



# PARASITOLOGY

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## New Zealand Society for Parasitology September 2019 Newsletter

### Greetings NZSP members

Our kind Waikato winter has grown some claws and the last few weeks have been testing with lots of rain and some very cool temperatures. Lambs are everywhere and have survived surprisingly well in most cases.

Conference is fast approaching and I encourage you to travel down to our PAD day on the 22<sup>nd</sup> October and then stay on for the conference. There are a few interesting field trials going on around the traps so if you are doing one or have results, do consider presenting. It doesn't have to be journal published work.

Hookworms have made the news since the last newsletter, an interesting interview with Professor Graham le Gros from the Malaghan Institute on Radio NZ.

<https://www.rnz.co.nz/national/programmes/afternoons/audio/2018705196/human-hookworms-potential-to-help-inflammatory-diseases>

Some of you will remember Professor le Gros presenting on faecal transplants to us in Wellington, one of the more memorable presentations! Congratulations to Martin Nielsen who published his 100<sup>th</sup> peer-reviewed paper recently. An excellent record. Keep warm and see you in Dunedin.

Cathryn

### Parasites of the South Pacific.

For the fourth year in a row, I have just returned from volunteering in the most parasitized corner of the world I have ever been to. Well, it probably isn't, but its pretty bad! We spent 5 days neutering mainly dogs and some cats, flat out, in 30 degree heat in very makeshift facilities. I felt like I was on the set of M.A.S.H! While doing a bitch spey one of the vets found a live wriggling, large round worm, we presumed to be *Toxocara canis* loose in the abdomen (there was no lab or microscope for proper identification of course). Was

this the adult form of visceral larva migrans? the worm with the top of a suture roll for scale, it was very big!



That was the most unusual parasite, but the quantity of fleas and ticks was unbelievable. Puppies would be anaemic from blood loss from flea infestations (and /or ticks) and pot bellies from lack of nutrition and probably parasites, was also very common

Operating in someone's fale.

Poor Renee was using my table. She is very tall. I had no sympathy for her.



Post op recovery ward



Our busiest day. Vets and nurses fell like flies in the heat, that was until we latched onto the Elixir of the South Pacific (coconut water), which also goes well with 'additives'... Note the table is the right height for Victoria



Note the Elixir of the South Pacific taking centre stage on this table. Its nature's own RTD...



Ticks! Every stage



WAAVP 2019

Volunteering is very rewarding, they need almost everything, so if you would like to give it a go, get in touch with an organization- it doesn't have to be for animals. ( Eg Habitats for humanities- you don't even have to be a builder!) I was volunteering through SPAW South Pacific Animal Welfare, but there are plenty out there if you know how to surf Google! And if you don't have a chat to Victoria. You might even be able to join her next trip if you bribe her with enough "additives"

Victoria Chapman

## 2019 WAAVP

### 27th Conference of the **World Association for the Advancement Of Veterinary Parasitology**

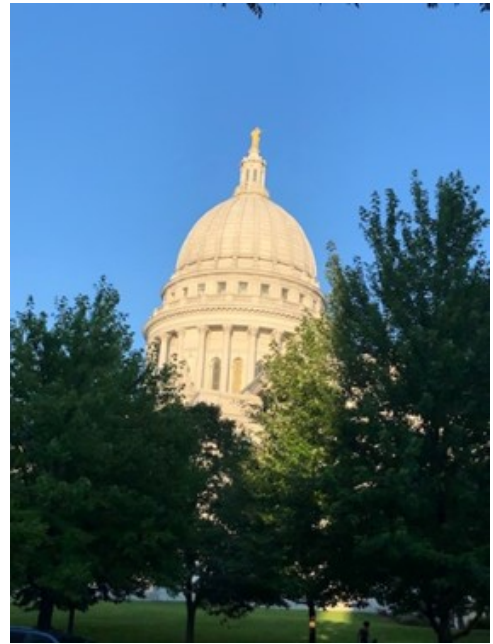
WAAVP was held in Madison Wisconsin in July this year. Madison is the capital of Wisconsin and is a lovely city situated between two lakes which are used for a lot of recreational water sports. The weather was great whilst we were there very warm a nice change from the NZ winter. The conference ran for 5 days starting on the Sunday and finishing with the Gala Dinner on the Thursday evening.

There were many concurrent sessions covering many topics of veterinary parasitology including sessions on One Health, ticks, heart worm, Coccidia, horses, Protozoans, wildlife and of course Ruminants.

