

Academic Curriculum Vitae – Dr Donovan W. Coles

Sydney, NSW

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Education

Ph.D. in Molecular Biology of Plant-Pathogen interactions. Thesis title: “*Plant-Pathogen Signaling During the Biotrophic to Necrotrophic Switch*” Dual PhD, Western Sydney University, Richmond, NSW, Australia, and University of Hertfordshire, Hatfield, United Kingdom. Awarded 12 August 2022.

MSc in Plant Biotechnology. Dissertation title: “*Functional characterization of NITRATE TRANSPORTER 2.5 in Arabidopsis thaliana defense using CRISPR-Cas9*” The University of Pretoria, Pretoria, South Africa. Awarded July 2018.

B.Sc. Honours in Biotechnology (with distinction). Report title: “*Towards the functional characterization of NITRATE TRANSPORTER 2.5 in plant defence using CRISPR-Cas9*” The University of Pretoria, Pretoria, South Africa. Awarded November 2015.

B.Sc. in Biotechnology (with distinction) The University of Pretoria, Pretoria, South Africa, 2014.

Research Positions:

Postdoctoral Research Fellow in Broccolini pathology, Hawkesbury Institute for the Environment, Western Sydney University, Richmond, NSW, Australia, January 2022-December 2024.

Research assistant in Molecular Fingerprinting of Myrtle Rust Disease, Western Sydney University. Richmond, NSW, Australia. December 2020 - December 2021.

Research assistant; Forest Molecular Genetics program, The University of Pretoria, Pretoria, South Africa. January of 2014 - December 2014.

Journal Articles:

1. Coles, D. W., Bithell, S. L., Jeffries, T., Cuddy, W. S., & Plett, J. M. (2024). Functional genomics identifies a small secreted protein that plays a role during the biotrophic to necrotrophic shift in the root rot pathogen *Phytophthora medicaginis*. *Frontiers in Plant Science*, 15, 1439020.
2. Coles D.W., Bithell S.L., Mikhael M., Cuddy W.S., Plett J.M. (2022). Chickpea Roots Undergoing Colonisation by *Phytophthora medicaginis* Exhibit Opposing Jasmonic Acid

- and Salicylic Acid Accumulation and Signalling Profiles to Leaf Hemibiotrophic Models. *Microorganisms*, 10, 343. <https://doi.org/10.3390/microorganisms10020343>. (Impact Factor 3.86; SJR Ranking Microbiology: 0.86).
3. Hill, R. A., Wong-Bajracharya, J., Anwar, S., Coles, D., Wang, M., Lipzen, A., Ng, V., Grigoriev, I. V., Martin, F., Anderson, I. C., Cazzonelli, C. I., Jeffries, T., Plett, K. L. and Plett, J. M. (2022). Abscisic acid supports colonization of *Eucalyptus grandis* roots by the mutualistic ectomycorrhizal fungus *Pisolithus microcarpus*. *New Phytologist*, 233: 966-982. <https://doi.org/10.1111/nph.17825>. (Impact Factor 10.15; SJR Ranking Microbiology: 3.74).
 4. du Toit Y., Coles, D. W., Mewalal R., Christie N., Naidoo S. (2020). eCALIBRATOR: A Comparative Tool to Identify Key Genes and Pathways for Eucalyptus Defense Against Biotic Stressors. *Frontiers in Microbiology*. 10.3389/fmicb.2020.00216. (Impact Factor 4.24; SJR Ranking Microbiology: 1.701).
 5. Naidoo S., Slippers B., Plett J. M., Coles D. W., Oates C. N. (2019). The Road to Resistance in Forest Trees. *Frontiers in Plant Science*. 10.3389/fpls.2019.00273. (Impact Factor 4.4; SJR Ranking Plant Science: 1.752).

Invited 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).
6. Coles D. W., Bithell S. L., Jeffries T., Cuddy W. S., Stotz H. U., Plett J. M. (Poster) Putting the brakes on disease: identifying and targeting key genetic regulators controlling the biotrophic to necrotrophic switch. 16th Congress of the Federation of Asian and Oceanian Biochemists and Molecular Biologists. Online. (2021).
7. Coles D. W., Bithell S. L., Jeffries T., Cuddy W. S., Plett J. M. (Invited Speaker) Small secreted RxLR Pm_10271 regulates the biotrophic to necrotrophic switch in the soil

