

# SAMUEL ARONEY

I am a microbiologist specialising in metagenomics and bioinformatics. I have worked in a wide range of research environments, from the biochemistry focussed diabetes laboratory at the Queensland Alliance for Agriculture and Food Innovation, University of Queensland, through the plant and bacteria investigations at the Department of Plant Sciences, Oxford University, and most recently to bioinformatics and metagenomic analyses at the Centre for Microbiome Research, Queensland University of Technology.

View this CV online with links at [AroneyS.github.io](https://AroneyS.github.io)

## RESEARCH EXPERIENCE

current  
I  
2021

### Postdoctoral Research Fellow

Ben Woodcroft Group  
Centre for Microbiome Research

Queensland University of Technology

- Studying the impact of permafrost thaw on microbial communities through bioinformatic analyses of metagenomic data.
- Developed Bin Chicken<sup>7</sup> for targeted recovery of low abundance metagenome assembled genomes through intelligent coassembly

2021  
I  
2017

### Rhizobial Motility Researcher

Philip Poole Laboratory  
Department of Plant Sciences

University of Oxford

- Determining the role of flagellar-based motility and chemotaxis in the symbiosis of *Rhizobium leguminosarum* with *Pisum sativum* (pea plant).
- Characterising the influence of the metabolic potential of the environment, especially through the phosphor-transferase system, on the swimming ability of *Rhizobium leguminosarum*.

2019

### Software Development Intern

The Zooniverse  
Department of Physics (Astrophysics)

University of Oxford

- Software development for The Zooniverse, a community science website established by the Department for Astrophysics.
- Developed a GraphQL based statistical database<sup>2</sup> of users and visitors to the website in Ruby, Bash and Python.

2017

### Synthetic Biology Researcher

Philip Poole Laboratory  
Department of Plant Sciences

University of Oxford

- Characterising nitrogen-fixation ability of *Pseudomonas stutzeri* and genetically modified *Pseudomonas fluorescens* Pf-5 and SBW25.

## CONTACT



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[Aroney\\_Samuel](https://twitter.com/Aroney_Samuel)



[github.com/AroneyS](https://github.com/AroneyS)



[AroneyS.github.io](https://AroneyS.github.io)



[samuel-aroney](https://www.linkedin.com/in/samuel-aroney/)

## LANGUAGE SKILLS

Python

R

Bash

Polars

Ruby

SQL

The source code is available on [github.com/AroneyS/cv](https://github.com/AroneyS/cv).

Last updated on 2024-06-10.

2017

### Plant Biochemistry Researcher

Andrew Smith Laboratory  
Department of Plant Sciences

 University of Oxford

- Sequencing *Portulaca oleracea* with Oxford Nanopore MinION technology. This plant performs both CAM and C<sub>4</sub> photosynthesis.
- Extracted and analysed the activity of various phosphoenolpyruvate carboxylases from C<sub>3</sub> and CAM photosynthetic plants.

2016  
I  
2015

### Metagenomics Researcher

Australian Centre for Ecogenomics

 University of Queensland

- Used the newly developed in-situ chemotaxis assay (ISCA) device to capture bacteria that display chemotaxis towards environmentally relevant compounds, including poly(ethylene terephthalate) degradation products and pesticides (diuron and atrazine).
- Then analysed the captured microbes using culture-independent methods (e.g. 16S rRNA gene amplicon and metagenomics) to provide the microbial population attracted by each individual chemoattractant and their metabolic potential.

2016

### Graduate Research Assistant

Australian Centre for Ecogenomics

 University of Queensland

- Compared small sea water samples before and after homogenisation to provide metagenomic data of the microheterogeneity of microbial life at such volumes.

2015

### Undergraduate Researcher

Advanced Study Program in Science (ASPiNS)  
Centre for Advanced Imaging

 University of Queensland

- Wrote code in R to estimate individual false-discovery rates across NMR metabolomics data split into columns along the ppm.
- This allowed the amelioration of the multiple testings problem, without relying on a uniform FDR assumption.

2014

### Research Assistant

Queensland Alliance for Agriculture and Food Innovation

 University of Queensland

- Compared the glycogen extracted through the traditional sucrose-gradient method to that extracted from formalin fixed samples.

2013

### Undergraduate Researcher

Advanced Study Program in Science (ASPiNS)  
Queensland Alliance for Agriculture and Food Innovation

 University of Queensland

- Testing the amount and structure of glycogen in mouse livers at different times after eating through an assay, size-exclusion chromatography and transmission electron microscopy of extracted glycogen.