There was a good sized group of people from New Zealand and Australia (most of whom are pictured below). It was good to see lots of younger researchers present presenting their work and being excited about the field of parasitology and the new advances being made with new tools and approaches. A lot of genetic work is being undertaken helping with diagnostics and understanding resistance. It was good to reconnect with friends and make new ones from around the world strengthening collaborations and planning new ones. I think some of the best interactions came outside the talks in the breaks where discussions around all sorts of topics took place.

I look forward to hopefully getting to the next one in Dublin and then in India in 2023

Tania Waghorn



**New Zealand Society for Parasitology Conference and Annual Meeting No. 47:**  
**The Dunedin Centre, 1 Harrop St, Dunedin**  
**23<sup>th</sup> – 24<sup>th</sup> October 2019**  
**And**  
**Parasite Advisory Day 22<sup>nd</sup> October**  
**The Dunedin Centre, 1 Harrop St, Dunedin**

**Registration Form**

*To Register please fill out and forward this form to Paul Mason by 1<sup>st</sup> October 2019. Direct transfers can be made to the following account: **NZ Society for Parasitology Inc, ASB, 12-3153-0031821-00**; but please include your name in the reference for the payment. Delegates wishing to make presentations please also complete the abstract form.*

**Name:**  
**Institution/company:**  
**Address:**  
**Phone No.**  
**Email address**

**Circle or Mark your choice:**

<b>Registration:</b>	<b>One day</b>	<b>Both days</b>
Student	\$ 50	\$100
Member	\$ 75	\$150
Non-member	\$105	\$200
Conference dinner – Vault 21 (23 <sup>th</sup> October)		\$80
<b>Parasite Advisory Day:</b>		
Single day	Invermay Agricultural Centre Puddle Alley, Mosgiel	\$100
<b>Total Remittance:</b>		<b>\$</b>

**Please return to: Paul Mason**  
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Mob: +64 (0)21 361 318  
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**Accommodation:** The committee have obtained a special room rate of \$190/night for several rooms at Wains Hotel for the conference, just tell them you are attending the NZSP conference. Wains is Victorian themed, rather nice and a short walk from the venue. Website is <http://www.cpg-hotels.com/our-hotels/wains-hotel-dunedin/> or call them on (03) 477 1145. There is also Scenic Circle, Kingsgate, Distinction and motels, AirBNB etc., if you want to find your own accommodation.

# **New Zealand Society for Parasitology Annual Meeting No. 47:**

The Dunedin Centre, 1 Harrop St, Dunedin

23<sup>th</sup> – 24<sup>th</sup> October 2019

## **CALL FOR ABSTRACTS**

Please complete the following and return to Paul Mason, Abstracts Editor 2019 Conference.

I wish to present the following:- Poster / Oral presentation (Delete one).

**Title:**

**Authors:**

(underline presenting author)

**Address:**

(Full Postal Address)

**Abstract (less than a page):**

### **Instructions for Authors for the Preparation of Abstracts**

The abstract should be self contained, readable and easily understood by people not intimately involved in the field. The abstract should contain clear objectives, appropriate data (with statistical parameters) and conclusions as appropriate. Unnecessary jargon and abbreviations, and information not relevant to the objectives and conclusions should be avoided.

**Please ensure that:**

1. The title and names of all authors are provided.
2. The name, address, phone, and email address of the corresponding author are given to facilitate contact regarding your submission.
4. Please submit the abstract electronically to the Abstracts Editor in Microsoft WORD format.
5. Abstracts must be received by the **1st October 2019**.

**Author Contact Details;**

**Tel:**

**E-Mail:**

**Send to Abstracts Editor 2019 Conference by 1st October 2019**

(Preferrably by Email)

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The MOLHELM is a biannual conference attended by world-leaders in the field of molecular helminthology and this year was held in San Antonio, Texas, USA. For this conference I presented a poster based on my current research funded by the Agricultural and Marketing Research and Development Trust (AGMARDT) Postdoctoral Fellowship Programme, entitled “Identifying the genetic mechanisms that evoke parasitic exsheathment”.

