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, where I am a Lecturer (Level B) and maintain several widely used metagenomics tools (Bin Chicken, CoverM, Galah, Aviary).

RESEARCH EXPERIENCE

2025 | current

Lecturer (Academic Level B)

Ben Woodcroft Group
Centre for Microbiome Research
Queensland University of Technology

- Promoted November 2025 (Senior Postdoctoral Researcher).
- Maintainer of Bin Chicken, CoverM, Galah and Aviary; contributor to SingleM.
- Associate supervisor of one PhD student; informal guidance to eight other PhD students and six postdoctoral researchers.

2021 | 2025

Postdoctoral Research Fellow

Ben Woodcroft Group
Centre for Microbiome Research
Queensland University of Technology

- Primary postdoctoral researcher for the QUT team of the NSF-funded EMERGE project, leading microbial genome recovery and downstream analyses of Arctic permafrost wetland metagenomes (>7,000 species recovered).
- Developed Bin Chicken[1] for targeted recovery of low-abundance metagenome-assembled genomes through intelligent coassembly; scaled up with NCMAS allocations on NCI and Pawsey to recover >140,000 novel species.
- First author of CoverM; contributor to SingleM/Sandpiper; maintainer of Aviary and Galah.

2017 | 2021

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*.



View this CV online with links at *aroneys.github.io/cv*

CONTACT

samuel.aroney@outlook.com
aroneys.github.io
github.com/AroneyS
Google Scholar
0000-0001-9806-5846
@aroneys.bsky.social
Aroney_Samuel
samuel-aroney

LANGUAGE SKILLS

- Python
- R
- Bash
- Polars
- Ruby
- SQL

Last updated on 2026-11-10.

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^2 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.

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 C4 photosynthesis.
- Extracted and analysed the activity of various phosphoenolpyruvate carboxylases from C3 and CAM photosynthetic plants.

2015 | 2016

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

2026

Methanotrophic potential of a northern fen[3]

Frontiers in Environmental Science (2026) 14

- Rachel M. Wilson, Jared B. Ellenbogen, Shuai Yang, ..., Samuel T. N. Aroney, et al.

2026

Mobile genetic elements shape microbial diversity and functions in thawing permafrost soils[4]

Nature Microbiology (2026) 11:1800–1814

- Jiarong Guo, Samuel T. N. Aroney, Guillermo Domínguez-Huerta, et al.

2025

Bin Chicken: targeted metagenomic coassembly for the efficient recovery of novel genomes[5]

Nature Methods (2025) 22:2516–2524

- Samuel T. N. Aroney, Rhys J. P. Newell, Gene W. Tyson, et al.
- Role: first

2025

Comprehensive taxonomic identification of microbial species in metagenomic data using SingleM and Sandpiper[6]

Nature Biotechnology (2025) 44:948–953

- Ben J. Woodcroft, Samuel T. N. Aroney, Rossen Zhao, et al.

2025

CoverM: read alignment statistics for metagenomics[7]

Bioinformatics (2025) 41

- Samuel T N Aroney, Rhys J P Newell, Jakob N Nissen, et al.
- Role: first

2025

The Microflora Danica atlas of Danish environmental microbiomes[8]

Nature (2025) 649:971–981

- C. M. Singleton, T. B. N. Jensen, F. Delogu, ..., S. T. N. Aroney, et al.

2025

Stable states in an unstable landscape: microbial resistance at the front line of climate change[9]

openRxiv (2025) [preprint]

- Dylan R. Cronin, Hannah Holland-Moritz, Derek A. Smith, Samuel T. N. Aroney, et al.
- Role: co-first

2024

GlobDB: a comprehensive species-dereplicated microbial genome resource[10]

Bioinformatics Advances (2024) 5

- Daan R Speth, Nick Pullen, Samuel T N Aroney, et al.

2024

Microbiome–metabolite linkages drive greenhouse gas dynamics over a permafrost thaw gradient[11]

Nature Microbiology (2024) 9:2892–2908

- Viviana Freire-Zapata, Hannah Holland-Moritz, Dylan R. Cronin, Sam Aroney, et al.

2024

The motility and chemosensory systems of Rhizobium leguminosarum, their role in symbiosis, and link to PTSNtr regulation[12]

Environmental Microbiology (2024) 26

- Samuel T. N. Aroney, Francesco Pini, Celia Kessler, et al.
- Role: first

2024

***Rhizobium* determinants of rhizosphere persistence and root colonization**[13]

The ISME Journal (2024) 18

- Hayley E Knights, Vinoy K Ramachandran, Beatriz Jorrin, ..., Samuel T N Aroney, et al.

2024

Aviary: hybrid assembly and genome recovery from metagenomes with Aviary[14]

Software (2024)

- Rhys J. P. Newell, Samuel T. N. Aroney, Julian Zaugg, et al.
- Role: maintainer

2024

Galah: more scalable dereplication for metagenome assembled genomes[15]

Software (2024)

- Samuel T. N. Aroney, Antonio Pedro Camargo, Gene W. Tyson, et al.
- Role: maintainer

2022

Insights into plastic biodegradation: community composition and functional capabilities of the superworm (Zophobas morio) microbiome in styrofoam feeding trials[16]

Microbial Genomics (2022) 8

- Jiarui Sun, Apoorva Prabhu, Samuel T. N. Aroney, et al.

