Alistair Bailey

An engineer by training, I have since worked primarily as an informatician and research scientist investigating antigen processing and presentation by major histocompatibility molecules using multi-omics methods. I currently work as a learning technologist supporting Librarians at the University of Southampton.[1]

My most recent project was CRUK Accelerator: Improving immunotherapy treatment for cancer patients.[2] Other projects I have worked on include research into influenza, COVID19, skin sensitization to chemical allergens, asthma and contagious cancer in the Tasmanian Devil.

I am also a Data and Software Carpentry[3] instructor and I have also created and delivered my own workshops to teach foundational R coding and data science skills to bioscientists.

Proteomics data I have curated, deposited and I am the data controller for is deposited at the PRoteomics IDEntifications Archive. Whole Exome and RNAseq data I have curated, deposited and I am the data controller for is deposited at the European Genome-phenome Archive.

EDUCATION

2017

CARPENTRIES INSTRUCTOR

Worldwide — The Carpentries

- I trained as a Carpentries[4] instructor as part of their volunteer led mission to increase global capacity in essential data and computational skills for conducting efficient, open, and reproducible research.

2016

MACHINE LEARNING

Stanford University — Coursera

- 10 week online introduction to machine learning.

2015

DATA SCIENCE SPECIALIZATION

John Hopkins University — Coursera

- 12 month online set of courses on data science using R, git and command line tools.

2013 | 2008

PHD, IMMUNOLOGY

Cancer Sciences, University of Southampton — Southampton, UK

- Thesis: Relating the structure, function and dynamics of the MHC Class I antigen presenting molecule.

2008 | 2005

BENG, CIVIL ENGINEERING

University of Southampton — Southampton, UK

- First Class Honours in Civil Engineering.

View this CV online with links at *ab604.uk/cv/cv.html*

CONTACT

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alistair604

LANGUAGE SKILLS

- R
- Markdown
- Latex
- Bash
- Git
- Python
- SQL

Made with the R package pagedown.

The source code is available on github.com/ab604/abailey-cv.

The font is Atkinson Hyperlegible

Last updated on 2024-02-10.

2005 | 2004

ENGINEERING, SCIENCE & MATHEMATICS FOUNDATION YEAR

University of Southampton — Southampton, UK

- Maths and physics foundation year preparation for undergraduate study.

1994 | 1992

BTEC ND AUDIO-VISUAL PRODUCTION

Bournemouth & Poole College of Art & Design — Bournemouth, UK

- Foundation course in film, photography, TV and radio production.

RESEARCH EXPERIENCE

2023 | 2018

RESEARCH FELLOW

Centre for Proteomic Research/Cancer Sciences, University of Southampton — Southampton, UK

- Cancer Research UK Accelerator: this project aims to identify potential treatment targets for hard to treat cancers such as lung cancer using peptidomics methods.

In my role, I process, analyse and manage data from various Omics technologies, primarily whole exome sequencing, RNAseq and proteomics. Proteomics data I receive as Thermo raw data and process with Peaks Studio[5], and post-process in R and RStudio. Whole exome and transcriptomics data I receive as fastq files and I use a mixture of command line tools using bash scripts and R and RStudio. I tend to follow the Broad Institute Best Practices for genomic data analysis[6] and Cornell Bioinformatics Core[7] for transcriptomic data processing. Scripts and processed data are managed using git version control. Raw data is backed up remotely and deposited along with processed outputs public repositories such as EBI PRIDE[8] and the European Phenome-Genome Archive[9] following FAIR protocols[10]. My primary computer is a Linux Ubuntu machine, but I also use Windows.

- We have also developed our method to identify treatment targets for infectious diseases such as influenza.
- In 2020 I also worked to develop a COVID19 test using proteomics methods.

2018 | 2015

RESEARCH FELLOW

Centre for Proteomic Research/Cancer Sciences, University of Southampton — Southampton, UK

- Developed peptidomics methodology at the UoS for research into the role of MHC molecules in skin sensitisation to chemical allergy.

2015 | 2013

RESEARCH FELLOW

Cancer Sciences, University of Southampton — Southampton, UK

- MRC Centenary Fellow

RESEARCH DATA

IMMUNOPEPTIDOMIC ANALYSIS OF INFLUENZA A VIRUS INFECTED HUMAN TISSUES IDENTIFIES INTERNAL PROTEINS AS A RICH SOURCE OF HLA LIGANDS[11], PUBLICLY RELEASED

- Proteomics data: PRIDE Project PXD022884[12]

IDENTIFICATION OF NEOANTIGENS IN ESOPHAGEAL ADENOCARCINOMA[13], PUBLICLY RELEASED

- Proteomics data: PRIDE Project ID PXD031108[14]
- WES & RNAseq data EGA Study ID EGAS00001005957

CHARACTERIZATION OF THE CLASS I MHC PEPTIDOME RESULTING FROM DNCB EXPOSURE OF HACAT CELLS[15], PUBLICLY RELEASED

- Proteomics data: PRIDE Project PXD021373[16]