This year the major topics of the WORM2019 conference included: Interrogating Helminth ‘Omics’, Tools to Manipulate Helminth Gene Expression, Helminth-Host interplay; immunomodulation, microbiome and metabolome, Signaling Pathways and Biomarkers in Helminths, Genetics and Biochemistry of Drug targets, Drug Action and Resistance. The interactions with attending lab technicians and graduate students, and feedback with other hands-on researchers who are also applying genomics and transcriptomics to investigate parasitic nematodes was valuable. In that regard, the networking opportunities and exiting collaborations from attending the WORM2019 conference were excellent, as opportunities for face time with scientists in this space of research are rare in NZ.

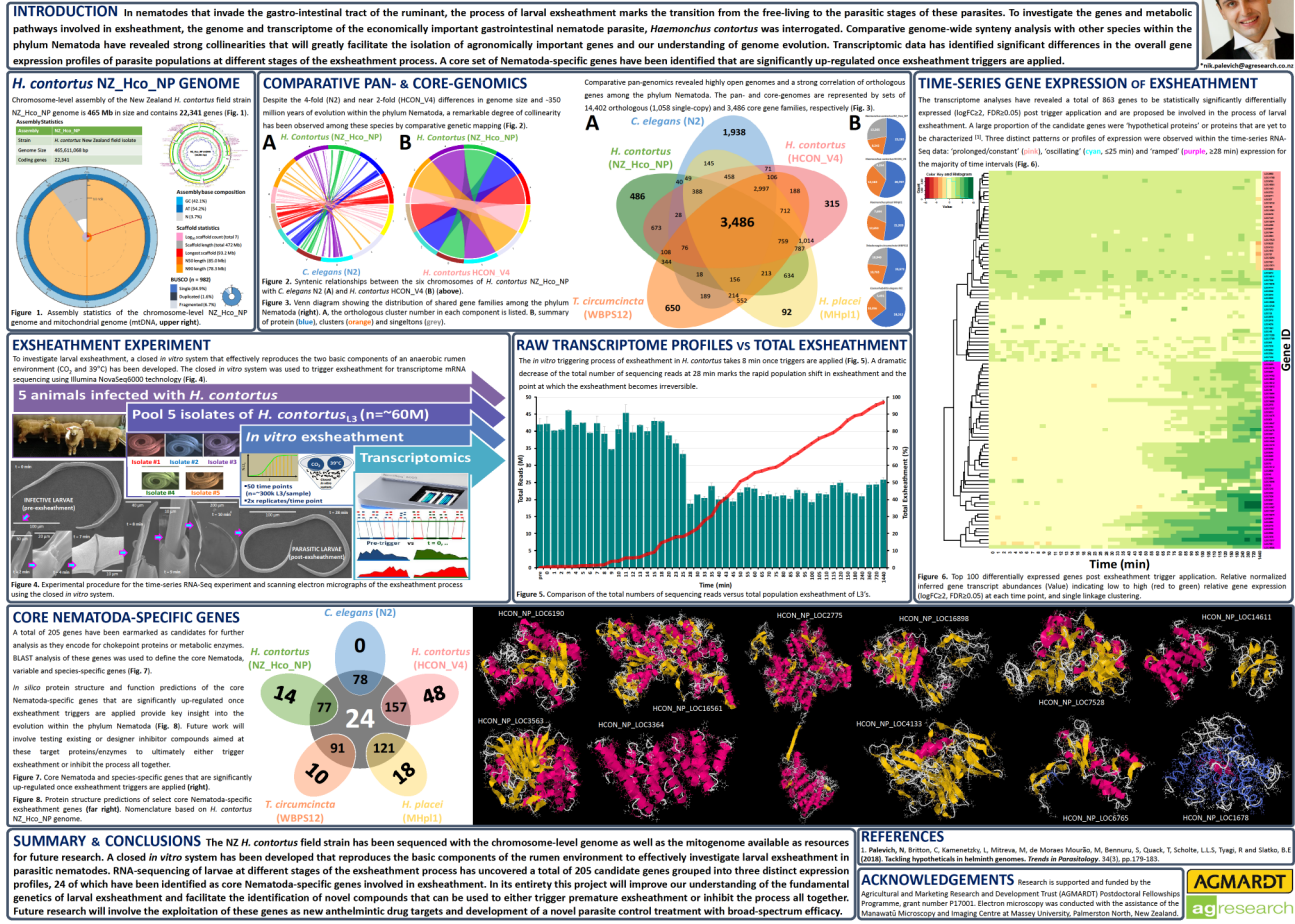


**Nik priming for the MOLHELM2019 conference with his amigos at the Alamo, San Antonio.**

# IDENTIFYING THE GENETIC MECHANISMS THAT EVOKE PARASITIC EXSHEATHMENT

Nikola Palevich<sup>1</sup>, Paul Maclean<sup>1</sup>, Abdul Baten<sup>1</sup>, Richard Scott<sup>1</sup> and Dave Leathwick<sup>1</sup>.

