Dr Donovin William Coles

Research agricultural pathologist

Contact

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Google Scholar Profile

LinkedIn Profile

Github

Sydney, Australia

Key Skills

- Multi-omics workflows
- High-performance computing
- Programming languages: R, Python, Java, and C/C++
- Strong analytical and problem-solving skills
- Excellent communication and leadership skills
- Project management and cross-disciplinary collaboration

Education

Doctor of Philosophy – Plant-Microbe interactions, Molecular Biology and Bioinformatics
Western Sydney University and University of Hertfordshire
Graduated 2022

Master of Science - Biotechnology
University of Pretoria
Graduated 2018

Bachelor of Science (Hons) Biotechnology
Genetics department
University of Pretoria
Graduated 2015

Bachelor of Science Biotechnology
Major in Genetics and Plant Pathology
University of Pretoria
Graduated 2014

Tools and Methodologies

- Data analysis: SQL, Power BI, Excel
- Writing: EndNote, Zotero, OneNote, Evernote, and Word

Summary

I am a dedicated and inquisitive researcher with strengths in agricultural pathology and bioinformatics. I have an excellent track record in working collaboratively with internal and external stakeholders to deliver on-ground projects for academia and industry. Through my classical training in genetics and plant pathology, I have secured prestigious awards at well-known research institutes internationally. I have developed an extensive skill set in various programming languages such as R, Python, Java, and C++. I have published my research in globally recognised scientific journals, mentored junior researchers, and presented at national and international conferences. I am energetic, driven, and love working in a collaborative team environment.

Work Experience

Postdoctoral Research Fellow - Western Sydney University, Future Food Systems and Perfection Fresh
January 2022 – December 2024

I managed a team and performed research as part of a university, industry, and government co-funded project to develop novel strategies to manage major diseases affecting the broccolini industry with a major focus on microbial and phytohormonal solutions.

Key responsibilities and achievements

- Performed glasshouse and national field trials. Identified novel APVMA approved microbial and metabolic/phytohormone products for suppression of a major root pathogen affecting the industry.
- Collected samples from multiple farms across Australia and compared microbial communities between healthy and diseased sites. Identified beneficial microbes associated with healthy sites for bioprospecting.
- Prepared industry reports and manuscripts for publication in refereed journals and presented research findings at national and international seminars and conferences including the Australasian Plant Pathology Society and Australasian Soilborne Diseases.
- Engaged with industry and grower stakeholders, developed strong research collaboration and managed meetings and discussions.
- Participated in student research supervision including co-supervision of a PhD student, teaching undergraduate laboratory practicals, and mentoring students.

Bioinformatic Research Assistant - Western Sydney University
December 2020 – December 2021

I performed bioinformatic analyses to identify biomarkers for the identification of resistant *Eucalyptus* germplasm and early pathogen detection.

Key responsibilities and achievements

- Processed and analysed large-scale integrated biological data including RNA-seq, small RNA-seq and metabolomics as part of a multi-disciplinary team.
- Managed the data and developed workflows in accordance with workplace policies for reproducible research.
- Prepared reports for funding partners, and manuscripts for publication in refereed journals.

- Sequence alignment: BLAST (locally and servers), ClustalW, HMMER and MAFFT
- Genomics: PacBio and Illumina sequencing and annotation, BLAST2GO, Galaxy, FastOrtho, SignalP, TMHMM, effectR, effectorP, BUSCO, Phytozome, NCBI, EucGenie, eCalibrator
- Phyologenetics: Saté-II, FastTree2 and iTOL.
- Transcriptomics: CLC Genomics Workbench, DESeq2, co-expression network analysis and MixOmics
- Metabolomics: Progenesis, KEGG and metaboanalyst
- Microbial communities: DADA2, Phyloseq, indicator species analysis
- GO enrichment and annotation: TopGO, PlantRegMap, and g:Profiler

- Identified key biomarkers associated with resistant germplasm and early infection to assist biosecurity monitoring.

Recent Seminars and Conference Presentations

1. Coles D. W., Powell J. R., Plett J. M., Anderson I. C. (Invited Speaker) Development of novel strategies to manage broccolini clubroot disease. Australasian Soilborne Disease Symposium (2024).
2. Coles D. W., Powell J. R., Plett J. M., Anderson I. C. (Invited Speaker) Development of novel IDM strategies to mitigate the impact of major broccolini diseases:
   Project progress. Perfection Fresh Grower Meeting (2023).
3. Coles D. W., Bithell S.L., Jeffries T., Cuddy W.S., Plett J. M. (Invited Speaker) Co-expression network and functional analyses reveal a role of RXLR effector *Phytmed_10271* in a quantitative system. Australasian Mycological Society symposium (2022).
4. Coles D. W., Plett, J. M., Anderson I. C., Powell, J. R. (Invited Speaker) Microbial community comparison between symptomatic and asymptomatic shoots of broccolini infected with *Albugo candida*. New Zealand Microbiological Society conference (2022).
5. Coles D. W., Wong-Bajracharya J., Tobias P., Plett J. M., Moffitt M. C. (Invited Speaker) Development of molecular fingerprinting for early detection of myrtle rust disease and resistant germplasm. 2nd Australian Biosecurity Symposium (2022).

Professional Service

- Developed and conducted an RNA-seq analysis workshop for 20 research colleagues with a presentation of the workflow followed by hands-on work using my prepared code script November 2024.
- Reviewer for BMC Plant Biology September-December 2022
- Panel member of the institute review committee for the review of the Hawkesbury Institute for the Environment, Western Sydney University, Richmond, NSW, Australia. July-September 2021.
- Student Representative for Ph.D. Students. Hawkesbury Institute for the Environment, Western Sydney University, Richmond, NSW, Australia. March 2019-June 2020.
- Organised an eight-week optimal health program for 10 PhD students to support health and well-being June-August 2019.
- Representative of the Social Committee. Forestry and Agricultural Biotechnology Institute, The University of Pretoria, Pretoria, South Africa. January 2016-2017.

Supervision

Student Name	Degree/Diploma	Date Completed
Antony Kamiri	Ph.D.	Ongoing
Cloud Vacca	Ph.D.	Ongoing
Bernard Smit	Undergraduate Research Assistantship	2017
Kelen Pillay	Undergraduate Research Assistantship	2016

References

Available upon request.