

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.



RESEARCH EXPERIENCE

current
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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 Chicken⁷ for targeted recovery of low abundance metagenome assembled genomes through intelligent coassembly

2021
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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 database² 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.

View this CV online with links at
AroneyS.github.io

CONTACT



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[Aroney_Samuel](https://twitter.com/Aroney_Samuel)



github.com/AroneyS



AroneyS.github.io



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

LANGUAGE SKILLS



The source code is available at
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 C₄ photosynthesis.
- Extracted and analysed the activity of various phosphoenolpyruvate carboxylases from C₃ and CAM photosynthetic plants.

2016
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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 colonization³**
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 regulation⁴**
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 trials⁵**
Microbial Genomics (2022)
 - Authored with Jiarui Sun, Apoorva Prabhu and Christian Rinke.
- 2021
- **Rhizobial Chemotaxis and Motility Systems at Work in the Soil⁶**
Frontiers in Plant Science (2021)
 - Authored with Philip S. Poole and Carmen Sánchez-Cañizares.
- 2020
- **Lifestyle adaptations of Rhizobium from rhizosphere to symbiosis⁷**
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 Liver⁸**
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 Control⁹**
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
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2016

- **DPhil, Microbiology**  University of Oxford
Department of Plant Sciences
Supervisor: Prof Philip Poole
 - Role and regulation of chemotaxis and motility in *Rhizobium leguminosarum*
 - Interdisciplinary Bioscience Doctoral Training Partnership (BBSRC)

2016
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2015

- **B.S., Honours (First Class)**  University of Queensland
Australian Centre for Ecogenomics
Supervisor: Prof Gene Tyson
 - Investigating bacterial chemotaxis towards marine pollutants

2015
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2012

- **B.S., Biochemistry and Molecular Biology**  University of Queensland
School of Chemistry and Molecular Biology

OTHER ACTIVITIES

current
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2024

- **HDR Engagement Committee**  Queensland University of Technology
School of Biomedical Sciences
 - Chair for the QUT School of Biomedical Sciences HDR symposium.

current
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2023

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

2020

- **Certificate course in Developing Learning and Teaching**  University of Oxford
Staff and Educational Development Association
 - The award is aligned to the UK Professional Standards Framework (UKPSF) for Teaching and Supporting Learning in Higher Education, at Descriptor 1.

2020
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2019

- **Graduate Safety Representative**  University of Oxford
Department of Plant Sciences
 - 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 2019	<ul style="list-style-type: none">● In vitro enzyme kinetics Department of Plant Sciences<ul style="list-style-type: none">• Demonstrating for <i>In vitro</i> enzyme kinetics practical, focussing on the kinetics of alcohol dehydrogenase.	 University of Oxford
2020	<ul style="list-style-type: none">● Statistics and Data Management Doctoral Training Centre<ul style="list-style-type: none">• Demonstrating for Statistics and Data Management intermediate course, a broad overview of scientific statistics focussing on statistical modeling.	 University of Oxford
2019 2017	<ul style="list-style-type: none">● Programming for Life Scientists Doctoral Training Centre<ul style="list-style-type: none">• Demonstrating for the programming module using the languages Python and C.	 University of Oxford
2019	<ul style="list-style-type: none">● Plants and People Department of Plant Sciences<ul style="list-style-type: none">• Tutorials about the role of motility and chemotaxis in the soil and in the rhizobium-legume symbiosis.	 University of Oxford
2016 2015	<ul style="list-style-type: none">● Analysis of Scientific Data Faculty of Science<ul style="list-style-type: none">• Demonstrating for Analysis of Scientific Data (STAT1201), focussing on experimental design, data modelling and statistics.	 University of Queensland
2015 2014	<ul style="list-style-type: none">● Inorganic, physical and organic chemistry School of Chemistry and Molecular Biology<ul style="list-style-type: none">• 1st Year inorganic, physical and organic chemistry peer-assisted study sessions (CHEM1090/CHEM1100).	 University of Queensland
2015 2014	<ul style="list-style-type: none">● Chemistry and Statistics tutoring Faculty of Science<ul style="list-style-type: none">• Drop-in tutoring at the Science Learning Centre for 1st Year Chemistry and Statistics.	 University of Queensland

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
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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
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2015
- **UQ Honours Scholarship**
University of Queensland
 - A competitive scholarship to support students undertaking the Honours program at the University.
- 2015
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2012
- **UQ Excellence Scholarship**
University of Queensland
 - A highly competitive full scholarship for top-ranked students entering the University.
- 2014
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2013
- **UQ Summer Research Scholarship**
University of Queensland
 - A competitive scholarship to support undergraduate student participation in the University's Summer Research Program.

2013
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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>