

## TAFADZWA MACHIPISA

### Research Interest(s)

Tafadzwa's interest are in exploring the genetic underpinnings of diseases and traits within a range of underrepresented groups, particularly among individuals with various African ancestries. This research is pivotal for gaining a deeper insight into the unique physiological norms of these populations, as well as the specific pathologies of diseases affecting them, such as cardiovascular disease.

*Key Terms:* Human population genetics, genetic epidemiology, infectious diseases, computational genomics, bioinformatics, immunometabolism, cardiovascular genetics, and population, global and/or public health research.

### Education & Training

- 2024** *Ph.D. in Medicine*  
University of Cape Town (UCT), Cape Town, South Africa (SA)  
(*Visiting Ph.D. fellow, McMaster University, Canada*)  
*Ph.D. Thesis:* The genetics of rheumatic heart disease (RHDGen) in Africans.  
Supervisor(s): Prof. Bongani M Mayosi (late) (SA), Prof. Mark Engel (SA), Prof. Guillaume Paré (Canada), and Prof. Bernard Keavney (UK).
- 2016** *MPhil in Maternal and Child Health (MCH)*  
UCT, Cape Town, SA  
*Dissertation (with distinction):* Preliminary genealogical evidence for the *Plakophilin-2* gene, *PKP2* c.1162C>T founder mutation in Afrikaner South Africans with Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC).  
Supervisor(s): Prof. Bongani M Mayosi (late) (SA) & A/Prof. Gasnat Shaboodien (SA).
- 2014** *Visiting Fellow: Global Health/Public Health*  
Emory University, Atlanta, Georgia, USA  
*Graduate Exchange Programme*
- 2012** *BSc Hons in Chemical Pathology*  
University of Pretoria (UP), Pretoria, SA  
*Thesis Title:* Analysis of the exons of the *GNAS* gene in a patient with suspected Pseudohypoparathyroidism (PHP) Type Ib.  
Supervisor: Dr. Chantal Van Niekerk (SA).
- 2011** *BSc in Biomedicine*  
Midrand Graduate Institute (MGI), Johannesburg, SA

### Research Experience(s)

- 2023-Present** *Postdoctoral Researcher*  
Tishkoff Lab, Department of Genetics, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, USA
- 2015-Present** *RHDGen Fellow*  
Mayosi Research Group, Cape Heart Institute (CHI), UCT, SA and Clinical Research Lab & the Genetic Molecular and Epidemiology Lab (CRLB-GMEL), Population Health Research Institute (PHRI), Canada  
Human Hereditary Health (H3Africa) & Wellcome Trust Project Description Link(s): <https://h3africa.org/index.php/consortium/the-rhdgen-network-genetics-of-rheumatic-heart-disease-and-molecular-epidemiology-of-streptococcus-pyogenes-pharyngitis/> & <https://app.dimensions.ai/details/grant/grant.3640606>
- 2012** *Undergraduate Student Lab Research Assistant*  
The Department of Chemical Pathology, UP, Pretoria, SA

### Highlighted Publications

See Full Publication List on Google Scholar: <https://scholar.google.co.za/citations?user=S0KosD8AAAAJ&hl=en>

- Karthikeyan, G., Watkins, D., Bukhman, G., Cunningham, M. W., Haller, J., Masterson, M., Mensah, G. A., Mocumbi, A., Muhamed, B., Okello, E., Sotoodehnia, N., Machipisa, T., Ralph, A., Wyber, R., & Beaton, A. (2023). Research priorities for the secondary prevention and management of acute rheumatic fever and rheumatic heart disease: a National Heart, Lung, and Blood Institute (NIH NHLBI) workshop report. *BMJ global health*, 8(Suppl 9), e012468. Link: <https://doi.org/10.1136/bmjgh-2023-012468> . Published: 31 October 2023.

