

Newsletter: Issue 8, September/October 2010

University of Otago, Dunedin, NZ

A Message from the Director:



Professor Kurt Krause
Webster Centre Director

Welcome to the September – October edition on the Webster Centre newsletter. To start with we provide a quick summary of the Queenstown Tuberculosis satellite meeting this past August which included presentations from two Webster researchers, Prof. Greg Cook and Dr. Sylvia Luckner. In addition we have an interview with Dr. Stephen Sowerby, who has an exciting invention to share that speeds the diagnosis of parasitic infections. His progress promises to speed the diagnosis of parasitic infection in livestock and moreover his new technology is well positioned to have an impact on diagnosis in human parasite infections as well! Applications have now closed for this years Webster Centre Summer Studentships, and next month we will be announcing this year's winners. Also, this month we are announcing the 2010 Webster Travel scholarship award competition that will support student travel to upcoming infectious diseases conferences. Finally, planning is underway for our third national infectious diseases meeting next year and we are looking at dates in October. More details to follow as this plan matures.

Queenstown Tuberculosis Meeting Summary – by Greg Cook



Professor Greg Cook
University of Otago
Steering Committee
Member, WCID

The QMB Tuberculosis Satellite Meeting brought together the TB research community in New Zealand for a two-day meeting that featured a number of international speakers including Celia Goulding (UC Irvine), Angelo Izzo (Colorado State) and Chris Cooper (Global Alliance for TB Drug Development). The meeting was based around the model set by the previous successful meetings (Turby) at the Malaghan Institute in Wellington. The meeting was organized by Dr Shaun Lott, University of Auckland and provided a focused forum that discussed the latest developments in the national and international research TB community. We were left in no doubt that New Zealand TB researchers are major players in the fight against this deadly recalcitrant pathogen. New Zealand has major TB researcher areas in drug development, structure-based drug design, development of new vaccines for humans and animals, immunological basis for the disease

and clinical translational research. The quality of the presentations was very high and if you ever needed a reason to work on this disease, the talk by Dr Joshua Freeman from the Auckland District Health Board, provided this by showing that New Zealand does indeed have some of the most deadly strains of *Mycobacterium tuberculosis* ever isolated. This included the discovery from Auckland Hospital in 2009 of pan-resistant *M. tuberculosis*, a strain of *M. tuberculosis* resistant to all antibiotics and leading to incurable disease. Like all multidrug-resistant strains of *M. tuberculosis* in New Zealand, the isolate was imported from elsewhere. The meeting was well supported by social events and Shaun Lott should be congratulated for organizing a superb meeting. We plan to repeat this meeting next year in Dunedin as part of our Webster Centre symposium.

Webster Centre Student Opportunities

NEW! Postgraduate Travel Scholarship

If you are a postgraduate student who has some data you would like to present at an upcoming infectious disease related conference you should apply for this travel scholarship for up to \$5000 in funding! Applications close **31 October 2010**. Please contact chelsea.ivey@otago.ac.nz for more information on how to apply.

Student Summer Research Scholarships

Recently applications for 2011 Undergraduate Student Summer Research Scholarships have closed. We have had a large number of high quality applications, and look forward to announcing the successful applicants in due course. Thank you very much to all that applied, we wish you all success with your applications.

Webster Centre Profiled Researcher: Dr Stephen Sowerby



Dr Stephen Sowerby,
Director of
Applied Sciences,
Otago University

Webster Centre Assistant to the Director, Chelsea Ivey, recently had the opportunity to talk with Dr Stephen Sowerby the Director of Applied Sciences, Otago University.

You have recently developed a new technology that has applicability in diagnosing parasites. Why are parasites an important health issue?

Parasites infect the gastrointestinal tract, and can cause undernutrition and anaemia in people (and animals such as livestock) that are chronically infected. Globally, these types of parasites infect up to one and a half billion people, so from a public health perspective it is a significant problem.

How are parasitic infections diagnosed now?

At the moment most diagnostic methods rely on using a microscope to see and count the parasites eggs. The problem with this is that you require a person with sufficient skill, and a microscope with sufficient capability to allow you to look over a large area with a small window. The optics on a microscope limits the area that can be observed at any one time so the person must manually scan over many fields of view.

What does your technology do?

Rather than using the microscope to go looking for the eggs over a large area, all of the eggs are forced to assemble in one area, which the microscope is already focused on. This approach causes the eggs to accumulate in a single microscopic field of view. That allows all of the eggs to be photographed simultaneously and the image can then be transmitted electronically, ultimately via cell phone. This image then becomes an audible record of that person's infection. It also allows testing to be done in a remote location so the person taking the sample and collecting the data doesn't have to have the capability to diagnose. The interesting thing about that is that many of the places with endemic parasitic infection have very good cell phone coverage but very poor parasite monitoring.

What could be the impact of widespread use of your technology on the parasite infection worldwide?

One problem with the management of parasite infection worldwide is that the current approach is to treat everybody rather than diagnose and then treat. So due to overexposure to drugs, many parasites have become resistant to therapeutics. Using our method we would have Targeted Selective Treatment of TST. This means that we diagnose first, and only treat those people that need it.

Who did you collaborate with in coming up with this machine?

I started to collaborate during the process of invention with Mr Greg Mirams of Techion Group Ltd. His company has an unmet commercial need to improve agricultural parasite analysis. That is the essence of Applied Science – finding an unmet need first! Otago Innovation are now part of the commercialisation process. I've also started to collaborate with Professor Philip Hill, the Director of Centre for International Health, Professor Jim McQuillan, Chemistry and Professor Mike Paulin, Zoology as well as Dr Sarah Wakes who is an engineer and coordinator of the Applied Science Programme's Design for Technology major. Dr Peter Fennessy, the University's Entrepreneur in Residence and the Partnering for Innovation Programme has provided some very important assistance on the road to development and commercialisation.

What has been the hardest aspect of developing this technology?

Realising the simplicity of what was required. What it was to start with was very different. The difficulty is investing time and money into a line of thought, and then realising it's the wrong path and having to cut it off and then start again, having learnt what you've learnt, but needing to go down a different path. It takes a bit of conviction to do that.

General Announcements and Upcoming Meetings



Chelsea Ivey, Coordinator,
WCID

Please email the Webster Centre at:

webstercentre@otago.ac.nz

- if there is a **scientific meeting** you would like highlighted
- if you are not on the Webster Centre **email list**
- if you would like to **join** the Webster Centre for Infectious Diseases
- if you have any comments or suggestions

The Webster Centre for Infectious Diseases can be contacted at:

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