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My team uses cutting-edge technologies to better understand the biology of gastrointestinal parasites, including worms and agents of diarrhoeal disease.

Parasitic worms have a major impact in impoverished communities in tropical and subtropical regions globally. Diarrhoeal parasites impact heavily on these communities, but are also important in developed countries, including Australia.

We work with the Victorian water industry to develop tools to monitor for aquatic microorganisms that present a public health risk. We also conduct fundamental research into host-parasite interactions, parasite development, stress responses and drug resistance, with the ultimate goal of developing approaches to better control these parasites.

#### **Research interest**

My team has two major parallel interests: fundamental parasite biology and advanced parasite diagnostics and epidemiology.

On the fundamental side, we use advanced sequencing technologies and bioinformatics to explore the genomics, transcriptomics and proteomics of major human parasites, including soil transmitted helminthes and major diarrhoeal pathogens (*Giardia* and *Cryptosporidium*).

We are particularly interested in:

- Hosts and parasites interaction at the immunological level
- Parasite development in their host
- Parasite resistance to common antiparasitic drugs

On the applied side, we develop quantitative real-time PCR assays to test for major parasites and other pathogens/microorganisms of relevance to the local water industry (for example *Cryptosporidium* and toxigenic cyanobacteria) and/or of relevance to global health (for example human gastrointestinal parasites).

We use these tools to assess transmission risk and to explore parasite epidemiology in developed and resource poor settings.