

# Callum Arnold

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## Education

### PhD Infectious Disease Modelling (Biology)

PENNSYLVANIA STATE UNIVERSITY

- University Graduate Fellowship
- Homer F. Braddock Scholarship in Biology, Chemistry, and Physics (Eberly College of Science)

State College, USA

Aug 2020 - Jun 2025

### MSc Global Health Policy

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

- Distinction

London, UK

Sep 2017 - Jun 2020

### MChem Chemistry

UNIVERSITY OF OXFORD

Oxford, UK

Sep 2011 - Jun 2015

## Short Courses

### Machine Learning A-Z: Hands-On Python & R In Data Science

UDEMY

- Learning regression and machine learning techniques in Python and R

Online

Jul 2019 - Dec 2019

### Network Modelling for Epidemics

UNIVERSITY OF WASHINGTON

- 5-day course on the application of stochastic agent-based network modelling techniques to complex epidemic models, building from deterministic and stochastic compartmental models

Seattle, USA

Aug 2018

### Mathematical Modelling of Communicable Diseases (CHL5425H)

UNIVERSITY OF TORONTO

- Audited graduate course on mathematical modelling of infectious diseases (course director: Prof D. Fisman)

Toronto, CAN

Jan 2018 - Apr 2018

### Python for Epidemiology

EPI SKILLS

- Learnt to apply Python modules such as epipy, pandas, and seaborn for epidemiological purposes

Online

Feb 2018

## Research Experience

### Division of Infectious Diseases, The Hospital for Sick Children

CLINICAL RESEARCH PROJECT COORDINATOR

- Coordinated a multi-centre observational study into waning immunity in infants to measles, mumps and varicella
- Managed all data produced by the National Microbiology Laboratory and the Nova Scotia Health Authority laboratory for the waning immunity study
- Conducted data analysis on additional research studies within the Infectious Diseases division, and in collaboration with epidemiologists at Public Health Ontario
- Provided statistical expertise to HSC clinician's research

Toronto

Apr 2018 - Dec 2019

### BOTNAR, OUH Trust

HONORARY CLINICAL RESEARCHER

- Primary image analyst of a novel 4-D CT scanning technique for better hip osteoarthritis screening and management
- Contributing researcher in the large longitudinal, cross-sectional FAIM study funded by Arthritis Research UK that aims to determine whether adolescent activity levels affect hip morphology, and assists in early detection of deterioration

Oxford, UK

Jun 2016 - May 2019

### John Radcliffe Hospital, OUH Trust

HONORARY CLINICAL RESEARCHER

- Conducted with a Thoracic Consultant a retrospective review of VATS Parathyroidectomies that was presented at the national cardiothoracic conference

Oxford, UK

May 2016 - Apr 2017

### University of Oxford

MCHEM PROJECT

- Utilised and wrote Python and Bash scripts to extract relevant data from files generated by the computational chemistry software Gaussian

Oxford, UK

Sep 2014 - Jun 2015

## Skills & Software

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**R:** ggplot2 & tidyverse, targets, Rmarkdown, bookdown, blogdown, deSolve

**Python:** pandas, Jupyter notebooks & kernels, seaborn, matplotlib, plotly, scikit-learn

**Others:** Git, STATA, Berkeley Madonna, REDCap, basic LaTeX, pandoc

## Other Work Experience

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### Greene's Tutorial Company

Oxford, UK

TUTOR

Sep 2015 - Jul 2017

- Tutored GCSE and A-Level students in mathematics and the sciences to assist them in achieving their academic goals for their CIE/Edexcel/AQA exams, and for Oxford University interviews and admission tests

### d'Overbroeck's

Oxford, UK

MATHEMATICS TEACHER

Nov 2016 - Jul 2017

- Responsible for the teaching of the A-level maths syllabus, including introductory statistics and mechanics
- Sole teacher, for one term, of a gifted year-8 student covering 1st and 2nd-year University-level maths and statistics

