Curriculum Vitae of Wilma Nel, PhD

**Diagnostic Clinic Manager, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria**

Full proficiency in English and Afrikaans – written and verbal

Full proficiency in Microsoft Office suite

Good with management of interpersonal relationships

Detail oriented and highly organized

Presentations – poster and oral

Creative – conceptualizing, writing, editing and proofreading

**Molecular techniques:** DNA & RNA extraction; PCR; Agarose gel electrophoresis; Sanger sequencing; Basic and advanced phylogenetics.

**Bioinformatics techniques:** De Novo genome assembly; Genome annotation; Gene mining and identification; Phylogenomics; Primer design.

**Mycological techniques:** Primary fungal isolation; Culture purification and maintenance; Single spore techniques; Mating studies; Co-culture studies; Species identification and description.

**Microscopy techniques:** Cleaning and maintenance; Advanced stereo, light, DIC, and phase contrast microscopy; Familiar with multiple different software platforms; Microscopy instruction to users.

**Entomology techniques:** Collection, handling and storage of insect specimens; Destructive vs. non-destructive DNA extraction methods; Basic identification.In charge of Polyphagous shot hole borer rearing.

# Skills and Research Techniques

# Personal Details

**Full name:** Wilma Janine Nel

**Date of Birth:** 22 November 1992

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**Languages:** English and Afrikaans

**Citizenship:** Dual South African/Dutch

**Licence:** Code B with own transport

# About Me

I am a young professional researcher, passionate about mycology, entomology, and insect-fungus interactions. During my time as a postgraduate student, I developed an interest in taxonomy, systematics, and microscopy. I work very well independently but am always happy to collaborate or spend time teaching students and colleagues. I am open to continuous learning and never afraid to try something new.

# Education, Awards, and Bursaries

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| --- | --- |
| **2021** | **PhD (Microbiology),** FABI, University of Pretoria**Thesis title:** Ophiostomatoid fungi associated with fungus farming insects in South Africa2018-2020 Recipient National Research Foundation: Freestanding PhD bursary2018-2020 University of Pretoria: Postgraduate bursary (PhD)2018 Forestry and Agricultural Biotechnology Institute: Award for student Mentorship2018 Mycological Society of America: Mentorship student travel award. Awarded to postgraduate students to attend the International Mycological Congress in Puerto Rico |
| **2018** | **MSc (Microbiology)** (*Cum Laude*), FABI, University of Pretoria**Thesis title:** Taxonomy and biology of the plant pathogenic fungus *Thielaviopsis basicola*2018 University of Pretoria: Merit certificate for academics for MSc: Microbiology2018 South African Association of Botanists (SAAB) Conference: Best student lightning oral presentation2016-2017 National Research Foundation: Scarce skills masters bursary2016-2017 University of Pretoria: Postgraduate bursary (MSc) |
| **2015** | **BSc (Hons) Microbiology** (with 2 distinctions), FABI, University of Pretoria  |
| **2014** | **BSc (Microbiology)**, University of Pretoria |
| **2010** | **National Senior Certificate** (with 1 distinction), Hoërskool Eldoraigne |

# Employment & Work Experience

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| --- | --- |
| **Jun 2023 – Present** | **Diagnostic Clinic Manager** (full-time), FABI, University of Pretoria |
| **Jul 2021 –** **Jun 2023** | **Post-Doctoral Research Fellow** (full-time), FABI, Department of Zoology and Entomology. University of PretoriaInvestigating biological control strategies for use against the invasive ambrosia beetle, *Euwallacea fornicatus*.  |
| **Sept 2021 - Present** | **Post-Doctoral Representative** (part-time),FABIFacilitating a line of communication between the Postdoctoral community with management. |
| **Jul 2022 - Present** | **Assistant Stock Manager** (part-time),FABIAssisting with stock taking and distribution of stock items to the various labs in the institute. |
| **Jun 2017 - Jan 2022** | **Lab Manager** (part-time),FABIImplementation of lab rules, providing introductory training to new students, and assisting in the maintenance and reporting of equipment. |
| **Jan 2017 – Jul 2021** | **Microscopy Administrator** (part-time),FABIOverseeing the care and maintenance of the microscope facilities, ordering of microscopy related equipment, training of personnel in the proper use of microscopy equipment and associated computer software. |
| **2015-2022** | **Academic Tutor and Demonstrator** (part-time), University of PretoriaAssisting with the set up of teaching venues, invigilation and marking of assignments, tests, and exams, hands on training of students during practical sessions, demonstration of various microbiological techniques.2015-2016 MBY 161 Introductory Microbiology2016-2017 MBY 251 Bacteriology2018-2020 Honours Joint Techniques Course2016-2022 MBY 261 Mycology |
| **2014** | **Student Assistant** (part-time), University of Pretoria, Department of Microbiology and Plant Pathology.Assisting postgraduate students with their research activities. |
|  | Teaching Experience |

