

SUCCESSFUL FABI GRADUATES

SEPTEMBER 2010 GRADUATION CEREMONY

FABI is proud to congratulate the six PhD and nine MSc students who graduated in September 2010. Of this group, the research work of four MSc students and three PhD students was either affiliated to, or supported by the DST/NRF Centre of Excellence in Tree Health Biotechnology (CTHB). Three of these MSc students have now registered for their PhDs. We have highlighted, below, the work of a few of these students – not all supported through the CTHB.

Dr Alvaro Duran (PhD)



In 2007 Arauco Alvaro, a Chilean national, began his PhD studies at FABI, University of Pretoria, where the focus of his research was to identify the cause of a serious new disease of *Pinus radiata* in Chile. As a result of his research, he discovered that the disease is caused by a species of *Phytophthora* and he was involved in naming the causal organism *Phytophthora pinifolia*. He also developed a molecular diagnostic method for the pathogen, undertook population, epidemiological and host range studies on it and considered options for its control. .

In previous years Alvaro was initially linked to the University of Concepcion in Chile where he worked on insects associated with native forest and commercial forest plantations. He also participated in a project related to the control of the pine shoot moth *Rhyacionia buoliana* (Lep: Tortricidae) in *Pinus radiata* plantations with pheromones, evaluation of different insecticides to control *Phloemyzus passerinii* (Hom: Aphididae) in Poplar and the epidemiology of *Chilecomadia valdiviana* (Lep: Cossidae) in *Eucalyptus nitens* plantations. After that he started working for Bioforest SA - a subsidiary of Arauco Group - in the position of Chief of the Phytosanitary Division Laboratory. He was in charge of identification of insects and diseases (morphological and molecular techniques) sent in by different units of Arauco, production of biological control agents for *Phoracantha semipunctata* and *Gonipterus scutellatus*, general screening and evaluation *in vitro* and *in vivo* of insecticides and fungicides, plant screening resistance for *Fusarium circinatum* and preparation of Pest Risk Assessment for the company.

We enjoyed getting to know Alvaro and his family and strong linkages have been established between colleagues and friends at FABI and Arauco.

Dr Brett Hurley (PhD)



Brett is a staff member at FABI and undertook his PhD part-time while he also played a very significant part in building the forest entomology and Sirex wood wasp research programmes for the team.. His research focus for his PhD was on the molecular ecology and establishment of biological control agents for the woodwasp, *Sirex noctilio*. This is the most important pest threat to commercial forestry in South Africa, and it

is estimated that losses due to this pest are approximately R300 million per annum.

As an entomologist, Brett's main research focus is insect pests, but his research interests are by no means restricted to insect pests alone. In a broad sense, his interests have been captured by the various interactions between fauna and flora (both beneficial and detrimental), as well as the influence that these interactions may have on society. He is particularly interested in biological control and the interactions between insects and fungi.

Dr Lorenzo Lombard (Ph.D.)



Lorenzo Lombard is a long term member of the FABI Tree Health Programme including strong linkages to both the CTHB and the TPCP. Lorenzo joined the programme during his B.Sc. Hons. year and completed an M.Sc. with the group before commencing with a Ph.D. The bulk of his research has been focussed on tree diseases caused by species of *Calonectria* and their *Cylindrocladium* asexual states and he has made very substantial contributions to the base of knowledge relating to these important fungi.

Lorenzo's Ph.D. largely involved resolving considerable taxonomic problems relating to species of *Calonectria*. He undertook a number of detailed studies on key complexes in the group and then used a multi-gene sequence approach to review relationships and the taxonomic status of all species of *Calonectria*. He also discovered many new species of *Calonectria* including one that is a major pathogen of young pine plants. A sideline study that formed part of his Ph.D. was to examine a new and serious disease of *Cedrela* in Ecuador. This work meant that he was able to spend an extended period of time in the lowland jungle of Ecuador, an incredible experience for a young South African.

After completing his Ph.D., Lorenzo moved to Holland where he has the important responsibility of leading European Fungal Barcoding initiative. He was happy to be able to return to Holland where he had spent a considerable time at the Centraalbureau voor Schimmelcultures (CBS) in Utrecht as part of his Ph.D. studies. This has provided him with the opportunity to continue working with close colleagues and also to be closer to his friend Lotta.

Dr Bongani Maseko (PhD)

Bongani joined the research group at the University of the Free State where he completed his M.Sc. degree and before FABI was conceived. He was thus one of the FABI pioneers and is well remembered for his many contributions to building the Institute, taking care of IT issues and perhaps especially for the outstanding tours of FABI that he led. He enrolled for his PhD and conducted research on "*Phytophthora* species associated with cold tolerant eucalypts". He thus discovered new *Phytophthora* pathogens of Eucalyptus, described new species of *Phytophthora* and made substantial contributions to our understanding of disease tolerance in cold-tolerant gums. He changed from full-time to studying part-time when he took up a post at DST, where he is still currently employed. Bongani's great interest is in science communication. He has exceptional communication and acting talents and is fondly remembered for the superb impersonations made at annual meetings of the Society for the Presentation of Outrageous Findings (SPOOF), those of Desmond Tutu and Nkosasama

Zumais. In his position at DST he surely will have the opportunity to engage with learners and educators to promote in them a great love and enthusiasm for science.

