

MOTLALEPULA PHOLO-TAIT

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PROFESSIONAL SUMMARY

Hardworking Plant Biotechnologist with applied plant research and laboratory abilities, and a successful career in both plant physiology and molecular biology research. Exceptional planner, team manager and project leader with a successful record of successfully funding, leading, and completing high-quality research. Ready to apply skills and knowledge to growth-oriented position at both academic and research institution.

ATTRIBUTES AND SKILLS

Molecular Biology Skills

- DNA and RNA extraction
- DNase free treatment and cDNA synthesis
- Agarose gel electrophoresis
- RT-PCR/RT-qPCR
- Proteomics and metabolomics procedures
- Recombinant Genetic Engineering
- Topo cloning and convectional ligation transformation techniques
- Bacterial streaking and culturing
- Plant tissue culture

Professional attributes

- Excellent academic and professional supervisory skills
- Excellent procurement and maintenance skills of general business of the lab
- Good customer service and satisfactory skills
- Attentive to details and good results-oriented skills
- Good, oriented teamwork skills
- Good negotiation and collaborative project skills

Data handling, Processing and Analysis

Maintain accurate laboratory records and data

- Design molecular or cellular laboratory experiments, oversee their execution, and interpret
- Knowledge in various Bioinformatic tools and services like NCBI, TAIR, Mev, Heatmap, BLAST, VectorNti, Sequence massager, MapMan, LinReg -Real time PCR
- Statistica, MinTAB and SAS programme analysis tools

Computer

- Proficiency in operation of personal computers and software packages like Microsoft Office.
- Literature searches through various programs
- Use of bibliography management tools like EndNote and citation using Medley

EDUCATIONAL QUALIFICATION

Advanced Diploma: Leadership and Management-2018

Shaw Academy - Dublin, Ireland

Major: Leadership and Organizational Culture, Coaching, Mentoring and Developing Others, Innovation and Creativity, Strategic Awareness and Communication to Inspire

Ph.D.: Plant Biotechnology- 2013-2016

Stellenbosch University - Stellenbosch, South Africa

- **Thesis:** Molecular analysis of plant growth promoted with low molecular weight compounds in relation to genetically altered photosynthetic carbohydrate partitioning in higher plants
- Director's award PhD scholarship- Institute for Plant Biotechnology

Master of Science: Agronomy

University of The Free State - Bloemfontein, South Africa

- **Major:** Crop Stress and Physiology
- **Thesis:** Morphological, physiological and yield response of maize (*Zea mays* L.) to seed treatments
- African scholarship for MSc graduate studies/National Research Foundation-South Africa

BSc Honores: Agronomy

University of The Free State - Bloemfontein, FS

- Best Dissertation Presentation Skills Award

Bachelor of Science: Agriculture

Tshwane University of Technology - Pretoria, South Africa

- Graduated cumlaude
- Chancellors medal achievement for Outstanding Academic Performance Award
- Best student in mixed farming
- Best student in beef production

PROFESSIONAL TRAININGS-DEVELOPMENTS

- **Small and Mighty: Introduction to Microbiology-2020**-University of Reading
- **Introduction to the Patent Cooperation Treaty-2020**-WIPO Academy-Distance Learning
- **General introduction Course on Intellectual Property Rights-2020**-WIPO Academy-Distance learning
- **Application of Genomics Technology in Plant Breeding-2009**-ICRISAT Patancheru, Greater Hyderabad, India

WORK HISTORY

2021 to current: Botswana University of Agriculture and Natural Resources (BUAN), Gaborone, Botswana

Manger Research Development and Outreach

Faculty of Research and Graduate Studies

Roles and responsibilities:

- Identify opportunities for collaborative research
- Compile past research outputs for possible commercialization.
- Facilitate protection of research discoveries and intellectual property
- Develop commercial opportunities for research outputs
- Administration of research and teaching activities within the Faculty of Research and Graduate Studies
- Marketing of research programs and activities.
- Management of research collaborations and partnerships
- Liaison between funding agencies and researchers
- Assist faculties on research activity related to my expertise

Teaching: Engaged in teaching first semester course- BSB 113 Biology of cells

- Introduction to the Scientific Method-Biological data gathering and presentation of results
- Basic biochemistry: elements, atoms, electrons and their behaviour.
- Water (structure and properties): pH, acids, bases.
- Macromolecules/Polymers: (structures, biological roles, and properties)
- Glycolysis, oxidative phosphorylation.