**2020-2022 MBY 261 Practical Lectures**

Introductory lecture; Microscopic characteristics of fungi; Using DNA sequence data to identify fungi.

**2021 PLG 262 Guest Practical Lecture**

The invasive polyphagous shot hole borer

# Research Outputs: Peer Reviewed Publications

**W.J. NEL,** S. JALI, I. BARNES, F. IMPSON, R. OBERPRIELER, B.P. HURLEY (2025) First report of *Melanterius inconspicuus* (Curculionidae, Coleoptera) in South Africa with observations of its development within the vegetative tissues of black wattle. *Southern Forests – A Journal of Forest Science*. 10.2989/20702620.2025.2537823.

**W.J. NEL,** T.A. DUONG, S. FELL, D.A. HERRON, T. PAAP, M.J. WINGFIELD, Z.W. DE BEER, J. HULCR, A.J. JOHNSON(2025) A checklist of South African bark and ambrosia beetles (Coleoptera: Curculionidae: Scolytinae, Platypodinae). *Zootaxa* 5648 (1): 1-101. 10.11646/zootaxa.5648.1.1 (Monograph)

J. HULCR, I. [BARNES](https://www.fabinet.up.ac.za/index.php/people-profile?profile=957), M. BARNES, R. GAZIS, A. [HAMMERBACHER](https://www.fabinet.up.ac.za/index.php/people-profile?profile=1196), A.J. JOHNSON, S. LYNCH, K.M.T. [LYNN](https://www.fabinet.up.ac.za/index.php/people-profile?profile=1273), G.C. MARAIS, C.G. MAYERS,**W.J.** [**NEL**](https://www.fabinet.up.ac.za/index.php/people-profile?profile=1241)**,** C. VILLARI, B.D. [WINGFIELD](https://www.fabinet.up.ac.za/index.php/people-profile?profile=908), M.J. [WINGFIELD](https://www.fabinet.up.ac.za/index.php/people-profile?profile=1022) (2025) From forest to fungus: A roadmap to bark beetle mycobiome research. *Phytoparasitica* 53(45) [10.1007/s12600-025-01246-x](http://dx.doi.org/10.1007/s12600-025-01246-x)

**W.J. NEL,** C. RANDOLPH, T. PAAP, B.P. HURLEY, B. SLIPPERS, I. BARNES, MICHAEL J. WINGFIELD(2024) *Fusarium* species associated with *Euwallacea xanthopus* in South Africa, including two novel species. *Mycologia* 1-20. 10.1080/00275514.2024.2394758

**W.J. NEL,** B. SLIPPERS, M.J. WINGFIELD, N. YILMAZ, B.P. HURLEY(2023) Efficacy of commercially available entomopathogenic agents against the Polyphagous Shot Hole Borer in South Africa. *Insects* 14 (361). 10.3390/insects14040361

P.W. CROUS, … , **W.J. NEL** *ET AL.*(2022) Fungal Planet description sheets: 1284-1382. *Persoonia - Molecular Phylogeny and Evolution of Fungi* 47:1284-1382. 10.3767/persoonia.2021.47.06

E. VAN ROOYEN, T PAAP, Z.W. DE BEER, G TOWNSEND, S. FELL, **W.J. NEL,** S. MORGAN, M. HILL, F. ROETS (2021) The polyphagous shot hole borer beetle: Current status of a perfect invader in South Africa*. South African Journal of Science* 117(11/12). 10.17159/sajs.2021/9736

