

## Education Background

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### Management Development Programme

University of Stellenbosch Business School

Current

### Doctor of Philosophy, Nutritional Physiology

North Dakota State University, Fargo, North Dakota

2012

*Dissertation: "Canola oil inhibits development and growth of breast cancer in vivo and in vitro"*

**Key Courses:** *Comprehensive Biochemistry, Cellular Signal Transduction Processes and Metabolic Regulations, Basic Immunology, Digestive Physiology, Animal Physiology, Animal Cell Culture Techniques, Applied Regression Models, Experimental Design, and Field Design*

### Master of Science, Nutritional Physiology

North Dakota State University, Fargo, North Dakota

2007

### Bachelor of Science, Animal Sciences

University of Venda

2004

## Job Experience

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### Senior Lecturer

Stellenbosch University

2022-date

### Senior Scientist

South African Medical Research Council

2019-date

### Postdoctoral Fellow

South African Medical Research Council

2017-19

### Postdoctoral Fellow

University of Cape Town

2016

### Postdoctoral Fellow

North Dakota State University

2015

## Research Experience

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Over 10 years of expertise in nutrigenomics and fetal programming of disease risk using *in vivo* (rat and nude mice) and *in vitro* cell culture models

## Teaching Experience

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### Honor Scientific Writing Class

Stellenbosch University

2022

### PhD Thesis Writing Class

South African Medical Research Council

2018

2018

### GIT Physiology

University of Cape Town

2017

### Nutrition and Mammary Biology

2008-10

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**Training**


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| <b>SAVIC Authorization</b><br>South African Veterinary Council                                | 2021 |
| <b>Good Clinical Practice: Beginner Course</b><br>Clinical Research Education and Development | 2018 |
| <b>Managing and Protecting Natural Resources</b><br>Fulbright Program                         | 2005 |
| <b>English for Graduate Studies</b><br>University of South Carolina                           | 2004 |

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**Awards and Honors**


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| NRF Postdoctoral Fellowship                     | 2016 |
| American Society for Cell Biology Travel Award  | 2013 |
| NRF Prestigious and Equity Doctoral Scholarship | 2010 |
| Oppenheimer Memorial Trust                      | 2007 |
| Fulbright Scholarship                           | 2006 |
| Easy Farm Best Student Award                    | 2004 |

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**Conference Proceedings**


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1. **Mabasa L.** The association between MTHFR and genes involved in hepatic lipid metabolism: role thereof marula leaf extract in the context of obesity. <https://consultus.eventsair.com/natural-products-for-healthy-aging-2021/#programme>, 2021.
2. Nonhlakanipho FS, Patel O, Van aarde R, **Mabasa L**, Huisamen B, Van Vuuren D, Barry R, Johnson R. Pinocembrin attenuates Doxorubicin (Dox)-induced cardiotoxicity whilst preserving the chemotherapeutic potential of Dox. 36<sup>th</sup> Annual Meeting of the International Society for Heart Research- European Section, Italy, 29 June -1 July 2021.
3. Sangweni NF, Gabuza K, Van Aarde R, **Mabasa L**, Huisamen B, Barry R, Johnson R. African Association of Physiological Sciences (AAPS) and the Physiological Society of Southern Africa (PSSA) Congress, 12 – 15 September 2021.
4. Sangweni NF, **Mabasa L**, Van Vuuren D, Huisamen B, Johnson R. The effect of Pinocembrin on impaired mitochondrial bioenergetics associated with Doxorubicin administration in an MCF-7 cell model. 10<sup>th</sup> Annual Biomedical Research and Innovation Platform symposium, Cape town, 21 October 2020.
5. Shabalala S, **Mabasa L**, Ramharack P, Sadie-Van Gijsen H, Kotze-Horstman L, Kappo A, Pheiffer C, Basson A, Walsh C, Johnson R. Obesogenic diet up-regulated expression of inflammatory markers contributing to the development of NAFLD in Wistar rats. 10<sup>th</sup> Annual Biomedical Research and Innovation Platform symposium, Cape town, 21 October 2020.
6. Kotze A, Shabalala S, Johnson R, Kimani C, Muller CJF, **Mabasa L**. The effect of Sclerocarya birrea (marula) leaf extract on hepatic lipid accumulation in mice. 10<sup>th</sup> Annual Biomedical Research and Innovation Platform symposium, Cape town, 21 October 2020.
7. Sangweni NF, **Mabasa L**, Van Vuuren D, Huisamen B, Johnson R. Prevention of Doxorubicin-induced cardiotoxicity by *Nonhlaceae Sanguine*: A mechanistic study. Biomedical Research and