- Mayanja, R., **Machipisa, T.**, Soremekun, O., Kamiza, A.B., Kintu, C., Kalungi, A., Kalyesubula, R., Sande, O.J., Jjingo, D., Fabian, J. and Robinson-Cohen, C., 2023. Genome-wide association analysis of cystatin-C kidney function in continental Africa. *EBioMedicine*. 95. Published: 26 August 2023.
- Soremekun, C., **Machipisa, T.**, Soremekun, O., Pirie, F., Oyekanmi, O., Motala, A. A., Chikowore, T., & Fatumo, S. Multivariate GWAS analysis reveals loci associated with liver functions in continental African populations. *PLoS ONE*. Published: February 21, 2023.
- **Machipisa, T.**, Chishala, C., Shaboodien, G., Zühlke, L. J., Muhamed, B., Pandie, S., de Vries, J., Laing, N., Joachim, A., Daniels, R., Ntsekhe, M., Hugo-Hamman, C. T., Gitura, B., Ogendo, S., Lwabi, P., Okello, E., Damasceno, A., Novela, C., Mocumbi, A. O., Madeira, G., Musuku, J., Mtaja, A., ElSayed, A., HM Alhassan, H., Bode-Thomas, F., Yilgwan, C., Amusa, G., Nkereuwem, E., Mulder, N., Ramesar, R., Lesosky, M., Cordell, H. J., Chong, M., Keavney, B., Paré, G., Engel, M. E. & the RHDGen Network Consortium. Rationale, Design, and the Baseline Characteristics of the RHDGen (The Genetics of Rheumatic Heart Disease) Network Study. *Circulation: Genomic and Precision Medicine*, 16(1): e003641. Published Feb 2023.
- Udosen, B., Soremekun, O., Kamiza, A., **Machipisa, T.**, Cheickna, C., Omotuyi, O., Soliman, O., Wélél, M., Nashiru, O., Chikowore, T., & Fatumo, S. Meta-Analysis and Multivariate GWAS Analyses in 77,850 Individuals of African Ancestry Identify Novel Variants Associated with Blood Pressure Traits. *International Journal of Molecular Sciences*, 24(3), p.2164. Published Jan 21, 2023.
- Kamiza, A.B., Toure, S.M., Vujkovic, M., **Machipisa, T.**, Soremekun, O.S., Kintu, C., Corpas, M., Pirie, F., Young, E., Gill, D., Sandhu, M.S., Kaleebu P, Nyirenda M, Motala AA, Chikowore T, & Fatumo S., 2022. Transferability of genetic risk scores in African populations. *Nature Medicine*, pp.1-4. Published Jun 2, 2022.
- Nakabuye, M., Kamiza, A.B., Soremekun, O., **Machipisa, T.**, Cohen, E., Pirie, F., Nashiru, O., Young, E., Sandhu, M.S., Motala, A.A., Chikowore, T., & Fatumo S., 2022. Genetic loci implicated in meta-analysis of body shape in Africans. *Nutrition, Metabolism and Cardiovascular Diseases*, 32(6), pp.1511-1518. Published online Mar 26, 2022.
- Chong, M., Mohammadi-Shemirani, P., Perrot, N., Nelson, W., Morton, R., Narula, S., Lali, R., Khan, I., Khan, M., Judge, C., **Machipisa, T.**, Cawte, N., O'Donnell, M., Pigeyre, M., Akhabir, L. & Paré, G. 2022. GWAS and ExWAS of blood mitochondrial DNA copy number identifies 71 loci and highlights a potential causal role in dementia. *Elife*, 11, p.e70382.
- Soremekun, O., Soremekun, C., **Machipisa, T.**, Soliman, M., Nashiru, O., Chikowore, T., & Fatumo, S. (2021). Genome-Wide Association and Mendelian Randomization Analysis Reveal the Causal Relationship Between White Blood Cell Subtypes and Asthma in Africans. *Frontiers in genetics*, 12, 749415. Published Dec 2, 2021.
- **Machipisa, T.**, Chong, M., Muhamed, B., Chishala, C., Shaboodien, G., Pandie, S., de Vries, J., Laing, N., Joachim, A., Daniels, R., Ntsekhe, M., Hugo-Hamman, C., Gitura, B., Ogendo, S., Lwabi, P., Okello, E., Damasceno, A., Novela, C., Mocumbi, AO. , Madeira, G., Musuku, J., Mtaja, A., ElSayed, A., Alhassan, H., Bode-Thomas, F., Okeahialam, B., Zühlke, L., Mulder, N., Ramesar, R., Lesosky, M., Parks, T., Cordell, H., Keavney, B., Engel, M & Paré, G. Novel locus associated with rheumatic heart disease in Black Africans: Findings from the RHDGen study. *JAMA Cardiology*. Published online Jun 9, 2021. DOI:10.1001/jamacardio.2021.1627.
- Chikowore, T., Kamiza, A.B., Oduaran, O.H.; **Machipisa, T.**, and Fatumo, S., Non-Communicable Diseases Pandemic and Precision Medicine: Is Africa ready? *EBioMedicine*, 2021. 65: p. 103260.