- borne pathogen *Phytophthora medicaginis*. Australasian Plant Pathology Society Biennial Conference. Online. (2021).
8. Coles D. W., Bithell S. L., Jeffries T., Cuddy W. S., Stotz H. U., Plett J. M. (Invited Speaker) Identification of key genetic regulators controlling the biotrophic to necrotrophic switch during hemibiotrophic pathogenesis. *School of Life and Medical Science Conference, University of Hertfordshire*. Hatfield, United Kingdom. (2021).
 9. Coles D. W., Bithell S. L., Cuddy W. S., Stotz H. U., Plett J. M. (Invited Seminar) Identification of key regulatory signals governing plant/hemibiotrophic pathogen interactions. *Hawkesbury Institute for the Environment, Western Sydney University*. Richmond, NSW, Australia. (2020).
 10. Coles D. W., Bithell S. L., Cuddy W. S., Plett J. M. (Invited Speaker) Investigating the transcriptomic response of chickpea roots to infection by the oomycete pathogen *Phytophthora medicaginis*. *Genomes and Biodiversity workshop*. University of Sydney. (2019).
 11. Coles D. W., Bithell S. L., Cuddy W. S., Plett J. M. (Invited Speaker) Physiological insights into the chickpea-*Phytophthora medicaginis* interaction. *Hawkesbury Institute for the Environment, Western Sydney University*. Richmond, NSW, Australia. (2019).
 12. Coles D. W., Cuddy W. S., Stotz H. U., Plett J. M. (Poster) Investigation of pathogen-plant signaling during the chickpea-*Phytophthora medicaginis* duel. *Hawkesbury Institute for the Environment, Western Sydney University*. Richmond, NSW, Australia. (2019).
 13. Coles D. W., Cuddy W. S., Stotz H. U., Plett J. M. (Invited Seminar) En Garde! Using dual RNA-seq to elucidate the code duello governing battle between Chickpea and *Phytophthora medicaginis*. *Hawkesbury Institute for the Environment, Western Sydney University*. Richmond, NSW, Australia. (2018).
 14. Coles D. W., Mewalal R., Naidoo S. (Invited Seminar) Functional genetic analysis of *NRT2.5* in *Arabidopsis thaliana* defense". *Forestry and Agricultural Biotechnology Institute, University of Pretoria*. Pretoria, South Africa. (2017).
 15. Coles D. W., du Toit Y., Hussey S. G., Mewalal R., Christie N., Myburg A. A. and Naidoo S. (Invited Speaker) Identification and characterization of *NITRATE TRANSPORTER 2.5* as a target defense response gene in *Eucalyptus grandis*. *IUFRO Tree Biotechnology Conference*. Concepción, Chile. (2017).
 16. Coles D. W., Mewalal R., Naidoo S. (Invited Seminar) Functional characterization of *NITRATE TRANSPORTER 2.5* in *Arabidopsis thaliana* defense. *Forestry and Agricultural Biotechnology Institute, University of Pretoria*. Pretoria, South Africa. (2017).
 17. Coles D. W., Mewalal R., Naidoo S. (Invited Seminar) Regulatory status of genome edited plants. *Forestry and Agricultural Biotechnology Institute, University of Pretoria*. Pretoria, South Africa. (2016).

Scholarships, grants and awards:

2023 Western Sydney University Winter Scholarship Student Grant

2018-2021	Western Sydney University and University of Hertfordshire co-tutelle dual award Ph.D. Scholarship
2021	Top oral presentation award (University of Hertfordshire, School of Life and Medical Science Research Conference, Agriculture and Geography Research session)
2019	Director's award for outstanding student poster (Hawkesbury Institute for the Environment, Western Sydney University)
2016-2017	National Research Foundation - Innovation Master's Scholarship
2016-2017	Forest Molecular Genetics Program - Master's Scholarship
2015	Top oral presentation award (Department of Genetics Honours Series, The University of Pretoria)
2015	National Research Foundation - Grant Holder Linked Bioinformatics Honours Scholarship
2015	Forest Molecular Genetics Program- Honours Scholarship
2014	Forest Molecular Genetics Program- Undergraduate Mentorship Scholarship

Professional Activities and Service:

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.

Representative of the Social Committee. Forestry and Agricultural Biotechnology Institute, The University of Pretoria, Pretoria, South Africa. January 2016-2017.

Teaching:

Unit/Course	Location	Year	Position
Plant Genetics and Crop Biotechnology (3 rd year)	The University of Pretoria	2017	Lab Instructor/Tutor
Molecular Genetics (2 nd year)	The University of Pretoria	2016-2017	Lab Instructor/Tutor
Genetics (1 st year)	The University of Pretoria	2015	Tutor

Mathematics and Science (High School)	Master Maths	2013	Tutor
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Student 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

Volunteer Teaching:

2023 and 2019 - Plant Health and Biosecurity (3rd year; Western Sydney University)

Volunteer Fieldwork:

2019 - Field work in Pine plantations, Jenolan, NSW, Australia. Hawkesbury Institute for the Environment, Western Sydney University, Richmond, NSW, Australia.

2016 - Field work in Mondi *Eucalyptus* plantations, Kwazulu-Natal, South Africa. Forest Molecular Genetics program, The University of Pretoria, Pretoria, South Africa.