- Innovation Platform Symposium, Cape Town, 21 October 2019.
8. Shabalala SC, **Mabasa L**, Kappo AP, Pheiffer C, Sadie H, Louw J, Johnson R. The effect of an obesogenic diet on the adiponectin signaling in the liver. Biomedical Research and Innovation Platform Symposium, Cape Town, 21 October 2019.
  9. Mabhida S, Muhamed B, Apalata T, Mongi B, **Mabasa L**, Johnson R. Inter-individual genetic variation and the development of uncontrolled hypertension in patients with concomitant type 2 diabetes mellitus in Eastern Cape South Africa. Biomedical Research and Innovation Platform Symposium, Cape Town, 21 October 2019.
  10. Jooste T. L, Marais E, **Mabasa L**, Frederiksen M, Johnson R. Profiling chromatin accessibility associated with high fat (HF) diet-induced CVD. Biomedical Research and Innovation Platform Symposium, Cape Town, 21 October 2019.
  11. Jooste TL, Marais E, **Mabasa L**, Johnson R. Gene expression and DNA methylation changes associated with high fat, high sugar diet-induced CVD in Wistar rats. ICGEB Workshop for Epigenetics of infectious and non-communicable diseases, 15 – 20 September 2019.
  12. Almeida MR, **Mabasa L**, Crane C, Park CS, Venancio VP, Bianchi MLP, Antunes LMG. Effects of maternal vitamin B6 diets on mRNA expression of genes involved in brain development in hippocampus of the offspring. *FASEB J* **29**:919.15, 2015.
  13. Park C, Cho KB, **Mabasa L**, Choi WS, Crane CL, Almeida MR. *In utero* exposure to lipotropic (methyl) nutrients suppresses mammary carcinogenesis in two generations of offspring. *EACR/AACR SIC Special Conference* **146**, Florence Italy 146, 2015.
  14. Cho KB, **Mabasa L**, Cho K, Crane C, Choi WS, Park C. *In utero* exposure to dietary lipotropes affects DNA methylation and gene expression in mammary glands of offspring. *FASEB J* **28**:1033.9, 2014.
  15. Park CS, **Mabasa L**, Cho K, Walters MW. Maternal dietary canola oil suppresses mammary carcinogenesis in rat offspring. *FASEB J* **27**:863.9, 2013.
  16. **Mabasa L**, Cho K, Bae S, Walters MW, Park CS. Dietary canola oil and growth of implanted drug-resistant MCF-7 human breast cancer in Balb/c nude mice. *FASEB J* **26**:1023.1, 2012.
  17. Bae S, Cho K, **Mabasa L**, Walters MW, Park CS. Effect of maternal methyl diet on epigenetic changes and mammary carcinogenesis in offspring. *FASEB J* **26**:1023.10, 2012.
  18. Bae S, Cho K, **Mabasa L**, Walters MW, Park CS. Maternal high-methyl diet alters DNA methylation in mammary tissues of female rat offspring. *Mol Biol Cell* **23**:750, 2012.
  19. Bae S, Cho K, **Mabasa L**, Walsh DM, Park CS. *In utero* exposure to methyl diet and epigenetic modification of breast cancer risk in offspring. *FASEB J* **25**: 583.11, 2011.
  20. **Mabasa L**, Cho K, Fowler AW, Park CS. Effect of methyl nutrients on feline lymphoma growth. *FASEB J* **24**: 725.9, 2010.
  21. **Mabasa L**, Cho K, Fowler AW, Park CS. Effect of methyl nutrients on the growth of multidrug resistant MCF-7 human breast cancer cells. *Mol Biol Cell* **20**:780, 2009.
  22. Cho K, **Mabasa L**, Fowler AW, Park CS. Effects of canola oil on breast cancer cell growth and multi-drug resistance. *Mol Biol Cell* **20**:96, 2009.
  23. Park CS, Cho KS, **Mabasa L**, Fowler AW. Canola oil inhibits human breast cancer cell growth by regulating caspase-3 and p53. *FASEB J* **23**:897.9, 2009.
  24. Park CS, **Mabasa L**, Cho KS, Fowler AW. Dietary canola oil reduces susceptibility to chemically induced mammary carcinogenesis. *Mol Biol Cell* **19**:855-856, 2008.