### Highlighted Oral Presentations

- **Machipisa T**, Engel ME, & Pare G. “Rationale, design, and the baseline characteristics of the RHDGen (Genetics of Rheumatic Heart Disease) Network Study”. Early Career Investigator Rounds presentation, Population Health Research Institute (PHRI) & McMaster University, Hamilton, Ontario, Canada, 4 April 2022.
- Engel M & **Machipisa T**. “The RHDGen Consortium GWAS findings and beyond”. H3Africa 18th Consortium Virtual Meeting, Virtual, Tanzania, 1 September 2021. Time slot: 13:40-14:00 [Invited guest speaker session for the Young Investigators Forum].
- **Machipisa T**, Mayosi BM (late), Engel ME, Keavney B, Pare G. “Preliminary tissue enrichment findings from DEPICT analysis in RHDGen”. 16th Meeting of the H3Africa Consortium, Virtual (LabRoots), 8 September 2020. Slide summary: <https://h3africa.org/index.php/sixteenth-h3africa-consortium-meeting/#1600156154857-116baf77-2336>
- **Machipisa T**, Mayosi BM, Pare G. “The Genetics of Rheumatic Heart Disease (RHDGen): GWAS & Trio-based family studies.” Wellcome Genome Course: Genetic Analysis of Population-based Association Studies presentation, Wellcome Genome Campus, Cambridge UK, 18 July 2018.
- **Machipisa T**, Mayosi BM, Shaboodien G. “Preliminary genealogical evidence for the Plakophilin-2 gene, PKP2 c.1162C>T founder mutation in South Africans with Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC)”. 9th Meeting of the H3Africa Consortium, University of Mauritius, Mauritius, 28 October 2016.

- **Machipisa T**, Francis V, Mayosi BM. “Study Coordinators Working Group Update”. 8th Meeting of the H3Africa Consortium, Radisson Blu Hotel, Dakar, Senegal, 14 May 2016.

#### Conference Poster Presentations

- **Machipisa T**, Chong M, Parks T, Cordell H, Keavney B, Engel M & Paré G, on behalf of the RHDGen Network. “Association of a novel locus with Rheumatic Heart Disease in Black African individuals: Findings from the RHDGen study.” American Society of Human Genetics Virtual Meeting 2021, 11-18 October 2021 13:00-14:30.
- **Machipisa T**, Chong M, Parks T, Cordell H, Keavney B, Engel M & Paré G, on behalf of the RHDGen Network. “Depict Analysis Suggests Enrichment of Heart Valve Tissue Expression in African Rheumatic Heart Disease Patients from the RHDGen GWAS Study Cohort.” American Heart Association Scientific Sessions 2021, Virtual, Boston, November 2021.