2021

Rhizobial Chemotaxis and Motility Systems at Work in the Soil[17]

Frontiers in Plant Science (2021) 12

- Samuel T. N. Aroney, Philip S. Poole, Carmen Sánchez-Cañizares
- Role: first

2020

Lifestyle adaptations of *Rhizobium* from rhizosphere to symbiosis[18]

Proceedings of the National Academy of Sciences (2020) 117:23823–23834

- Rachel M. Wheatley, Brandon L. Ford, Li Li, Samuel T. N. Aroney, et al.

2015

A rapid extraction method for glycogen from formalin-fixed liver[19]

Carbohydrate Polymers (2015) 118:9–15

- Mitchell A. Sullivan, Shihan Li, Samuel T.N. Aroney, et al.

2014

Changes in Glycogen Structure over Feeding Cycle Sheds New Light on Blood-Glucose Control[20]

Biomacromolecules (2014) 15:660–665

- Mitchell A. Sullivan, Samuel T. N. Aroney, Shihan Li, et al.

EDUCATION

2016 | 2021

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)

2015 | 2016

B.S., Honours (First Class)

Australian Centre for Ecogenomics
Supervisor: Prof Gene Tyson

University of Queensland

- Investigating bacterial chemotaxis towards marine pollutants

2012 | 2015

B.S., Biochemistry and Molecular Biology

School of Chemistry and Molecular Biology

University of Queensland

OTHER ACTIVITIES

2024 | current

HDR Engagement Committee

School of Biomedical Sciences

Queensland University of Technology

- Member of the QUT School of Biomedical Sciences HDR engagement committee: event organisation, student registration and engagement.
- Organised six career and wellbeing events across 2024-25; attendance rose from 8 to 40.

2023 | current

Reviewing

- Reviewed nine manuscripts for journals including Nature Communications, The ISME Journal, ISME Communications and Polar Science.
- Member of the ISME Early Career Scientist Reviewer Pool (three-year appointment).

current

HPC Administration Team

Centre for Microbiome Research — Queensland University of Technology

- Maintain infrastructure code and contribute to workshops and planning for the Centre's HPC.
- Led an optimisation of storage usage and file counts that improved filesystem performance.

2025 | current

MVIF Pacific Organising Committee

Microbiome Virtual International Forum

- Assign applicants to presentation types, plan keynotes and run the webinar backend for four events in 2025 (2,500 unique attendees).

2026

Chair, School of Biomedical Sciences HDR Symposium (2026)

School of Biomedical Sciences — Queensland University of Technology

- Chaired the symposium again: 56 HDR students (23 talks), with $5,000 in sponsorship raised.

2024

Chair, School of Biomedical Sciences HDR Symposium (2024)

School of Biomedical Sciences — Queensland University of Technology

- Oversaw scheduling, keynotes, registration, abstract scoring and presentation selection for 67 HDR students (53 talks, 37 posters).
- Raised $20,000 in industry sponsorship and organised two keynote speakers.

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.

2019 | 2020

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.

Environmental Metagenomics (week-long online course)

Centre for Microbiome Research — Queensland University of Technology

- Developed and delivered a course covering read processing, assembly and binning, and functional characterisation.

2019 | 2020

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.

2017 | 2019

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.

2015 | 2016

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.

2014 | 2015

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).

2014 | 2015

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

2026 **130,000 new species from across the globe enrich the tree of life**
ISME20 — Auckland, New Zealand
• Poster.

2026 **130,000 new species from across the globe enrich the tree of life**
JAMS Symposium — Brisbane, Australia

2026 **130,000 new microbial species hidden in public DNA data**
QUT ECR symposium — Queensland University of Technology
• Poster; awarded first place.

2026 **Discovering 24,000 new microbial species with Bin Chicken**
School of Biomedical Sciences — Queensland University of Technology

2024 **Directed coassembly recovers many novel microbial genomes**
19th International Symposium on Microbial Ecology (ISME19)
Cape Town, South Africa
• Poster.

2024 **Targeted coassembly recovers 24,000 novel species**
Australian Microbial Ecology Conference (AusME) — Sydney, Australia
• Talk.

2022 **A fork in the metabolic road: microbial communities impacting emission dynamics of thawing permafrost**
Australian Microbial Ecology Conference (AusME)
Melbourne, Australia
• Poster.

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, SCHOLARSHIPS AND FUNDING

2026

ECR Paper of the Year

School of Biomedical Sciences — Queensland University of Technology

2026

First place poster

QUT ECR symposium — Queensland University of Technology

2026 | 2026

NCMAS computational allocation

National Computational Merit Allocation Scheme

2025 | 2025

NCMAS computational allocation (NCI and Pawsey)

National Computational Merit Allocation Scheme

- Awarded for large-scale Bin Chicken genome recovery.

2016 | 2020

Brasenose Oxford-Australia Clarendon Scholarship

University of Oxford

- A highly prestigous 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.

2015 | 2016

UQ Honours Scholarship

University of Queensland

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

2012 | 2015

UQ Excellence Scholarship

University of Queensland

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

2013 | 2014

UQ Summer Research Scholarship

University of Queensland

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

2012 | 2013

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.