Alexander Piper

PhD Candidate

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Alexander Piper is a PhD candidate with Agriculture Victoria Research and La Trobe University whose research uses high-throughput sequencing and computational biology to improve detection and control of insect pests.

Education

La Trobe University — *Melbourne, Australia*

PhD Candidate — 2017-*Present*

- Thesis title: Genomic bio-surveillance for insect pests

Queensland University of Technology — *Brisbane, Australia*

Bachelor of Science (Biology) — 2015

- Biotechnology and Genetics Minor
- Chemistry Minor

Research experience

La Trobe University — *Melbourne, Australia*

PhD Candidate — 2017-*Present*

- Development and validation of metabarcoding based assays for high-throughput identification of invasive insects.
- Using population genomics to explore the historical range expansion and demography of an invasive fruit fly.

Agriculture Victoria Research — *Melbourne, Australia*

Research Scientist (Casual) - Computational Biology — 2017-2020

- Developing bioinformatic pipelines and SOPs for a fee-for-service metabarcoding diagnostic assay.

Agriculture Victoria Research — *Melbourne, Australia*

Research Scientist - Chemical Ecology — 2016-2017

- Investigating the role of microbial volatile organic compounds in the ecology of Bactrocera fruit flies, and their potential for application in novel insect attractant formulations.

Queensland University of Technology — *Brisbane, Australia*

Laboratory Assistant - Microbial Ecology — 2015-2016

- Isolation and physiological characterisation of environmental microbes from insects and host plants.

Queensland University of Technology — *Brisbane, Australia*

Vacation Research Scholar — Microbiology — 2015

- Exploratory research into fungal symbionts of an agricultural pest insect funded by a university scholarship.

Queensland University of Technology — *Brisbane, Australia*

B.Sc. Capstone Research Project — Molecular Ecology — 2015

- Developing an environmental DNA PCR assay for detection of an invasive freshwater fish species.

Queensland University of Technology — *Brisbane, Australia*

Undergraduate Research — Physiological Genomics — 2013-2014

- Validation of transcriptomics differentially expressed genes using qRT-PCR.

Journal articles

1. Batovska, J, A Piper, I Valenzuela, J Cunningham, and M Blacket (2020). “Developing a non-destructive metabarcoding protocol for detection of Invasive insects in bulk trap catches”.
2. Piper, A, J Batovska, N Cogan, J Weiss, J Cunningham, B Rodoni, and ... (2019). Prospects and challenges of implementing DNA metabarcoding for high-throughput insect surveillance. *GigaScience*.
3. Piper, A, K Farnier, T Linder, R Speight, and J Cunningham (2017). Two gut-associated yeasts in a Tephritid fruit fly have contrasting effects on adult attraction and larval survival. *Journal of chemical ecology*.

Conference talks

Australian Entomological Society Conference — *Brisbane, Queensland*
Towards quantitative and high-throughput insect surveillance using DNA Metabarcoding. 2019

Agriculture Victoria Regional Science Conference — *Tatura, Victoria*
An updated molecular toolbox for Biosecurity. 2019

AgriBio Science Conference — *Melboure, Victoria*
Detecting the unexpected, DNA metabarcoding for high-throughput insect surveillance. 2018

Victorian DNA Barcoding Workshop — *Melbourne, Victoria*
Quality control considerations for metabarcoding. 2018

Australian Entomological Society Conference — *Alice Springs, Northern Territory*
Detecting the unexpected, DNA metabarcoding for high-throughput insect surveillance. 2018

iMapPESTS metabarcoding Workshop — *Melbourne, Victoria*
Quality control considerations for metabarcoding. 2018

SciPlant 17 — *Brisbane, Queensland*
The importance of Yeasts in the ecology and control of the Queensland Fruit Fly. 2017

Australian Entomological Society Conference — *Terrigal, New South Wales*
Yeast-insect interactions in the Queensland fruit fly (Bactrocera tryoni). 2017

Biology of Tephritid Fruit Flies Meeting IV — *Melbourne, Victoria*
A microbial hypothesis for Queensland fruit fly host selection. 2016

Synergistic activities

- Reviewer for VALITEST Work Package 2 - Guidelines for validation and application of non-targeted HTS diagnostic procedures in plant pest diagnostics.
- Reviewer for Molecular Ecology Resources, Evolutionary Ecology, and Journal of Economic Entomology.
- Member of The Society for Molecular Biology and Evolution.
- Member of The Australian Bioinformatics and Computational Biology Society.
- Member of The Australian Entomological Society.
- Participant in the Insect Genetic Technologies Research Coordination Network (IGTRCN).

References

- **Assoc Prof. Paul Cunningham**
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  Agriculture Victoria Research
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- **Dr. Noel Cogan**
  Senior Research Scientist
  Agriculture Victoria Research
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