**W.J. NEL,** Z.W. DE BEER, M.J. WINGFIELD, M. POULSEN, D.K. AANEN, B.D. WINGFIELD, T.A. DUONG(2021) Phylogenetic and phylogenomic analyses reveal two new genera and three new species of ophiostomatalean fungi from termite-fungus combs. *Mycologia* 113: 1199-1217. 10.1080/00275514.2021.1950455

P.W. CROUS, …, **W.J. NEL** *et al*. (2021) New and Interesting Fungi. 4. *Fungal Systematics and Evolution* 7:255-343. 10.3114/fuse.2021.07.13

**W.J. NEL,** Z.W. DE BEER, M.J. WINGFIELD, T.A. DUONG (2021) Ophiostomatalean fungi associated with wood boring beetles in South Africa including two new species. *Antonie van Leeuwenhoek*. 114:667-68610.1007/s10482-021-01548-0.

**W.J. NEL,** Z.W. DE BEER, M.J. WINGFIELD, T.A. DUONG (2020) The granulate ambrosia beetle, *Xylosandrus* *crassiusculus* (Coleoptera: Curculionidae, Scolytinae), and its fungal symbiont found in South Africa. *Zootaxa,* 4838: 427-435. 10.11646/zootaxa.4838.3.7.

M PROCTER, **W.J. NEL,** S. MARINCOWITZ, P.W. CROUS, M.J. WINGFIELD (2020) A new species of *Raffaelea* from beetle-infested *Leucaena leucocephala***.** *Fungal Systematics and Evolution****,*** 6**:** 305-314. [10.3114/fuse.2020.06.16](http://dx.doi.org/10.3114/fuse.2020.06.16).

**W.J. NEL**, T.A. DUONG, Z.W. DE BEER, M.J. WINGFIELD (2019) Black root rot: A long known but little understood disease. *Plant Pathology,* 68: 834-842. [10.1111/ppa.13011](https://doi.org/10.1111/ppa.13011).

**W.J. NEL,** T.A. DUONG, M.J. WINGFIELD, B.D. WINGFIELD, A. HAMMERBACHER, Z.W. DE BEER (2018)Heterothallism revealed in the root rot fungi *Berkeleyomyces basicola* and *B. rouxiae***.** *Fungal Biology*, 122: 1031-1040.[10.1016/j.funbio.2018.08.006](http://dx.doi.org/10.1016/j.funbio.2018.08.006).

B.D WINGFIELD, …, **W.J. NEL,** *ET AL.* (2018)IMA Genome-F 9 Draft genome sequence of *Annulohypoxylon stygium, Aspergillus mulundensis, Berkeleyomyces basicola* (syn. *Thielaviopsis basicola*), *Ceratocystis smalleyi,* two *Cercospora beticola* strains, *Coleophoma cylindrospora*, *Fusarium fracticaudum*, *Phialophora cf. hyalina*, and *Morchella septimelata***.** *IMA Fungus,* **9**:199-223. [10.5598/imafungus.2018.09.01.13](http://dx.doi.org/10.5598/imafungus.2018.09.01.13)

T. PAAP, Z.W. DE BEER, D. MIGLIORINI, **W.J. NEL,** M.J. WINGFIELD (2018) The polyphagous shot hole borer (PSHB) and its fungal symbiont *Fusarium euwallaceae*: a new invasion in South Africa**.** *Australasian Plant Pathology,* 47: 231-237. [10.1007/s13313-018-0545-0](http://dx.doi.org/10.1007/s13313-018-0545-0).

**W.J. NEL,** T.A. DUONG, B.D. WINGFIELD, M.J. WINGFIELD, Z.W. DE BEER (2018) A new genus and species for the globally important, multi-host root pathogen *Thielaviopsis basicola*. *Plant Pathology*, 67: 871-882. 10.1111/ppa.12803 (Cover)

# Research Outputs: Publications In Prep

**W.J. NEL,** I. BARNES, T. PAAP, K.M.T. LYNN, A. VAN DIJK, A. HAMMERBACHER**,** *et al.*Fourteen species of *Geosmithia* detected from subcortical beetles infesting native South African trees, including the description of nine new species.