### Keble College, Oxford

Oxford, UK

ASSISTANT ROWING COACH

Sep 2015 - Jul 2017

- Implemented changes to the program founded in current research to optimise athlete performance
- Organised athletes' data to ensure useful metrics are produced, allowing constructive analysis of performance via a KPI dashboard that summarised an athlete's physiological profile on one page

### Discovery Surf School

Bigbury, UK

SURF INSTRUCTOR

Dec 2010 - Sep 2015

- Lead and organised on-day logistics for work with young adults and children with learning difficulties
- Lead and supervised beginner groups of 90+ students and 10 instructors, ensuring quality in each group

## Volunteer and Athletic Experience

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### Tortoise Club (Oriel College Boat Club Alumni Society)

Oxford, UK

SECRETARY AND TREASURER

Feb 2016 - Nov 2018

- Council member responsible for the documentation and running of the 550-member alumni club, and principle sponsor, of Oriel College Boat Club

### Oriel College Boat Club

Oxford, UK

CAPTAIN OF BOATS

Jul 2014 - Jul 2015

- Ran the College club which had an annual turnover of 60,000 GBP

### Athletic Experience

PERSONAL

- Competed in the 2017 Half-Ironman World Championships after winning my age-group slot at the qualifying race
- Won 'Blades' during both Torpids and Summer Vllls Oxford rowing regattas, and the Henley Boat Races

## Publications

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### JOURNAL ARTICLES

- Arnold, C, S Srinivasan, CM Herzog, A Gontu, N Bharti, M Small, CJ Rogers, MM Schade, SV Kuchipudi, V Kapur, R Andrew, and MJ Ferrari (Jan. 1, 2021). SARS-CoV-2 Seroprevalence in a University Community: A Longitudinal Study of the Impact of Student Return to Campus on Infection Risk Among Community Members. *medRxiv*, 2021.02.17.21251942.
- Fernquest, S, A Palmer, C Pereira, C Arnold, E Hirons, J Broomfield, S Newman, and S Glyn-Jones (June 12, 2020). The Response of Hip Joint Cartilage to Exercise in Children: An MRI Study Using T2-Mapping. *CARTILAGE*. doi: 10.1177/1947603520931182, 1947603520931182. (Visited on 06/18/2020).
- Han, MA, D Storman, H Al-Rammahy, S Tang, Q Hao, G Leung, M Kandi, R Moradi, JJ Bartoszko, C Arnold, N Rehman, and G Guyatt (Mar. 30, 2020). Impact of Maternal Reproductive Factors on Cancer Risks of Offspring: A Systematic Review and Meta-Analysis of Cohort Studies. *PLOS ONE* **15**(3), e0230721.
- Piché-Renaud, PP, H Groves, T Kitano, C Arnold, A Thomas, L Streitenberger, L Alexander, SK Morris, and M Science (2020). Healthcare Workers' Perception of a Global Outbreak of Novel Coronavirus (COVID-19) and Personal Protective Equipment: Survey of a Pediatric Tertiary Care Hospital. *Infection Control & Hospital Epidemiology*, 1–25.

5. Science, M, R Savage, A Severini, E McLachlan, SL Hughes, C Arnold, S Richardson, N Crowcroft, S Deeks, S Halperin, K Brown, T Hatchette, J Gubbay, T Mazzulli, and S Bolotin (Nov. 21, 2019). Measles Antibody Levels in Young Infants. *Pediatrics*, e20190630.
6. Craig, R, E Kunkel, NS Crowcroft, MC Fitzpatrick, H de Melker, BM Althouse, T Merkel, SV Scarpino, K Koelle, L Friedman, C Arnold, and S Bolotin (June 29, 2019). Asymptomatic Infection and Transmission of Pertussis in Households: A Systematic Review. *Clinical Infectious Diseases* (ciz531).
7. Fernquest, S, C Arnold, A Palmer, J Broomfield, J Denton, A Taylor, and S Glyn-Jones (Apr. 1, 2017). Osseous Impingement Occurs Early in Flexion in Cam-Type Femoroacetabular Impingement. *The Bone & Joint Journal* **99-B** (4\_Supple\_B), 41–48.

## 8 POSTERS UNLISTED