

Alishia Van Heerden

Molecular Biology Specialist & Laboratory Manager | MSc Genetics

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PROFESSIONAL SUMMARY

Dedicated professional with a background in plant disease diagnostics and a proven track record of excellence in laboratory management. Currently contributing to ground breaking research at the Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, I am deeply passionate about biology and committed to expanding my expertise across various scientific domains. Skilled in bioinformatics, next generation sequencing analysis, microsatellite design, and diagnostic assay development, I bring a wealth of technical knowledge and practical experience to molecular biology roles.

Known for my hardworking nature, independence, and adaptability, I thrive in dynamic environments and excel in solving complex problems. As a meticulous laboratory manager, I have honed my ability to oversee operations, ensure safety compliance, and foster a collaborative work culture. Adept at leading interdisciplinary teams and leveraging advanced technologies, I am committed to driving innovation and advancing research in molecular genetics. With a solid foundation in molecular biology, I am eager to explore opportunities in roles such as molecular biologist, senior laboratory technician, or researcher.

AREAS OF EXPERTISE

- Molecular Biology & Genetics
- Project management Skills
- Bioinformatics
- Report Writing
- Genomics Research
- Innovation & Problem Solving
- Laboratory Management
- Laboratory Research

EDUCATION

MSc Genetics, University of Pretoria, June 2023

Weighted average: 77 %

Thesis title: Development of a LAMP assay for the in-field diagnosis of the emerging Eucalyptus pathogen, *Elsinoë necatrix*, utilizing the elsinochrome toxin cluster as a highly specific marker.

Bachelor of Science Honours (BSc: Hons): Genetics, University of Pretoria, 2020

Weighted average: 72.33%

Thesis title: Generating a mutant library of the tree pathogenic fungus *Ceratocystis albifundus* using *Agrobacterium*-mediated transformation.

Bachelor of Science (BSc): Genetics, University of Pretoria, 2019

Majors: Genetics and Biochemistry

National Senior Certificate, Die Hoërskool Menlopark, 2016

TECHNICAL SKILLS

MOLECULAR

High-throughput DNA extraction
PCR
qPCR
LAMP
Illumina library preparation
Next generation sequencing
SOP development

BIOINFORMATICS

Next generation sequencing analysis
Genotyping
Gene prediction
Primer design

MICROBIOLOGICAL

Culturing
Serial dilutions
Single spore isolation
Cloning
Agrobacterium-
transformation

CAREER HISTORY

Plant Disease Diagnostic Technician | Forestry and Agricultural Biotechnology Institute (FABI) | Jan 2023 – Present

Responsibilities:

- Utilise advanced techniques in full genome sequencing and bioinformatic assembly to accurately identify and analyse plant pathogens, contributing to cutting-edge research in plant disease diagnostics.
- Spearhead the design and development of custom microsatellites tailored for precise identification and tracking of plant diseases, enhancing the efficacy of disease surveillance efforts.
- Innovate the creation of a highly efficient diagnostic assay, enabling rapid and precise detection and diagnosis of plant pathogens, thereby facilitating timely intervention and mitigation strategies.
- Collaborate with interdisciplinary teams to integrate genomic data and diagnostic tools, enhancing overall disease management strategies and contributing to the advancement of agricultural practices.
- Publish research findings in reputable scientific journals, showcasing expertise and contributions to the field of plant disease diagnostics and management.

Laboratory Manager | Forestry and Agricultural Biotechnology Institute (FABI) | Jan 2023 – Present

Responsibilities:

- Direct and manage comprehensive laboratory operations, overseeing all aspects including safety protocols, inventory control, and the establishment of a secure work environment.
- Implement and enforce stringent safety measures and protocols to ensure compliance with regulatory standards and safeguard the well-being of laboratory personnel.
- Cultivate a culture of safety awareness and adherence to best practices, fostering a secure work environment.
- Demonstrate leadership in maintaining laboratory equipment and facilities to high standards, facilitating smooth and uninterrupted workflow.

Tutor | University of Pretoria | Jan 2021 – Dec 2022

Responsibilities:

- Delivered comprehensive tutoring services to third-year students encompassing subjects such as Population and Evolutionary Genetics, Genome Evolution and Phylogenetics, and Human Genetics.

NOTABLE ACHIEVEMENTS

Publications:

- van Heerden A, Pham NQ, Wingfield BD, Wingfield MJ, Muro Abad JI, Durán A, Wilken PM. (2024) LAMP assay to detect *Elsinoë necatrix*; an important Eucalyptus shoot and leaf pathogen. *Plant Dis.* 2024 Sep;108(9):2731-2739. doi: 10.1094/PDIS-01-24-0086-RE.
- van Heerden A, Pham NQ, Wingfield BD, Wingfield MJ, Wilken PM. (2024) Six type-I PKS classes and highly conserved melanin and elsinochrome biosynthetic clusters found in diverse *Elsinoë* species. *BMC Genomics* 2024 Oct 22;25(1):990. doi: 10.1186/s12864-024-10920-z

Teaching Experience:

- Introductory Microsatellite Workshop – IMW2024 (University of Pretoria) – Facilitator

Bursaries

- Grant holder linked bursary for honours and masters student, National Research Foundation (NRF).
- Student bursary and masters student bursary from Royal Golden Eagle (RGE).

Poster Presentations:

- South African Society for Plant Pathology (SASPP) 2022: Development of a LAMP assay for in-field diagnosis of the novel Eucalyptus pathogen, *Elsinoë necatrix* using the elsinochrome toxin cluster as a marker.
- IUFRO all Division 7 (Forest Health, Pathology and Entomology) 2022: A LAMP assay for in-field detection of *Elsinoë necatrix*, the causal agent of Eucalyptus scab and shoot malformation.

Other:

- 33rd Annual Meeting of the Tree Protection Cooperative Program (TPCP) 2022: Demonstration of a Loop-mediated isothermal amplification (LAMP) assay.
- Member of the Golden Key International Honors Society since 2017.

ADDITIONAL INFORMATION

Languages: Afrikaans and English

Computer Literacy: MS Office; Linux; Python