# Research Outputs: Conference Abstracts

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| 2025 | W.J. NEL, T.A. DUONG, S. FELL, D.A. HERRON, T. PAAP, M.J. WINGFIELD, Z.W. DE BEER, J. HULCR, A.J. JOHNSONThe diversity of bark and ambrosia beetles in South Africa (Oral Presentation).24th Congress of the Entomological Society of Southern Africa, July 2025. |
| **W.J. NEL**, I. BARNES, S. JALI, F. IMPSON, R.G. OBERPRIELER, B.P. HURLEYFirst report of Melanterius inconspicuus on black wattle in South Africa, with observations of its development (Poster Presentation).24th Congress of the Entomological Society of Southern Africa, July 2025. |
| 2024 | **W.J. NEL,** I. BARNES, B. SLIPPERS, L. DE VOS, B.P. HURLEYDevelopment of improved molecular tools for pathogen diagnostics (Poster Presentation).ICFR Forestry Science Symposium, November 2024. |
| **W.J. NEL,** B. SLIPPERS, L. DE VOS, M.J. WINGFIELD, I. BARNES, B.P. HURLEY35 years of the TPCP Diagnostics Clinic: Learning from the past to build for the future (Poster presentation). 53rd Congress of the Southern African Society of Plant Pathology, February 2024. |
| **W.J. NEL,** B. SLIPPERS, M.J. WINGFIELD, I. BARNES, T. PAAP, C. RANDOLPH, B.P. HURLEYSix species of *Fusarium* identified from *Euwallacea xanthopus* infesting *Erythrina lysistemon* trees in Durban, South Africa, including the description of two new species (Oral Presentation).53rd Congress of the Southern African Society of Plant Pathology, February 2024. |
| 2022 | **W.J. NEL,** B. SLIPPERS B, M.J. WINGFIELD, N. YILMAZ, B.P. HURLEY Entomopathogens tested for their efficacy against the invasive polyphagous shot hole borer,*Euwallacea fornicatus* (Oral Presentation).International Congress on Invertebrate Pathology and Microbial Control. 54th Annual Meeting of the Society for Invertebrate Pathology. August 2022. |
| 2021 | **W.J. NEL,** Z.W. DE BEER, M.J. WINGFIELD, T.A. DUONGUsing phylogenomic analyses to resolve taxonomic ambiguity and the: The descriptionof two new genera in the Ophiostomatales (Oral Presentation).Joint SASSB Webinar Series/FABI International Seminar Series 01.07.2021 |
| 2020 | **W.J. NEL,** Z.W. DE BEER, M.J. WINGFIELD, T.A. DUONGOphiostomatoid fungi associated with ambrosia beetles in South Africa, including two new species (Virtual presentation of graphical abstract). MSA from the Cloud, MSA virtual meeting, July 2020. |
| 2019 | **W.J. NEL,** Z.W. DE BEER, M.J. WINGFIELD, T.A. DUONGBark and ambrosia beetles from South Africa’s natural forests (Poster Presentation). IUFRO WG 7.03.12 ‘Biocontrol of Forest Insect Pests and Pathogens’ |
| **W.J. NEL,** B.D. WINGFIELD, A.R. McTAGGART, M.J. WINGFIELD, Z.W.DE BEER, H.J. LIM, M.A. VAN DER NEST, T.A. DUONGGenomic patterns of convergently evolved bark and ambrosia beetle associated fungi reveal patterns of genome reduction and gene loss (Oral Presentation). 51st Congress of the Southern African Society for Plant Pathology (SASPP) |
| **W.J. NEL,** T.A. DUONG, A. HAMMERBACHER, B.D. WINGFIELD, M.J. WINGFIELD, Z.W. DE BEER*Berkeleyomyces basicola* and *Berkeleyomyces rouxiae*: Black root-rot pathogens of globally important crop plants (Poster Presentation). 51st Congress of the Southern African Society for Plant Pathology (SASPP). |
| 2018 | **W.J. NEL**, B.D. WINGFIELD, A. MCTAGGART, M.J. WINGFIELD, Z.W. DE BEER, H-J. LIM, M. VAN DER NEST, T.A. DUONGGenomic basis of convergent evolution in beetle-associated Sordariomycete fungi (Oral Presentation) Joint conference of the South African Society for Bioinformatics and the South African Genetics Society (SASBi/SAGS) |
| **W.J. NEL,** T.A. DUONG, A. HAMMERBACHER, B.D. WINGFIELD, M.J. WINGFIELD, Z.W. DE BEERTaxonomy and mating strategy of *Thielaviopsis basicola*, a globally important pathogen of agricultural crops (Poster Presentation).International Mycological Congress (IMC), San Juan, Puerto Rico. |
| **W.J. NEL**, T.A. DUONG, A. HAMMERBACHER, B.D. WINGFIELD, M.J. WINGFIELD, Z.W. DE BEERCryptic heterothallic mating system discovered in the important root pathogens previously known as *Thielaviopsis basicola* (Oral Presentation. **Awarded: Best lightning presentation**).South African Association of Botanists (SAAB) Conference. |
| **W.J. NEL,** T.A. DUONG, B.D. WINGFIELD, M.J. WINGFIELD, Z.W. DE BEERA new genus and sister species for the globally important, multi-host root pathogen, *Thielaviopsis basicola* (Poster Presentation. **Awarded: Runner-up best poster**). South African Association of Botanists (SAAB) Conference. |
| 2017 | **W.J. NEL,** T.A. DUONG, B.D. WINGFIELD, M.J. WINGFIELD, Z.W. DE BEERMultigene sequence data reveals that the root rot pathogen *Thielaviopsis basicola* constitutes two sister species in a new genus (Oral Presentation). South African Society for Systematic Biology (SASSB). |
| **W.J. NEL**, T.A. DUONG, B.D. WINGFIELD, M.J. WINGFIELD, A. HAMMERBACHER, Z.W. DE BEERThe important root rot pathogen *Thielaviopsis basicola* shown to be heterothallic (Poster Presentation). The 29th Fungal Genetics Conference, Asilomar, California, 14- 19 March. |
| **W.J. NEL**, T.A. DUONG, B.D. WINGFIELD, M.J. WINGFIELD, Z.W. DE BEERMultigene sequence analyses reveal a new genus and a new species in a globally important, multi-host root pathogen (Oral Presentation). 50th Congress of the South African Society of Plant Pathology (SASPP)  |
| **W.J. NEL, T**.A. DUONG, M. POULSEN, D. AANEN, S. VREEBRUG, Z.W. DE BEERFungiculous species of Ophiostomatales, including three new species from *Termitomyces* fungus combs (Poster Presentation). 50th Congress of the South African Society of Plant Pathology (SASPP)  |