## PUBLICATIONS

2024

### Rhizobium determinants of rhizosphere persistence and root colonization<sup>3</sup>

ISME (2024)

- Authored with Hayley Knights, Vinoy K. Ramachandran, Beatriz Jorrin, Raphael Ledermann, Jack D. Parsons and Philip S. Poole.

2024

### The motility and chemosensory systems of Rhizobium leguminosarum, their role in symbiosis, and link to PTSNtr regulation<sup>4</sup>

Environmental Microbiology (2024)

- Authored with Francesco Pini, Celia Kessler, Philip S. Poole, Carmen Sánchez-Cañizares.

2022

### Insights into plastic biodegradation: community composition and functional capabilities of the superworm (*Zophobas morio*) microbiome in styrofoam feeding trials<sup>5</sup>

Microbial Genomics (2022)

- Authored with Jiarui Sun, Apoorva Prabhu and Christian Rinke.

2021

### Rhizobial Chemotaxis and Motility Systems at Work in the Soil<sup>6</sup>

Frontiers in Plant Science (2021)

- Authored with Philip S. Poole and Carmen Sánchez-Cañizares.

2020

### Lifestyle adaptations of Rhizobium from rhizosphere to symbiosis<sup>7</sup>

Proceedings of the National Academy of Sciences (USA) (2020)

- Authored with Rachel M. Wheatley, Brandon L. Ford, Li Li, Hayley E. Knights, Raphael Ledermann, Alison K. East, Vinoy K. Ramachandran and Philip S. Poole.

2015

### A Rapid Extraction Method for Glycogen from Formalin-fixed Liver<sup>8</sup>

Carbohydrate Polymers (2015) 118:9-12

- Authored with Mitchell A. Sullivan, Shihan Li, Bin Deng, Cheng Li, Eugeni Roura, Benjamin L. Schulz, Brooke E. Harcourt, Josephine M. Forbes and Robert G. Gilbert.

2014

### Changes in Glycogen Structure over Feeding Cycle Sheds New Light on Blood-Glucose Control<sup>9</sup>

Biomacromolecules (2014) 15:660-665

- Authored with Mitchell A. Sullivan, Shihan Li, Frederick J. Warren, Jin Suk Joo, Ka Sin Mak, David I. Stapleton, Kim S. Bell-Anderson, and Robert G. Gilbert.

## EDUCATION

2021  
I  
2016

### **DPhil, Microbiology**

Department of Plant Sciences  
Supervisor: Prof Philip Poole

 University of Oxford

- Role and regulation of chemotaxis and motility in *Rhizobium leguminosarum*
- Interdisciplinary Bioscience Doctoral Training Partnership (BBSRC)

2016  
I  
2015

### **B.S., Honours (First Class)**

Australian Centre for Ecogenomics  
Supervisor: Prof Gene Tyson

 University of Queensland

- Investigating bacterial chemotaxis towards marine pollutants

2015  
I  
2012

### **B.S., Biochemistry and Molecular Biology**

School of Chemistry and Molecular Biology  University of Queensland

## OTHER ACTIVITIES

current  
I  
2024

### **HDR Engagement Committee**

School of Biomedical Sciences  Queensland University of Technology

- Chair for the QUT School of Biomedical Sciences HDR symposium.

current  
I  
2023

### **Reviewing**

- I have reviewed articles for Nature Communications and Polar Science.

2020

### **Certificate course in Developing Learning and Teaching**

Staff and Educational Development Association  University of Oxford

- The award is aligned to the UK Professional Standards Framework (UKPSF) for Teaching and Supporting Learning in Higher Education, at Descriptor 1.

2020  
I  
2019

### **Graduate Safety Representative**

Department of Plant Sciences

 University of Oxford

- Departmental graduate safety representative for safety committee meetings and graduate student contact.
- This has involved managing the Department's response to the COVID-19 crisis and determining the safest way to return to work.

## TEACHING EXPERIENCE

I enjoy helping students on their journey from their current state of knowledge to new and deeper understanding about a topic.

2020  
I  
2019

### ***In vitro* enzyme kinetics**

Department of Plant Sciences

 University of Oxford

- Demonstrating for *In vitro* enzyme kinetics practical, focussing on the kinetics of alcohol dehydrogenase.

2020

### **Statistics and Data Management**

Doctoral Training Centre

 University of Oxford

- Demonstrating for Statistics and Data Management intermediate course, a broad overview of scientific statistics focussing on statistical modeling.

2019  
I  
2017

### **Programming for Life Scientists**

Doctoral Training Centre

 University of Oxford

- Demonstrating for the programming module using the languages Python and C.

2019

### **Plants and People**

Department of Plant Sciences

 University of Oxford

- Tutorials about the role of motility and chemotaxis in the soil and in the rhizobium-legume symbiosis.