## Publications

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1. Adu-Amankwaaha F, Tapfuma KI, Hussan RH, Tshililo N, Baatjies L, Masiphephethu MV, **Mabasa L**, Mavumengwana V. Cytotoxic activity of Cape Fynbos against triple-negative breast cancer cell line. *S Afr J Bot*, doi: 10.1016/j.sajb.2022.08.004, 2022.
2. **Mabasa L**, Kotze A, Shabalala S, Kimani C, Gabuza K, Johnson R, Sangweni NF, Maharaj V, Muller CJF. *Sclerocarya birrea* (marula) extract inhibits hepatic steatosis in *db/db* mice. *Int. J. Environ. Res. Public Health* 19(7):3782. Doi: 10.3390/ijerph19073782, 2022.
3. Mabhida SE, Sharma JR, Apalata T, Masilela C, Nomatshila S, **Mabasa L**, Fokkens H, Benjeddou M, Muhamed B, Shabalala S, Johnson R. The association of MTHFR (rs1801133) with hypertension in an indigenous South African population. *Front Genet* 13: 937639. Doi: 10.3389/fgene.2022.937639, 2022.
4. Kotze-Horstmann L, Cois A, Johnson R, **Mabasa L**, Shabalala S, Van Jaarsveld P, Sadie-Van Gijzen H. Characterization and comparison of the divergent metabolic consequences of high-sugar and high-fat diets in male Wistar rats. *Front Physiol* 13:904366. Doi: 10.3389/fphys.2022.904366, 2022.
5. Mabhida SE, Muhamed B, Sharma JR, Apalata T, Nomatshila S, **Mabasa L**, Benjeddou M, Masilela C, Ziqubu K, Shabalala S, Johnson R. Methylenetetrahydrofolate reductase polymorphism (rs1801133) and the risk of hypertension among African populations: a narrative synthesis of literature. *Genes* 13(4): 631. Doi: 10.3390/genes13040631, 2022.
6. Sangweni NF, Van Vuuren D, **Mabasa L**, Gabuza K, Huisamen B, Naidoo S, Barry R, Johnson R. Prevention of anthracycline-induced cardiotoxicity: the good and bad of current and alternative therapies. *Front Cardiovasc Med* 9:907266, doi: 10: 3389/fcvm.2022.907266, 2022.
7. Sangweni NF, Gabuza K, Huisamen B, **Mabasa L**, Van Vuuren D, Johnson R. Molecular insights into the pathophysiology of doxorubicin-induced cardiotoxicity: a graphical representation. *Arch Toxicol* 96(6):1541-50, 2022.
8. Sangweni NF, Dlodla PV, Chellan N, **Mabasa L**, Sharma J, Johnson R. The implication of low dose dimethyl sulfoxide on mitochondrial function and oxidative damage in cultured cardiac and cancer cells. *Molecules* 26(23):7305. Doi: 10.3390/molecules26237305, 2021.
9. **Mabasa L**, Samodien E, Sangweni NF, Pheiffer C, Louw J, Johnson R. In utero one-carbon metabolism interplay and metabolic syndrome in cardiovascular disease risk reduction. *Mol Nutr Food Res* 64(4):e1900377; doi: 10.1002/mnfr.201900377, 2020.
10. Mohamed L, Chakraborty S, Aruljothi KN, **Mabasa L**, Sayah K, Costa-Lotufo LV, Jardine A, Prince S. *Galenia africana* plant extract exhibits cytotoxicity in breast cancer cells by inducing multiple programmed cell death pathways. *Saudi Pharm J* 28(10):1155-1165, 2020.
11. Shabalala SC, Dlodla PV, **Mabasa L**, Kappo AP, Basson AK, Pheiffer C, Johnson R. The effect of adiponectin in the pathogenesis of non-alcoholic fatty liver disease (NAFLD) and the potential role of polyphenols in the modulation of adiponectin signaling. *Biomed Pharmacother* 131, 110785, <https://doi.org/10.1016/j.biopha.2020.110785>, 2020.
12. Sangweni NF, Moremane M, Riedel S, Van Vuuren D, Huisamen B, **Mabasa L**, Barry R, Johnson R. The prophylactic effect of pinocembrin against Doxorubicin-induced cardiotoxicity in an in vitro H9c2 cell model. *Front Pharmacol* 11:1172; doi: 10.3389/fphar.2020.01172, 2020.
13. Johnson R, Sangweni NF, Mabhida SE, Dlodla PV, **Mabasa L**, Riedel S, Chapman C, Mosa RA, Kappo AP, Louw J, Muller CJF. An in vitro study on the combination effect of Metformin and N-Acetyl Cysteine against hyperglycaemia-induced cardiac damage. *Nutrients* 11(12), DOI: [10.3390/nu11122850](https://doi.org/10.3390/nu11122850), 2019.

