

Samuel Thompson

PHD STUDENT

School of Biological Sciences, University of Western Australia

✉ samt9892@hotmail.com |  [Samuel-Thompson-17](#) |  [samt9892](#) |  [samt9892](#)

About me

I use computers and large data sets to answer biological questions, especially in crops. I use genomics, pangenomics, k-mer/SNP/QTL-association studies, biostatistics, and interpretable machine learning to find new approaches to breed climate change-ready crops.

Education

University of Western Australia

Perth, Australia

PHD

2020-present

- eDNA metabarcoding PhD with the Marine Ecology Fisheries Research Group and the Jarman lab
- Developed a sampling system capable of collecting 360-degree stereo-video, water samples and oceanographic data at depths up to 600m
- Designed a family-specific metabarcoding primer set for Lutjanidae (snapper)
- Worked extensively with industry (BHP)

University of Southampton

Southampton, United Kingdom

MASTER OF BIOLOGICAL OCEANOGRAPHY

2017-2018

- Studied all forms of oceanography with a focus on biological oceanography and deep-sea ecology
- In my final project I worked on characterising the abyssal megafauna of the Kiribati region from ROV imagery (published in Frontiers in marine science 2019)

University of Kent

Kent, United Kingdom

BACHELOR OF BIOCHEMISTRY (WITH HONOURS)

2008-2012

- Studied general life sciences with a focus on microbiology/genetics
- In my final project I worked on genome duplication events in the marine chordate *Amphioxus*

Employment

UWA

Perth

MINDEROO

2021-present

- My first step towards an independent lab with with AUSD 448k1 in government and AUSD 418k UWA funding
- I am modeling mechanisms of gene loss and birth in crops to learn where new genes come from, and how to avoid loss of agronomically important genes.

UWA

Perth

FORREST FELLOW

2017-2020

- One of three inaugural Forrest Fellows
- Work on genomics of complex plants with Forrest Foundation support
- Supervised three PhD students and four MSc students to completion.

UWA

Perth

POSTDOCTORAL RESEARCHER

2015-2017

- Researched genetics of complex plants with a focus on canola and wheat in Edwards lab
- Worked closely with industry partners to improve their breeding programs
- Supervised two interns, co-supervised four PhD students and one MSc student to completion

Experience

- 2021 **Host, ABACBS conference Perth Hub**
Hosted the Perth hub of the yearly ABACBS conference, chaired genomics session
- 2021-Now **Member, Scientific Advisory Panel Machine Learning**
Member of the scientific advisory panel for ongoing machine learning projects supported by the ARDC.
- 2012-2018 **Research Collaboration with Bayer CropScience/BASF**
Continued collaboration with Bayer CropScience on their plant breeding projects
- 2011-Now **Co-founder openSNP.org**
Partially wrote and maintain the Ruby on Rails code-base
- 2013-Now **Certified Carpentries Instructor**
Certified Software Carpentry and Data Carpentry instructor
- 2018 **Research Bazaar Organising Committee**
ResBaz is a world-wide three-day festival promoting digital literacy. I organised teachers, drafted the timeplan, designed the web page, raised funding, invited keynote speakers
- 2017-Now **Hacky Hour Founder**
Founded a weekly get-together of researchers and staff working with programming and data, doubles as a help-desk for students with programming problems.
- 2017-2019 **Mozilla Open Science Leadership Mentor**
Mentored programmers and researchers on how to streamline and grow open science projects
- 2016-2019 **EMBL-ABR Head of Nodes member**
EMBL-ABR was an Australian-wide network supporting the technical needs of life sciences researchers
- 2016-2017 **COMBINE WA Representative**
As the local COMBINE representative I organise or help organise workshops and regular networking events

Awards and Funding

Grant: ARC Discovery Early Career Research Award

AWARDED DECRA FOR 2021-2023. TOTAL FUNDING: AUD\$ 448,781 AND AUD\$ 418,772 IN UWA FUNDING.

ARC
2021-2023

Grant: Identifying genetic contributors to canola blackleg resistance in the presence of environmental effects using Machine Learning

WITH PROF. DAVE EDWARDS, PROF. MOHAMMED BENNAMOUN, PROF. FARID BOUSSAID, PROF. JACQUELINE BATLEY. TOTAL FUNDING: AUD\$ 309,524.

