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PHYTOPHTHORA DIAGNOSTICS AND GENOMICS INTERNATIONALLY

Molecular biologist Rebecca McDougal recently had the pleasure of a three-week trip to Europe to visit current and potential collaborators and to attend two international conferences. The aim of her trip was to meet other researchers who are involved in similar fields of research (plant pathology, molecular diagnostics and genomics), along with world-renowned *Phytophthora* researchers, and to introduce Scion's research to the international oomycete community.

Starting in the Netherlands, Rebecca visited Dr Peter Bonants at Plant Research International, at Wageningen University. Dr Bonants leads a team of molecular pathologists who have key roles in developing diagnostic methods for plant pathologists and also industry. Specifically, Rebecca learned about the design and application of Luminex assays for multiplex detection of *Phytophthora* spp. from various types of samples, a technique that could have great potential here in New Zealand. Other technologies discussed included LAMP assays, DNA extraction and storage, high-throughput real-time PCR, and the use of online diagnostic tools such as Q-Bank. In addition, discussions with genomics researchers about their experience with *Phytophthora infestans* and resistance breeding were very informative for some of the projects currently underway at Scion.

Rebecca then ventured to Exeter University in the UK, where she visited current collaborators involved in genome sequencing for the *Phytophthora* Healthy Trees, Healthy Future (HTHF) programme. Very valuable discussions were had around genetic diversity of *P. kernoviae*, effector repertoire, and additional strains they could consider sequencing. A reciprocal visit to Scion by Prof. Murray Grant is likely in October this year to build on the collaboration that has already started.

From Exeter, Rebecca travelled on to Norwich, UK, where she attended the Oomycete Molecular Genetics Network Annual Meeting. This meeting was attended by over 140 delegates, with 46 oral presentations and many poster presentations also. Here she presented an overview of the HTHF programme and this was received with good interest from members of the oomycete community. Rebecca had great benefit meeting researchers with a long history and excellent track-record in oomycete research, and seeing the diverse range of oomycete research from fossilised oospores and herbarium-derived genome sequences, to comparative genomics, effector delivery and heterologous hosts.

The final stop on Rebecca's journey was the XVI International Congress on Molecular Plant-Microbe Interactions held in Rhodes, Greece. This four-day conference was quite large with over 1400 delegates, 32 plenary speakers, 190 speakers in concurrent sessions and 755 posters. Rebecca presented research on detection of *Phytophthora* from herbarium samples. Highlights from this meeting included talks on diagnostic methods for use in the field, as well as ways in which genomics can provide clues to how pathogens switch hosts and evade recognition.

The Norwich City Football Stadium, UK, where the Oomycete Molecular Genetics Network Annual Meeting was held.

*Newsletter of the **Scion Forest Protection team**, and the **Forest Health Reference Laboratory** (incorporating the Forest Research Mycological Herbarium (NZFRI-M), the Forest Research Culture Collection (NZFS), and the National Forest Insect Collection (FRNZ)). Edited by Nicolas Meurisse and Lindsay Bulman, Scion, Private Bag 3020, Rotorua 3046, New Zealand. Email:* nicolas.meurisse@scionresearch.com *Website:* http://www.scionresearch.com/biosecurity

Overall, the key thing Rebecca learned from the conferences and discussions was that there is no silver bullet; several strategies are required for overcoming plant disease, and pathogen variability will drive the deployment of resistance genes. Population genomics, effector repertoire and evolution in the field require constant monitoring, using large numbers of isolates. In Europe, Rebecca had great discussions with researchers who are keen to keep in touch and potentially collaborate on similar types of *Phytophthora* research, so she really thinks this visit helped to cement collaboration where successful future projects are highly likely.

Rebecca McDougal

Rebecca cleverly obscuring the Australian flag at the XVI International Congress on Molecular Plant-Microbe Interactions at Rhodes, Greece.

NEW MITE FOR POTENTIAL BIOCONTROL FOR EUROPEAN WASPS

Two species of European wasps, *Vespula germanica* and *V. vulgaris*, have now become widespread in New Zealand and are significant environmental and economic pests. With support from the Sustainable Farming Fund (SFF), Ronny Groenteman and researchers from Landcare Research have started to explore the potential of a new mite recently discovered in wasp nests as a sustainable biological control solution. Early findings are encouraging; higher mite densities were found associated with declining wasp colonies. However, it is unclear why the mite is not already providing biological control. So the first step of the project is to determine if the mite is the actual cause of nest collapse or just a by-product of that decline. The research project will investigate if healthy wasp populations can maintain low mite densities in their nests by mutual grooming. It is also recognized that mites are poor dispersers on their own, and it is unclear if the mite is a recent introduction and has not had time to spread, or if it has been here a long time but has failed to disperse. If the latter is correct, the research project would develop dedicated methods to assist mite spread and establishment.

Nicolas Meurisse

http://www.landcareresearch.co.nz/about/news/media-releases/wasp-biocontrol-project-set-to-begin

Mites on *Vespula germanica.*
Photo: Bob Brown, Landcare Research.

FH NEWS SURVEY

The Editors would like to thank all those who took the time to respond to our survey. We received over 80 replies and are working through those now.

NEW EDITORS

Nicolas Meurisse and Lindsay Bulman are the new editors of FH News. We take over from John Bain who has edited the FH News since February 2005. Thanks John for doing such a wonderful job editing this newsletter for such a long time.

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