#### Awards, Honors, Notable Achievements & Invited memberships/positions

<b>2023-Present</b>	<ul style="list-style-type: none"> <li>• University of Pennsylvania, Penn Center for Global Genomics &amp; Health Equity Postdoctoral Fellowship sponsored by Genentech (Source: <a href="https://globalgenomics.med.upenn.edu/updatedWebsite2021_gghe/2021-fellowshipApp.php">https://globalgenomics.med.upenn.edu/updatedWebsite2021_gghe/2021-fellowshipApp.php</a> )</li> </ul>
<b>2021-2022</b>	<ul style="list-style-type: none"> <li>• Sigma Xi, The Scientific Research Honor Society, Full member (Invited &amp; Accepted)</li> <li>• Department of Medicine PhD Top-up Scholarship Award</li> <li>• JAMA Cardiology 2021 Editor’s note and AMA module: Expanding Discovery in Cardiovascular Genome-Wide Association Studies. Citation: Natarajan P, McNally EM. JAMA Cardiol. Published online June 09, 2021. doi:10.1001/jamacardio.2021.1635. AMA Module (1 Credit CME): <a href="https://edhub.ama-assn.org/jn-learning/module/2780387">https://edhub.ama-assn.org/jn-learning/module/2780387</a>.</li> </ul>
<b>2019-Present</b>	<ul style="list-style-type: none"> <li>• Science World Museum, Canada: Black History Month Ambassador, 2021.</li> <li>• TACG (The African Computational Genetics) group: Associate (PI: Prof. Segun Fatumo)</li> </ul>
<b>2019-2020</b>	<ul style="list-style-type: none"> <li>• Presented an oral presentation at the 16<sup>th</sup> Meeting of the H3Africa Consortium Meeting (Virtual Section on LabRoots) and won 2<sup>nd</sup> place</li> </ul>
<b>2015-2018</b>	<ul style="list-style-type: none"> <li>• Inaugural UCT-McMaster (PHRI) Fellowship 2019/2020 by Prof. Salim Yusuf</li> </ul>
<b>2018</b>	<ul style="list-style-type: none"> <li>• Mayosi Research Group Scholarship under H3Africa RHDGen Network</li> </ul>
<b>2017</b>	<ul style="list-style-type: none"> <li>• Wellcome Genome Campus 30<sup>th</sup> Anniversary Scholarship Award (UK)</li> <li>• Golden Key International Honor Society Invitation and UCT Chapter Award</li> </ul>
<b>2016</b>	<ul style="list-style-type: none"> <li>• UCT Scholarship for International Travel, Crasnow Postgraduate Scholarship</li> <li>• Won 2<sup>nd</sup> Place: H3Africa Research Fellows’ Forum for oral presentation, 28th October, University of Mauritius</li> </ul>
<b>2012-2015</b>	<ul style="list-style-type: none"> <li>• South African Graduates Development Association (SAGDA) Advisory board member</li> </ul>
<b>2014</b>	<ul style="list-style-type: none"> <li>• Presented on 8 October at US Consulate General Cape Town on the <i>Graduate information session: Student representative on student life in the U.S. - South African students share their experiences</i></li> </ul>
<b>2012</b>	<ul style="list-style-type: none"> <li>• CIPA Graduate Exchange Student Scholarship: Emory University and UCT</li> </ul>
<b>2011</b>	<ul style="list-style-type: none"> <li>• University of Pretoria Honors Postgraduate Scholarship</li> <li>• Presented on 31 May at SAGDA National Dialogue Series: Student Leadership</li> <li>• MGI Certificate of Merit and MGI Certificate of Excellence</li> </ul>

#### Leadership, Consultation, & Teaching Experience

<b>2021-Present</b>	<p><b>Consultant</b> Health Analytic Working Group, Canadian Black Scientist Network (CBSN) &amp; the Health Analysis Division, Statistics Canada (Exemplary Outputs: <a href="https://www150.statcan.gc.ca/n1/pub/82-003-x/2023002/article/00001-eng.htm">https://www150.statcan.gc.ca/n1/pub/82-003-x/2023002/article/00001-eng.htm</a> )</p>
<b>2022</b>	<p><b>Sessional Lecturer</b> University of Witwatersrand, SA. Course(s): PADM 5123 Social Theory &amp; Research</p>
<b>2021</b>	<p><b>Program Committee (Abstract Reviewer)</b> The Nigerian Bioinformatics and Genomics Network Conference 2021, sponsored by 54Gene</p>
<b>2019</b>	<p><b>Judge</b> McMaster University, Faculty of Health Science, Medical Science Research Symposium</p>
<b>2014</b>	<p><b>Problem-Based Learning Facilitator for the UCT Undergraduate MBChB Programme</b> Clinical Laboratory Science, UCT</p>