Dr Ryan Nadel (PhD)

Ryan's PhD concerned the Eucalyptus bronze bug *Thaumastocoris peregrinus*, which is one of the most damaging invertebrate pests found in commercially important exotic *Eucalyptus* plantations in both southern Africa and South America. This sap sucking bug poses a major threat to the forestry sector by reducing the photosynthetic ability of trees, resulting in stunted growth and even death of severely infested trees. His research unravelled the molecular ecology of *T. peregrinus* in its native environment of Australia and invaded environments of southern Africa and South America. In addition Ryan investigated the molecular ecology of a potential biological control agent, *Cleruchoidea noackae*, an egg parasitoid in its native environment of Australia. A second focus of the project was to characterise the role of semiochemicals in host selection and pest control.



Ryan has taken up a position as a senior research scientist with the Institute for Commercial Forestry Research (ICFR) where he continues with his research in the interests of the South African forestry industry. The ICFR have been fortunate to gain a talented young scientist who was also awarded the coveted FABlan of the Year award in 2009. This award gave him the opportunity to attend the IUFRO World Congress in Seoul.

Mr Marc Bouwer (M.Sc.)

Marc received his BSc degree in Biochemistry at the University of Pretoria in 2005 and completed his honours degree in chemical pathology in 2007 having done chemistry 2nd and 3rd year. He undertook his MSc in analytical chemistry jointly supervised by Prof. Bernard Slippers and Prof. Mike Wingfield of FABI and Prof. Egmont Rohwer of the Department of Chemistry. The title of his MSc research project, which he obtained *cum laude*, was "Identification of volatile organic compounds from Eucalyptus detected by *Gonipterus scutellatus* females". Marc has now registered to do his PhD at FABI focussed on identifying pheromone components for forest insect pests in South Africa.



Miss Pranitha Dawlal (MSc)

Pranitha completed her BSc degree in Microbiology at the University of Pretoria and joined FABI in her honours year. She completed her MSc (Microbiology) degree at the Centre for Applied Mycological Studies (CAMS) at FABI under the joint supervision of Dr G Marais and Dr E Barros (CSIR Biosciences). In her research, she compared 49 commercially produced maize cultivars in South Africa based on fungal infestation and mycotoxin levels and also investigated the resistance of commercially produced maize cultivars against the infestation of 10 mycotoxigenic fungi during storage. Pranitha is now working at CSIR Biosciences.



Miss Marija Kvas (MSc)



Marija did her BSc and Honours at the University of Pretoria and has just completed her MSc *cum laude*. Her research project aimed at determining the diversity of *Fusarium* species associated with floral malformation of the indigenous *Myrtaceous* tree. She was jointly supervised by Prof Wally Marasas (previously of the MRC), Prof Emma Steenkamp, Prof. Brenda Wingfield and Prof. Mike Wingfield at the University of Pretoria. Marija will register for her PhD in 2011.

Miss Aisha Mahomed Ali (MSc)



Aisha completed her MSc degree with distinction in the Center for Applied Mycological Studies, CAMS, situated in FABI, under the supervision of Dr GJ Marais, Prof ER Rhower, and Dr PJ Van Zyl (CSIR Biosciences). The project was funded through the Centre for Tree Health Biotechnology (CTHB) and entitled “The Production of Flavours and Fragrances from South African Fungi.” It involved the screening of fungi from the FABI and CSIR culture collections through a sensory evaluation for the nutty, beefy, caramel, chocolate, green and potato aromas known to be characteristic of pyrazines. Thereafter pyrazine production in the 11 most prominent fungi was confirmed through GC-MS-TOF.

Aisha spent a year working at BioPAD in her area of research interest while completing her MSc and is now working at the Technology Innovation Agency (TIA) in Cape Town.

Mr James Mehl (MSc)



James completed his BSc (Hons) in 2004 at the University of Pretoria and then registered for his MSc at FABI under the supervision of Professors Mike Wingfield, Jolanda Roux and Coert Geldenhuys. His research project investigated whether fungi occurring on and in kiaat trees (*Pterocarpus angolensis*) were responsible for their death and die-back in several areas in the Mpumalanga Province of South Africa. The study resulted in the discovery of four new species of the Botryosphaeriaceae, a new host report for a *Ceratocystis* sp. and the linking of observed die-back and death to the ecology of the tree species and bad management of affected trees. . He obtained his degree Cum Laude. James has recently registered for his PhD. His proposed project title is “Phylogeography and ecology of several species of the Botryosphaeriaceae”.

Miss Lorinda Swart (MSc)

Lorinda completed her BSc (2004) and BSc (Hons) (2005) in Microbiology. She continued with her MSc in Microbiology with FABI and the TPCP group under supervision of Prof TA Coutinho and Prof SN Venter. The title of her research project was “*Pantoea* and *Xanthomonas spp* associated with bacterial blight and dieback of *Eucalyptus*” aimed at the identification of the bacteria associated with bacterial blight and dieback of *Eucalyptus* worldwide and the development of a rapid and reliable taxonomic framework for these bacteria. Lorinda is currently employed by a Biocontrol company in Pretoria.