2016  
I  
2015

### **Analysis of Scientific Data**

Faculty of Science

 University of Queensland

- Demonstrating for Analysis of Scientific Data (STAT1201), focussing on experimental design, data modelling and statistics.

2015  
I  
2014

### **Inorganic, physical and organic chemistry**

School of Chemistry and Molecular Biology

 University of Queensland

- 1st Year inorganic, physical and organic chemistry peer-assisted study sessions (CHEM1090/CHEM1100).

2015  
I  
2014

### **Chemistry and Statistics tutoring**

Faculty of Science

 University of Queensland

- Drop-in tutoring at the Science Learning Centre for 1st Year Chemistry and Statistics.

## MAJOR PRESENTATIONS

2020

### **Strategically navigating through the soil: the integrated sensory systems of the legume symbiont *Rhizobium leguminosarum***

Sensory Transduction in Microorganisms Conference

 Ventura, CA

- Presentation and Poster for the Gordon Research Conference on Sensory Transduction in Microorganisms.

2018

### **Role and regulation of chemotaxis and motility in the Rhizobium-legume symbiosis**

Department of Plant Sciences

📍 University of Oxford

- DPhil Transfer of Status presentation at the Department of Plant Sciences.

2016

### **Investigating bacterial chemotaxis towards marine pollutants**

School of Chemistry and Molecular Biology 📍 University of Queensland

- Honours seminar presentation at the School of Chemistry and Molecular Biology.



## **AWARDS AND SCHOLARSHIPS**

2020

|  
2016

### **Brasenose Oxford-Australia Clarendon Scholarship**

University of Oxford

- A highly prestigious scholarship selectively offered for graduate study at the University of Oxford.

2020

### **Brasenose Studentship Fund**

University of Oxford

- Provided funding to travel to California to present my research at the Sensory Transduction in Microorganisms Conference.

2020

### **Vice-Chancellor's Education Award**

University of Oxford

- Award received for demonstrations given in the Programming for Life Scientists course.
- The course offers high level training in computer programming to a highly diverse cohort of graduate students at Oxford University.

2016

|  
2015

### **UQ Honours Scholarship**

University of Queensland

- A competitive scholarship to support students undertaking the Honours program at the University.

2015

|  
2012

### **UQ Excellence Scholarship**

University of Queensland

- A highly competitive full scholarship for top-ranked students entering the University.

2014

|  
2013

### **UQ Summer Research Scholarship**

University of Queensland

- A competitive scholarship to support undergraduate student participation in the University's Summer Research Program.

2013  
I  
2012

### **UQ Summer Research Scholarship**

University of Queensland

- A competitive scholarship to support undergraduate student participation in the University's Summer Research Program.

## PUBLIC ENGAGEMENT

2020

### **Perspectives: Electronic Learning Resource**

Oxford University Press

 Oxford, United Kingdom

- Interviewed about the underwater agricultural research centre, Nemo's Garden, for a series of videos made available through the Perspectives electronic learning resource.

2019

### **Science short: Bacterial World**

Museum of Natural History

 Oxford, United Kingdom

- Interactive presentation about the bacterial symbiosis in root nodules aimed at non-expert adults.

2018

### **Super Science Saturday: People and Planet**

Museum of Natural History

 Oxford, United Kingdom

- Organizing and running a 'Root-nodules' stall for families, to help them understand the fixation of nitrogen by bacteria in pea plants.

2017

### **Inside Cells Day**

Museum of Natural History

 Oxford, United Kingdom

- Presentation about 'Fertilizers and the Environment' to A-level High School Students.

I enjoy engaging with the public and helping them to understand science. This is not only personally rewarding, but also important for improving public perceptions of science.

## REFEREES

### **Prof Gene Tyson**

Centre for Microbiome Research  Queensland University of Technology

### **Assoc Prof Ben Woodcroft**

Centre for Microbiome Research  Queensland University of Technology

### **Prof Philip Poole**

Department of Plant Sciences

 University of Oxford

## LINKS

- 1: <https://github.com/AroneyS/binchicken>
- 2: <https://github.com/zooniverse/zoo-stats-api-graphql>
- 3: <https://doi.org/10.1093/ismejo/wrae072>
- 4: <https://doi.org/10.1111/1462-2920.16570>
- 5: <https://doi.org/10.1099/mgen.0.000842>
- 6: <https://doi.org/10.3389/fpls.2021.725338>
- 7: <https://doi.org/10.1073/pnas.2009094117>
- 8: <https://doi.org/10.1016/j.carbpol.2014.11.005>
- 9: <https://doi.org/10.1021/bm401714v>