14. Samodien W, Johnson R, Pheiffer C, **Mabasa L**, Erasmus M, Louw J, Chellan N. Diet-induced hypothalamic dysfunction and metabolic disease, and the therapeutic potential of polyphenols. *Mol Metab* 27:1-10, 2019.
15. Samodien E, Pheiffer C, **Mabasa L**, Erasmus M, Louw J, Johnson R. Diet-induced DNA methylation within the hypothalamic arcuate nucleus and dysregulated leptin and insulin signalling in the pathophysiology of obesity. *Food Sci Nutr*, <https://doi.org/10.1002/fsn3.1169>, 2019.
16. Almeida MR, **Mabasa L**, Crane C, Park CS, Venâncio VP, Bianchi ML, Antunes LM. Maternal vitamin B6 deficient or supplemented diets on expression of genes related to GABAergic, serotonergic, or glutamatergic pathways in hippocampus of rat dams and their offspring. *Mol Nutr Food Res* 60(7):1615-24, 2016.
17. **Mabasa L**, Park CS, Cho K, Singh RK, Choi WS, Crane CL, Cho K, Almeida MR. Suppression of mammary carcinogenesis through early exposure to dietary lipotropes occurs primarily *in utero*. *Nutr Cancer* 67(8):1276-82, 2015.
18. **Mabasa L**, Cho K, Walters MW, Bae S, Park CS. Maternal dietary canola oil suppresses growth of mammary carcinogenesis in female rat offspring. *Nutr Cancer* 65(5):695-701, 2013.
19. Cho K, **Mabasa L**, Walters MW, Park CS. Lipotropes enhance the anti-proliferative effect of chemotherapeutic drugs in MCF-7 human breast cancer cells. *Oncol Rep* 29:2237-2242, 2013.
20. **Mabasa L**, Cho K, Bae S, Walsh DM, Park CS. Lipotropes (methyl nutrients) inhibit growth of feline lymphoma *in vitro*. *Res Vet Sci* 93:259-263, 2012.
21. Cho K, **Mabasa L**, Bae S, Walters MW, Park CS. Maternal high methyl diet suppresses mammary carcinogenesis in female rat offspring. *Carcinogenesis* 33, 1106-12, 2012.
22. Cho K, **Mabasa L**, Fowler AW, Walsh DM, Park CS. Canola oil inhibits breast cancer cell growth in cultures and *in vivo* and acts synergistically with chemotherapeutic drugs. *Lipids* 45:777-784, 2010.
23. Park CS, Cho KS, Bae DR, Joo NE, Kim HH, **Mabasa L**, Fowler AW. Methyl-donor nutrients inhibit breast cancer cell growth. *In Vitro Cell Dev Biol-Anim* 44:268-272, 2008.

## Research Grants

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|  |         |
|--|---------|
| South African Medical Research Council-Research Capacity Development (R1,500,000)  | 2021-23 |
| <i>Project Title: Determinants of high neonatal and child mortality rates in the rural areas of Limpopo province, South Africa</i> |         |
| National Research Foundation Thuthuka Funding (R218,000)   | 2020-22 |
| <i>Project Title: Intrauterine Obesogenic Environment and Epigenetic Regulation of Cardiac Metabolism</i>                          |         |
| SAMRC Institutional Support (R176,000)   | 2020-22 |
| Northern Canola Growers Association (R1,522,245)   | 2011-15 |
| <i>Project Title: Canola oil and breast cancer risk: synergistic effect with methyl nutrients</i>                                  |         |
| Agricultural Products Utilization Commission (R761,122)  | 2014    |
| <i>Project Title: Canola oil and breast cancer risk: synergistic effect with lipotropic nutrients</i>                              |         |
| National Institute of Health R15 (R4,339,159)  | 2012    |
| <i>Project Title: Maternal methyl diet and epigenetic imprint in offspring mammary carcinogenesis</i>                              |         |
| Department of Defense Breast Cancer Research Program (R1,918,719)  | 2008    |
| <i>Project Title: In utero exposure to dietary methyl nutrients and breast cancer risk in offspring</i>                            |         |

United States Department of Agriculture  
*Project Title: Canola oil and breast cancer risk*

2007-11

### Student Supervision

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**Previous:** Supervised 1 BSc (Hons), 3 MSc and 3 PhD students.

**Current:** Supervising 4 MSc and 1 PhD students

### Memberships/Committees

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SAMRC Research Capacity Development Scientific Committee  
American Society for Cell Biology member  
American Society for Nutrition member  
Biomedical Research and Innovation Platform (BRIP) Animal Committee  
BRIP Symposium Organizing Committee

### Citizenship

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Biochemistry and Cell Biology Reviewer  
Domestic Animal Endocrinology Reviewer  
Public Health Nutrition Reviewer  
Journal of Herbal Medicine Reviewer  
Current Therapeutic Research Reviewer  
Molecular Nutrition and Food Research Reviewer  
International Journal of Environmental Research and Public Health  
BRIP Academic Program facilitator  
University of Venda-SAMRC Collaboration Data Management  
Workshop Organizer (2021-2022)  
Chairing PSSA Conference Session  
Chairing BRIP Symposium Session

### Outreach

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**Previous:** Moos, Ewes, and More (bringing Science to people), Fargo, North Dakota

**Current:** SAMRC Career Day, Western Cape

### Computer Skills

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**Statistics:** SAS, Minitab (version 14.1), StatXact 8 and GraphPad Prism