# Research Outputs: Other Communications

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| 2024 | W.J. Nel, A. Hammerbacher, B.P. Hurley, D.G. Slabbert. Drivers that influence PSHB infestation in Pecan orchards (Invited Presentation). South African Pecan Production Association (SAPPA) AGM, November 2024.  |
| 2024 | W.J. Nel. A tiny beetle causing large problems: The polyphagous shot hole borer in South Africa (Invited Presentation). Meeting of the Irene Garden Club, April 2024. |
| 2023 | W.J. Nel. A tiny beetle causing large problems: The polyphagous shot hole borer in South Africa (Invited Presentation). WESSA Friends Forum AGM 2023. |
| 2023 | W.J. Nel, A. Hammerbacher. Can tiny beetles kill big trees? An emerging problem in South Africa (Popular Science Communication). University of Pretoria, Faculty of Natural and Agricultural Sciences News. [Can tiny beetles kill big trees? An emerging problem in South Africa | University of Pretoria (up.ac.za)](https://www.up.ac.za/faculty-of-natural-agricultural-sciences/news/post_3147591-can-tiny-beetles-kill-big-trees-an-emerging-problem-in-south-africa#:~:text=An%20emerging%20problem%20in%20South%20Africa,-Faculty%20of%20Natural&text=These%20beetles%2C%20known%20as%20polyphagous,cities%20at%20an%20alarming%20rate) |
| 2017 | W.J. Nel, T.A. Duong, A. Hammerbacher, B.D. Wingfield, M.J. Wingfield, Z.W. De Beer. Genome sequencing reveals the root pathogens, previously known as *Thielaviopsis basicola*, to possess the genes required for heterothallic mating (Poster). University of Pretoria Genome Research Institute (GRI) Symposium |