GRDC
2020-2022

Grant: Machine Learning - Project E: Deep Learning for early detection and classification of crop disease and stress

WITH PROF. MOHAMMED BENNAMOUN, PROF. FARID BOUSSAID, PROF. DAVE EDWARDS, DR. NIC TAYLOR. TOTAL FUNDING: AUD\$ 344,971.

GRDC
2020-2022

Woodside Early Career Scientist of the Year, finalist

FINALIST IN PREMIER'S SCIENCE AWARDS 2019

WA
2019

Rising Stars nomination

TWO EARLY CAREER RESEARCHERS PER UWA RESEARCH SCHOOL WERE NOMINATED FOR RISING STARS, A UNIVERSITY-WIDE EVENT WHERE RESEARCHERS INTRODUCE A PUBLIC AUDIENCE TO THEIR RESEARCH.

UWA, Perth
2018

Forrest Research Foundation Non-stipendiary Fellowship

THREE YEAR FELLOWSHIP TO PURSUE RESEARCH AT UWA, PART OF THE THREE INAUGURAL FORREST FELLOWS

UWA, Perth
2018

UWA Research Collaboration Award

AUD\$ 28,100 TO FUND A SEAGRASS MICROBIOME SEQUENCING PROJECT.

UWA, Perth
2017

GRDC Travel Award

TRAVEL COST SCHOLARSHIP TO TRAVEL TO PAG, USA.

GRDC
2014

UQ SAFS Travel Award

TRAVEL COST SCHOLARSHIP TO TRAVEL TO PAG, USA.

UQ, Brisbane
2014

Bayer Grants4Apps

GRANT TO COVER OPENSNP RUNNING COSTS

Bayer
2013

Two postgraduate scholarships

MY PHD WAS SUPPORTED BY TWO SCHOLARSHIPS FROM UQ FOR TUITION FEES AND LIVING COSTS.

UQ, Brisbane

2011-2014

First place in PLOS/Mendeley Binary Challenge

WON FIRST PRICE IN A COMPETITION AIMED TOWARDS THE ADVANCEMENT OF OPEN SCIENCE

openSNP.org

2012

Teaching

University teaching

ORGANISED NEW MSc BIOINFORMATICS WITH NEW UNIT, SCIE5003 (ADVANCED BIOINFORMATICS). DEVELOPED CONTENT OF SCIE5003 AND SCIE4002, TAUGHT INTO BOTH UNITS.

UWA, Perth

2017-Now

Introduction to tidyverse and purrr

INTRODUCING RSTUDIO, PROJECT ORGANISATION, BASIC TIDYVERSE, LOOPS, FUNCTIONS, MAPS

ASI R Workshop

2021

Introduction to genomics on the command line

INTRODUCTION TO THE COMMAND LINE, BIOINFORMATICS ANALYSES AND PIPELINES, AND BASIC SNP ANALYSIS IN R.

ResBaz, Curtin

2019

Introduction to tidyverse and caret in R

INTRODUCTION TO R, TIDYVERSE, GGLOT2, CARET, AND BASIC STATISTICS IN R. TAUGHT OVER TWO DAYS.

School of Human Sciences, UWA

2019

Introduction to modern R

INTRODUCTION TO R, TIDYVERSE, GGLOT2, AND BASIC STATISTICS APPROACHES IN R. TAUGHT OVER TWO DAYS.

TKI, Perth

2018

Data Carpentry workshop

INTRODUCTION TO GENOMICS AND SHELL. PART OF THE PLANNING COMMITTEE.

ResBaz, UWA

2018

Software Carpentry workshop

INTRODUCTION TO DATA MANIPULATION USING PYTHON.

ResBaz, Curtin

2017

Data Carpentry workshop and host

HOSTED, PLANNED, AND SET UP THE FIRST DATA CARPENTRY WORKSHOP AT UWA, TAUGHT BEST DATA MANAGEMENT PRACTICES.