<sup>1</sup>AgResearch Ltd., Grasslands Research Centre, Palmerston North, New Zealand.



Editors note.

There is a huge amount of detail in this poster from Nik Palevich & Co authors from AgResearch. To easily read the information you need to magnify the page to around 300%. To understand it you will need to buy Nik a beer or two & get him to explain it!

## New Members

- Camille Flack - [camille.flack@vshb.co.nz](mailto:camille.flack@vshb.co.nz)
- Anna Martyn - [anna@piopiovets.co.nz](mailto:anna@piopiovets.co.nz)
- Karen Mary McWhirter - [karen@piopiovets.co.nz](mailto:karen@piopiovets.co.nz)
- Richard Adrian Atkinson - [richard@piopiovets.co.nz](mailto:richard@piopiovets.co.nz)
- Michael Anthony Lilley - [michael.lilley@vetlife.co.nz](mailto:michael.lilley@vetlife.co.nz)
- Louise Carter - [LouiseC@svslabs.nz](mailto:LouiseC@svslabs.nz)

At the time of editing only one of the new members has sent their bio to the secretary.

It's always interesting to read of members parasitological interests & it furthers collaboration in research so I'm sure the rest of the new members will send in their bios before the next newsletter!

## Parasitic worms might hold the key to sustainable pesticides

Ref: Anthropocene:  
Innovation in the Human Age  
<contact@anthropocenemagazine.org>



The discovery is part of a parasitic worm that causes billions of dollars of crop damage annually, could actually make plants more resilient in the face of disease, a new study finds. Using chemical compounds secreted by this parasite, the researchers on the new paper think they might be able to develop a sustainable pesticide for some of the world's biggest crops, such as soybeans, rice, and wheat.

The parasites in question – nematodes also known as roundworms – produce a pheromone called ascaroside, which they use for communication between one another. The team of international researchers had carried out previous studies that showed that in the presence of this compound, plants increase their immune response – most likely as a hardwired defence mechanism against the parasites, which typically infest the soil around their roots.

In their recent *Journal of Phytopathology* study, the researchers isolated the ascaroside compound, and applied it to test plants of four major crops: soybeans, rice, wheat, and maize. When they then infected those treated plants with a range of fungal, bacterial, and other plant diseases, they discovered that overall, these plants were more capable of fighting off threats.

In rice, for instance, the pheromone treatment reduced the effects of a particularly damaging bacteria, which has been known to kill up to 50% of rice crops in Asia. In soybean plants, ascaroside helped the plants ward off the damaging Mosaic Virus, as well as strains of bacterial blight. Treated wheat plants were more resistant to two prominent types of fungus that affect crops globally.

When these results were combined with the researchers' previous investigations on barley, potato, tomato, and thale cress plants, they found that the worm pheromone boosted plants' resistance to an impressive 15 out of 16 major plant pathogens and pests, overall.



It's thought that the presence of the worm's pheromone essentially primes the crops' immune systems, making them more alert to incoming threats, and more capable of mounting a stronger defence. While the study found that ascaroside treatments couldn't provide complete protection against every pathogen the crops faced, the researchers think that the partial protection it does offer could, however, significantly reduce the amount of pesticide applied to crops, overall.

The discovery is part of a new trend in agricultural research to find ways of developing crops that have in-built resistance to pests – including, for instance, the breeding of genetically-resistant plants. The particular benefit that this new research has to offer is that the treatment that's applied to the plants is completely natural. So, while it functions like a pesticide, it won't unintentionally damage the wider environment, which is the major caveat of applying pesticides to crops.

The hope is that with further development, the ascaroside treatment could provide crops “with more environmentally friendly protection against pests and pathogens,” the scientists reason.

They're well on their way to that goal. Some of the researchers on the paper have launched a startup company to commercialize their discoveries, and now they're investigating whether seeds treated with the worm pheromone will grow into plants with stronger immune systems, from the get-go.

Source: Klessig, et. al. [“Nematode ascaroside enhances resistance in a broad spectrum of plant–pathogen systems.”](#) *Journal of Phytopathology*. 2019.