# Research Outputs: Co-authored Conference Contributions

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| 2025 | M. WONDAFRASH, W.J. NEL, I. GERMISHUIZEN, B.P. HURLEYIdentification and monitoring of a newly detected borer beetle in Acacia mearnsii plantations in KwaZulu-Natal (Poster presened by M. Wondafrash).24th Congress of the Entomological Society of Southern Africa |
| 2018 | T. PAAP, Z.W. DE BEER, D. MIGLIORINI, **W.J. NEL**, M.J. WINGFIELDFirst report of the polyphagous shot hole borer (PHSB) and its fungal symbiont in South Africa (Presented by T. Paap). South African Society for Systematic Biology (SASSB). |
| 2017 | F. MTHUNZI, R. CHANG, **W.J. NEL**, Z.W. DE BEERSubspecies of the Dutch Elm Disease fungus cannot be distinguished based on multigene sequences (Presented by F. Mthunzi). South African Society for Systematic Biology (SASSB). |
| 2017 | Z.W. DE BEER, H. DE BRUIN, **W.J. NEL**, B. SLIPPERSA survey of entomopathogenic *Beauveria* spp. in South African plantations (Presented by Z.W. de Beer). Combined Congress of the Entomological and Zoological Societies of Southern Africa (ESSA/ZSSA). |
| 2017 | **W.J. NEL**, T.A. DUONG, B.D. WINGFIELD, M.J. WINGFIELD, Z.W. DE BEERA new genus and sister species described for the globally important, multi-host root pathogen, *Thielaviopsis basicola* (Presented by Z.W. de Beer). XIX International Botanical Congress |

# Society Memberships

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| --- | --- |
| 2016 – Present | South African Society for Plant Pathology (SASPP) |
| 2025 - Present | Entomological Society of Southern Africa (ESSA) |
| 2022 | Society for Invertebrate Pathology (SIP) |
| 2020 | Mycological Society of America (MSA) |
| 2018 - 2019 | FABI Social Club |
| 2018 | South African Association of Botanists (SAAB) |
| 2018 | African Mycological Association (AMA) |
| 2017 - Present | South African Society for Systematic Biology (SASSB) |
| 2017 | Mycological Society of America (MSA) |
| 2016 – 2017 | FABI Social Club |
| Workshops Attended | 2022: Bark beetle academy (Hosted at the University of Florida, USA)Other Experience2018: Metagenomics/meta-transcriptomics Workshop2017: GATK Workshop 2016: FABI Advanced Phylogenetics Workshop2016: Microsatellite Workshop |
| Other  | 2021: Contributor to CABI invasive species compendium datasheet on *Berkeleyomyces basicola*2019: Assisted with *Fusarium* inoculations and pathogenicity screening trials2019: Assisted and participated in NST/NRF bark beetle blitz workshop (Hosted by FABI) 2018: Assisted with Polyphagous shot hole borer workshop (hosted by FABI/CABI)2018: Mentor in the Centre of Excellence in Tree Health Biotechnology (CTHB) mentorship program at FABI2017 – 2019: Chaperone (Local and International guests during FABI events) |

**Professor Michael Wingfield**

# References

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 Co-supervisor of MSc, PhD and Post-Doctoral Fellowship

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**Professor Martin Coetzee**

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 Line manager overseeing Lab manager duties

* FABI, University of Pretoria, Private bag X20, Hatfield, 0028, South Africa

**Dr. Seonju Marincowitz**

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* Seonju.marincowitz@fabi.up.ac.za
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 Line manager overseeing microscopy duties

* FABI, University of Pretoria, Private bag X20, Hatfield, 0028, South Africa