

SAMUEL ARONEY

I am a joint author of 3 journal articles {64 total citations} in biochemistry and molecular biology. 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, through the plant and bacteria investigations at the Department of Plant Sciences, Oxford University, to the statistical analyses at the Australian Centre for Ecogenomics. I have also constructed a 4000 line analytical dashboard¹ with underlying database during an internship with the Zooniverse² community science enterprise associated with the Department of Physics, Oxford University. I am currently completing a DPhil on bacterial chemotaxis at the University of Oxford funded by a Clarendon Award.

I am seeking a Postdoctoral Researcher position in microbiology, molecular biology and genomics. I am keen to join a research team and undertake laboratory work in these fields. I am also interested in continuing to use my programming skills for automated statistics and image analysis.

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

CONTACT



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AroneyS.github.io

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EDUCATION

2021
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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
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2015



B.S., Honours (First Class)

Australian Centre for Ecogenomics
Supervisor: Prof Gene Tyson

University of Queensland

- Investigating bacterial chemotaxis towards marine pollutants

2015
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2012



B.S., Biochemistry and Molecular Biology

School of Chemistry and Molecular Biology University of Queensland



PUBLICATIONS

2020



Lifestyle adaptations of *Rhizobium* from rhizosphere to symbiosis³

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 Liver⁴

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.

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

Last updated on 2021-07-09.

2014

● **Changes in Glycogen Structure over Feeding Cycle Sheds New Light on Blood-Glucose Control⁵**

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.



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.



RESEARCH EXPERIENCE

2021

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2017

● **Rhizobial Motility Researcher**

Philip Poole Laboratory University of Oxford
Department of Plant Sciences

- 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 University of Oxford
Department of Physics (Astrophysics)

- Software development for The Zooniverse, a community science website established by the Department for Astrophysics.
- Developed a GraphQL based statistical database⁶ 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.
- 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.



TEACHING EXPERIENCE

- 2020
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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
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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
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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
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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
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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.

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



OTHER ACTIVITIES

- 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
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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.



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 Philip Poole

Department of Plant Sciences

📍 University of Oxford

● Prof Gail Preston

Department of Plant Sciences

📍 University of Oxford

● Prof Gene Tyson

School of Biomedical Sciences

📍 Queensland University of Technology



LINKS

1: <https://github.com/zooniverse/zoo-stats-api-graphql>

2: <https://www.zooniverse.org/>

3: <https://doi.org/10.1073/pnas.2009094117>

- 4: <https://doi.org/10.1016/j.carbpol.2014.11.005>
- 5: <https://doi.org/10.1021/bm401714v>
- 6: <https://github.com/zooniverse/zoo-stats-api-graphql>