My own lab is interested in basic parasite control, mechanisms to control parasitic diseases in sheep and cattle. The main focus of our work is a parasite called the liver fluke. It’s a flat learn parasite that effects animals and humans, it’s a significant problem in Australia and an enormous problem around the world.

AgriBio has been designed to be inherently flexible into the future. It’s designed under a public private partnership model, and the intent through all of the design process, has been to design a facility which is going to be capable of delivering high end science solutions for the next 25 years. So there is quite a lot of crystal ball gazing involved there. But we believe it’s going to offer a facility with world class capabilities for growing plants and animals, under various levels of containment and should really facilitate the collaboration between La Trobe scientists and DPI staff.

Research that I will perform at AgriBio will be mainly to continue with our subsoil manure work. This is a new technology we have developed it involves incorporating large amounts of organic matter into the subsoil; it transforms the subsoil there’s a lot still we need to understand about the basic functionality of technology.

I work on plant diseases looking at identification of plant diseases, for plant pathogens that are biosecurity pathogens, but also for long term control of pathogens, on plants.

My research mainly covers four areas. The first one is a look at plant soil interactions with a focus on rhizosphere chemistry and biochemistry. The second area is impacts of climate change on the soil processes, so the two projects covers, the effect of warming and effect of elevated Co2 on soil processes, particularly the carbon and nitrogen cycle.

The third area is soil management with a focus on the managements of soil acidity and the final area is the phytoremeditation.

In terms of impacts from this research, it’s all about transforming the soil it enables us to increase rainfall use efficiency. It enables us to store, capture, and use extra rainfall in our crops and to use it late in reproductive development. Which means it is used very efficiently, and this delivers huge productivity gains and improvements in water use.

Probably the two major impacts I would envisage would be that one or two or the molecules that we identify from out protein work could be worked up to be evaluated for a vaccine. It would make a predominant protein, evaluate that protein in large animals and if the initial trial was successful we could then talk to pharmaceutical companies to further develop those molecules as commercial vaccines.

What where working on is looking for long term control options with plant diseases. One of the pathogens I work on attacks apples, and where working with plant breeders to try and get apples that don’t need spraying for example in the future.

AgriBio will provide us with superb new facilities that are quarantine containment and physical containment. That allows us to do our molecular work on plant pathogens as well as marvellous glass houses and new growth containment facilities.

The main facilities which can help my research are a suite of the world class facilities in glass houses and growth chambers and growth rooms.

In terms of new research opportunities, AgriBio for me is going to open up a whole new world of molecular biology. I’m basically an ergonomist working with crops and soils, but we need to use the new tools in molecular biology to understand the genes the DNA to help us understand what’s going on. This opportunity will be available with DPI in AgriBio because they have the people they have the tools.

The benefits of AgriBio are that it’s collaboration between La Trobe University scientists and scientists from the Department of Primary Industries Victoria. It will bring together over 400 scientists, staff and students from both organisations in a collaborative institute. That we hope will drive the future of Victorian agriculture and biological sciences.

International collaborations mainly involve working with farmer groups, farmer research driven groups, across Australia and Southern Australia in the cropping areas from Western Australia to New South Wales. Working on this new technology subsoil. We have recently made contact with a group of Punjab in India again trying to introduce our technology into their farming systems where they have these problem subsoils.

One of the major collaborations I have is looking at the genomes of a couple of plant pathogens things that infect apples and pears, and looking at the sequence of these fungi there whole genome sequence and working with New Zealand scientists at the Plant and Food Research Organisation as well as scientists from INRA in France. Our new collaboration with Korean scientists looks at fungus that infects Nashi Pear which we currently don’t have in Australia.

When we collocate the way we bio with colleagues from DPI, I anticipate we will be working closely with the soil’s group. They have mastered the techniques of identifying soil microbes using their molecular tools. We need to master those techniques for our technology, and I am looking forward very much too actually working with that group.

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