecour S and Sliwa K, Can melatonin improve cardiac function in pulmonary arterial hypertension? European Society of Cardiology (ESC) annual congress, Amsterdam, Netherlands 2013, European Heart Journal 2013; Vol 34(1):476.
- 10. MAARMAN G, Blauwet L, Sliwa K, Lecour S, The effects of melatonin on cardiac function in a model of pulmonary arterial hypertension, The World Congress on Paediatric Cardiology & Cardiac Surgery 2013, Cape Town, South Africa.
- 11. MAARMAN G, Du Toit E.F, The effect or a fatty acid oxidation inhibitor (oxfenicine) on myocardial function and –resistance to ischemia/reperfusion injury in a rodent model of the metabolic syndrome, Physiology Society of Southern Africa, 36th Annual Congress, Johannesburg, South Africa 2009.

12. MAARMAN G, Du Toit E.F, The effect or a PPAR-alpha agonist (K111) on myocardial function and resistance to ischemia/reperfusion injury in a rodent model of the metabolic syndrome, Physiology Society of Southern Africa, 35th Annual Congress, Johannesburg South Africa 2008.

### MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS

FACULTY: Pulmonary Vascular Research Institute (PVRI) Global Taskforce on Pulmonary Infections.
MEMBER: American College of Chest Physicians
MEMBER: American Heart Association
MEMBER: American Thoracic Society
MEMBER: International Society of Heart Research (ISHR) – European Section
MEMBER: European Society of Cardiology (ESC)
MEMBER: South African Society of Southern Africa (PSSA)
MEMBER: South Africa Heart Association (SA-Heart)
MEMBER: International Mitochondrial Physiology Society (MiP-Society)

### **OTHER ACHIEVEMENTS**

NRF- RATING 2018 = Y2 RATING

#### **GOOGLE SCHOLAR H-INDEX:** 11

SCOPUS H-INDEX: 10

#### CERTIFICATE: GOOD CLINICAL PRACTICE (GCP)

- CREDE: University of Stellenbosch

#### **CERTIFICATE: HUMAN SUBJECTS PROTECTION (HSP)**

National Institute of Health (NIH) - USA

#### GOLDEN KEY INTERNATIONAL HONOUR SOCIETY (MEMBERSHIP NO: 13125379)

- University of Cape Town, South Africa

#### AWARD OF EXCELLENCE

- 7<sup>th</sup> Mitochondrial Physiology School - Best oral presentation

#### **CLINICAL EXCELLENCE AWARD**

- 15<sup>th</sup> South African Association Heart Congress – Best oral presentation

#### AWARD OF EXCELLENCE

- For best presenter in the Basic Sciences – University of Stellenbosch (Academic year day)

# CERTIFICATE FOR ACCREDITATION OF CARE, USE AND HANDLING OF LABORATORY ANIMALS

- Department of Medicine, University of Cape Town

## CERTIFICATE FOR SCIENTIFIC WRITING SKILLS

Department of Medicine, University of Stellenbosch

## CERTIFICATE FOR BASIC COMMUNICATION SKILLS IN XHOSA

#### - Department of Medicine, University of Cape Town

## CERTIFICATE FOR ENGINEER DRAWINGS (N1 AND N2)

- Scimathus/IMSTUS educational programme, University of Stellenbosch

## CERTIFICATE FOR TERMINAL/HO BASED CARE

Western Cape Department of Health/MEC of Health

## CERTIFICATE FOR TRAUMA COUNSELLING

- Western Cape Department of Health/MEC of Health

## CERTIFICATE FOR BASIC AND INTERMEDIARY FIRST AID

- Western Cape Department of Health/MEC of Health

CERTIFICATE FOR HIV/AIDS PEER COUNSELLING: Western Cape Department of Health/MEC of Health

### REFERENCES

#### LINE MANAGER - PROF. HANS STRIJDOM

Deputy Director: Centre for Cardio-Metabolic Research in Africa (CARMA). Acting Head: Division of Medical Physiology, Faculty of Medicine and Health Sciences, Stellenbosch, University. Work phone: 021 938 9387 Email: jgstr@sun.ac.za

#### **PROF. SANDRINE LECOUR**

Deputy Director of the Hatter Institute for Cardiovascular Research in Africa (HICRA). Faculty of Health Sciences, Department of Medicine, University of Cape Town. Work phone: 021 406 6358 Email: <u>sandrine.lecour@uct.ac.za</u>

#### **PROF. KAREN SLIWA**

Deputy Dean of Research, Department of Medicine, Faculty of Health Sciences, UCT. President of the World Heart Federation. Director of the Hatter Institute for Cardiovascular Research in Africa (HICRA). Work phone: 021 406 6457 Email: <u>karen.sliwa-hahnle@uct.ac.za</u>

#### **MR. LWANDO BANTOM**

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