UWA, Perth

2016

Software Carpentry workshop

INTRODUCTION TO PYTHON AND GIT

ResBaz, Murdoch Uni

2016

Software Carpentry workshop

INTRODUCTION TO PYTHON AND GIT

Curtin Uni, Perth

2016

Software Carpentry workshop and host

HOSTED, PLANNED, AND TAUGHT INTO THE FIRST SOFTWARE CARPENTRY WORKSHOP AT UQ.

UQ, Brisbane

2016

Software Carpentry workshop

BASIC TO INTERMEDIATE PYTHON.

Sydney

2014

Software Carpentry workshop

BASIC TO INTERMEDIATE PYTHON

PyCon AU/UQ, Brisbane

2014

Software Carpentry workshop

BASIC TO INTERMEDIATE PYTHON AS ASSISTANT

Adelaide

2013

Programming tutor

TUTORED STUDENTS IN INTRO TO PROGRAMMING (JAVA), DATABASE MANAGEMENT (ORACLE/MYSQL) AND NETWORKS & APPLICATIONS, HELD SEVERAL ALL-DAY REFRESHER COURSES BEFORE EXAMS

Bond University

2009-2011

Presentations

Machine learning in bioinformatics – where are we and what's next?

INVITED TALK

CCDM/Curtin University

2021

Machine learning in plant breeding and bioinformatics

INVITED TALK

Cinvestav/online

2021

Future-ready crops for a changing climate: the role of bioinformatics

INVITED TALK

UWA DVCR Forrest Fellow series

2021

Bioinformatics at scale Q & A	<i>Pawsey Supercomputing Centre</i>
INVITED	2021
Interpretable Machine Learning in Bioinformatics	<i>ABACBS online seminars</i>
INVITED TALK	2021
Our machine learning technical stack	<i>GRDC Tech Seminars</i>
	2020
Predicting Gene Loss in Plants: Lessons Learned from Laptop-Scale Data	<i>PAG Conference, San Diego</i>
	2020
Eukaryotic pangenomics: where we've been, where we're going	<i>Bayliss Seminar Series</i>
INVITED	2019
Assembling complex plant genomes – things I wish someone would have told me earlier	<i>AGRF Seminar Series</i>
INVITED	2019
Helping Biologists Make Sense of Plant Variant and Annotation Data	<i>PAG Conference, San Diego</i>
	2019
Feeding the future world: safe-guarding Australia's food bowl in a changing climate	<i>Rising Stars UWA</i>
	2018
From QTLs to candidate genes, or: There and Back Again	<i>Institute of Ag seminars</i>
INVITED	2018
The path of least resistance (genes) - mining plant genomes for disease resistance	<i>COMBINE/Pawsey symposium</i>
INVITED	2018
Early Career Researcher Panel - What have I learnt at the beginning of my research career?	<i>Combined Biological Sciences Meeting</i>
	2018
ScienceCafe - STEM outreach aimed at year 10 students	<i>UWA</i>
	2018
The future of wheat research	<i>UWA</i>
	2017
Skippping the assembly step – what we can learn from looking at sequences directly	<i>Pawsey Roadshow</i>
INVITED	2017
The State of Bioinformatics in High Performance Computing in 2017	<i>HPCAC Conference, Perth</i>
	2017
Towards better plant breeding at UWA	<i>COMBINE, Perth</i>
	2017
Improving Plant Breeding using KNetMiner	<i>PAG, San Diego</i>
	2017
Towards a canola pan-genome: cautionary tales from the assembly bench	<i>CCDM, Curtin</i>
INVITED TALK	2016
Sharing Experience: What Can We Learn from Each Other Developing Plant Informatics Systems	<i>PAG, San Diego</i>
	2016
Assessing and validating the amphidiploid genome of Brassica napus using genotyping by sequencing	<i>PAG, San Diego</i>
	2015
Using skim-based genotyping by sequencing for trait association and QTL cloning in Brassica napus	<i>PAG, San Diego</i>
	2015
Assembling and validating the genome of the Brassica napus using skim-based genotyping by sequencing	<i>UQ, GenGen Seminars</i>
	2014

Publications

Preliminary observations of the abyssal megafauna of Kiribati

Frontiers in Marine Science

E SIMON-LLEDÓ, S THOMPSON, A YOOL, A FLYNN, C POMÉE, J PARIANOS, ...

2019