Current Supervisory engagement

- **2 PhD students: PhD in Breeding and PhD Agronomy**

01/2016 to 2021: Department of Agricultural Research – Gaborone, Botswana

Principal Researcher Research Officer Agricultural

Head of Genetics, Genomics and Biotechnology Laboratory

Area of Research: Plant and Animal Biotechnology; Molecular Biology, Crop Physiology, Agronomy, Plant Eco- Physiology

Research

- Strategically planned, monitored, and implemented Climate Smart Agricultural Research Projects
- Mentored and supervised 5 researchers, 2 research assistants and 1 technician
- Methodological and laboratory supervision of 6 post graduate students (3 BUAN; 3 BIUST) doing part of their genetic and molecular analysis at DAR genetic laboratory
- Scheduled and train technical staff members on molecular research methodology and laboratory skills
- Developed and pitch research and innovative projects for monitory funding and human resource research exchange

- Compiled and analyzed data and adjust experimental designs as necessary
- Monitored and evaluated research projects including budgetary issues
- Regularly communicated research results to industries, government, and general public
- Attracted at least 3 international research grants in two years period of service
- Prepared research reports and manuscripts for publications
- Proctored scientific meetings and public meetings on our services

Management/Coordination

- Managed the research funding and ensuring compliance to study timelines and budgets.
- Coordinated development of the Agricultural Biotechnology and Biosafety Policy
- Coordinate Inventory of laboratory infrastructure, troubleshoot and take corrective actions
- Negotiate agreements between employees to clarify misunderstood directions and resolve conflicts affecting performance
- Produced regular research and staff reports to evaluate performance, adjust strategies and maintain agile, sustainable operations.

01/2013 to 12/2015: Stellenbosch University – Stellenbosch, South Africa

Assistant/Tutor- Institute for Plant Biotechnology

Areas: Plant Biotechnology; Plant Physiology; Molecular Biology

- Research team member for Gateway Cloning of a transgenic potato lacking *AGPase* gene
- Assisted faculty staff with plant biotechnology undergraduate teaching and laboratory experiments
- Tried and tested laboratory protocols and methods prior to assigning them to students
- Reviewed laboratory protocols, and coordinated updates to keep laboratory work relevant and accurate
- Demonstrated use of laboratory equipment and enforce laboratory rules
- Increased BSc honors students pass rate by 15% through discussion sessions, tutorials, or laboratory sessions
- Evaluated and graded examinations, assignments, or papers and record grades
- Assisted in developing student-led after-school tutoring program to teach under-privileged students

07/2009 to 12/2012: Department of Agricultural Research – Gaborone, Botswana

Agricultural Researcher Officer

Plant Biotechnology: Cereals and Grain legumes

- Conducted basic and applied research on molecular biology/plant biotechnology under controlled and rainfed environment
- Monitored and evaluated research projects including budgetary issues
- Supervised a team over 15 multi-institutional employees
- Increased GMOs testing efficiency by 50%
- Attracted and coordinated at least 2 funded projects
- Monitored and evaluated research projects including budgetary issues
- Interpreted research findings and summarized data into reports.
- Regularly communicated with scientific research teams at national and international for a
- Scheduled and trained technical staff members.
- Managed overall laboratory functions

04/2005 to 06/2007: Department of Agricultural Research – Gaborone, Botswana

Assistant Agricultural Researcher

Crop Physiologist: Grain legumes

- Organized field crop research from start to finish by designing effective experimental design and data entry procedures.
- Collected and recorded data at various field sites for later assessment and data analysis.
- Assisted in the interpretation of research findings and summarized data into reports
- Supervised at least 2 technicians and 5 field assistants
- Disseminated research findings to various personnel in different formats, including power point, presentations, and spreadsheets
- Took active role in departmental meetings, engaging with all parties and transcribing detailed notes of plans, decisions and options discussed.

INTERNATIONAL RESEARCH FUNDING/GRANTS

SN	Name	Client	Amount (US\$)	Completion Date	Responsibility
1.	iSEP-SEQ: Neonatal sepsis monitoring in Sub-Saharan Africa with a microbial cell-free DNA sequencing approach- Inclusivity and Wellbeing Research Project	Royal Academy of Engineering-UK	20 ,000	Ongoing	Researcher: Biotechnology and Molecular biology Expertise
2.	National multi-stakeholder Public Awareness and Participation Innovative Platform on Biotechnology and Biosafety	RAEIN-Africa	60, 000	2013	Project Coordinator
3.	Cowpea: Resistance source for <i>Alectra vogelii</i> Research Project	IFS	50, 000	2008	Researcher: Agronomist
4.	Implementing the Cartagena Protocol on Biosafety	GEF	20, 000	July 2019	PI and Team Leader
5.	Effective use of Biosafety Clearing House mechanisms for genetically modified organisms	GEF	15, 000	2021	PI and Team leader

PUBLICATIONS

- Motlalepula Pholo, 2020. Genetically modified organisms (GMOs) and Synthetic biology: Their potential applications and the legal perspectives in Botswana, (Chapter 21) In: Anurag Chaurasia, David L. Hawksworth and Manoela Pessoa de Miranda (Eds.). *GMOs- Implications for Biodiversity Conservation and Ecological Processes* (First edition). Springer. [ISBN 978-3-030-53182-9](https://doi.org/10.1007/s00425-018-2916-8)
- Motlalepula Pholo, Beatrix Coetzee, Hans J. Maree, Phillip R. Young, James R. Lloyd, Jens Kossmann and Paul N. Hills. 2018. Cell division and turgor mediate enhanced plant growth in Arabidopsis plants treated with the bacterial signalling molecule lumichrome. *Planta*, 244: 1-12. <https://doi.org/10.1007/s00425-018-2916-8>
- Pholo M, 2018. The State of Laboratory Biosafety and Biosecurity in Botswana. In: Roseanne Diab, ed. *The State of Laboratory Biosecurity Biosafety and in the Southern African Development Community (SADC) Region*. South Africa, 19-20 March 2018. Pretoria, South Africa. Academy of Science of South Africa (ASSAf), Pretoria, pp 25-26, ISBN: 978-0-6399410-2-8. <http://dx.doi.org/10.17159/assaf.2018/0027>
- Pholo, M., Coetzee, B., Maree, H.J., Young, P.R., Peters, S.W., Lloyd, J.R., Hills, P.N. and Kossmann, J., 2017. How does lumichrome affect plants? An omics approach to understanding plant growth enhancement. *South African Journal of Botany*, 100 (109), p.363. <https://doi.org/10.1016/j.sajb.2017.01.157>
- Pholo M, Seef-Pretorius CJ. Seedling growth of maize (*Zea mays* L.) response to seed treatments. *Biological Forum -An International Journal*. 2011, 3(1):4-9. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.670.9582&rep=rep1&type=pdf>
- S. Ngwako, K. P. Walker, D. George, M. Matsheka, T. Moyo, M. Pholo, M. K. Molelekeng, U. Batlang, D. Gaborekwe, T. Mfolwe, F. Mmereki, D. Machacha, K. Lethola, C. Mazereku, K. Monare, N. Bodilenyane, N. Radijeng, B. Sesanyane and O. Mapitse, 2013. Enhancing Biotechnology and Biosafety Public awareness and participation in Botswana: Experiences of the Botswana Innovation Platform. In: Shumba-Mnyulwa D, ed. *Innovation Systems for Resilient Livelihoods: Connecting Theory to Practice*. Proceedings of the International Conference held in Johannesburg, South Africa, 26-28 August 2013. Pretoria, South Africa: Regional Agricultural and Environmental Innovations Network- Africa (RAEIN-Africa). p.24-25. <https://vdocuments.site/download/idv-611729-b4f6227fec008e3e496c01de7a01b6e0-558ddcab850cc>
- Stads, Gert-Jan & Pholo, Motlalepula, 2011. "Botswana: Recent developments in agricultural research," ASTI country notes 124842, International Food Policy Research Institute (IFPRI). DOI: 10.13140/RG.2.1.4758.0643. <https://EconPapers.repec.org/RePEc:fpr:astin:124842>.