NEOANTIGEN IDENTIFICATION IN PANCREATIC NEUROENDOCRINE TUMOURS, UNRELEASED PENDING PUBLICATION

- Proteomics data: PRIDE Project ID PXD037449
- WES & RNAseq data EGA Study ID EGAS00001006722

IMMUNOPEPTIDOMICS GUIDED IDENTIFICATION OF NEOANTIGENS IN NON-SMALL CELL LUNG CANCER, UNRELEASED PENDING PUBLICATION

- Proteomics data: PRIDE Project ID PXD028990
- WES & RNAseq data EGA Study ID EGAS00001005499

IMMUNOPEPTIDOMICS OF A BRAIN TUMOUR CELL LINE TO IDENTIFY HLA PRESENTED ZIKA, UNRELEASED PENDING PUBLICATION

- Proteomics data: PRIDE Project ID PXD037627

INDUSTRY EXPERIENCE

2012

INTERNSHIP

Microsoft Research — Cambridge, UK

- Helped develop computational model of MHC I peptide selection.

I have worked in a variety of roles ranging from engineering to research scientist. I like collaborative environments where I can learn from my peers.

2012 | 2004

FREELANCE SATELLITE COMMUNICATIONS ENGINEER

Globecast — London, UK

- I continued to work as an engineer in broadcast TV from 2004 and 2012 on major events such as the Olympics and Football World Cup.

2004 | 2000

SATELLITE COMMUNICATIONS ENGINEER

Globecast — London, UK

- Full time engineer working in global broadcast TV primarily on sports, news and live entertainment events.

2000 | 1995

FILM AND TELEVISION POST-PRODUCTION ENGINEER

Telecine — London, UK

- I trained as an engineer to operate various TV & film post-production equipment.

TEACHING EXPERIENCE

2020 | 2019

CODING TOGETHER[17]

University of Southampton — Southampton, UK

- I created and taught an eight week series of collaborative workshops to teach foundational R coding and data science skills based on Carpentries materials.

2019 | 2018

ACADEMIC SUPPORT TUTOR

IntoUniversity Millbrook — Southampton, UK

- IntoUniversity[18] supports young people from disadvantaged backgrounds to attain either a university place or another chosen aspiration. I volunteered as an academic support tutor for secondary school learners.

2018

SOFTWARE CARPENTRY

Umeå University — Umeå, Sweden

- Taught R for Reproducible Research and assisted in Command Line Basics.

2018

BRITISH SOCIETY FOR PROTEOMICS 2018 DATA SCIENCE WORKSHOP[19]

University of Bradford — Bradford, UK

- I created and taught a proteomics data science workshop including introduction to R, Volcano plots, heatmaps and peptide logos.

2017

DATA CARPENTRY

University of Southampton — Southampton, UK

- Taught R for Reproducible Research and assisted in Command Line Basics and git.

2017

DATA CARPENTRY

University of Southampton — Southampton, UK

- Taught R for Reproducible Research and assisted in introduction to SQL.

I am enjoy teaching foundational coding and data science skills to researchers and developing evidence-based best practices. I am especially interested in helping novices and making coding more accessible to all.

2017

SOFTWARE CARPENTRY

University of Southampton

Southampton, UK

- Assisted with python and git for reproducible research.

PUBLICATIONS

2022

OPERATION MOONSHOT: RAPID TRANSLATION OF A SARS-COV-2 TARGETED PEPTIDE IMMUNOAFFINITY LIQUID CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY TEST FROM RESEARCH INTO ROUTINE CLINICAL USE[20]

Clinical Chemistry and Laboratory Medicine

- Jenny Hällqvist, Benjamin I. Nicholas, Alistair Bailey et al.

2022

IDENTIFICATION OF NEOANTIGENS IN ESOPHAGEAL ADENOCARCINOMA[21]

Immunology

- Ben Nicholas, Alistair Bailey, Katy J. McCann, Oliver Wood, Robert C. Walker, Robert Parker, Nicola Ternette, Tim Elliott, Tim J. Underwood, Peter Johnson, Paul Skipp

2022

ANALYSIS OF CELL-SPECIFIC PERIPHERAL BLOOD BIOMARKERS IN SEVERE ALLERGIC ASTHMA IDENTIFIES INNATE IMMUNE DYSFUNCTION[22]

Clinical & Experimental Allergy

- Ben Nicholas, Jane Guo, Hyun-Hee Lee, Alistair Bailey, Rene de Waal Malefyt, Milenko Cicmil, Ratko Djukanovic

2022

IMMUNOPEPTIDOMIC ANALYSIS OF INFLUENZA A VIRUS INFECTED HUMAN TISSUES IDENTIFIES INTERNAL PROTEINS AS A RICH SOURCE OF HLA LIGANDS[23]

PLoS Pathogens

- Ben Nicholas, Alistair Bailey, Karl J. Staples, Tom Wilkinson, Tim Elliott, Paul Skipp.

2021

THE DIFFERENTIATION STATE OF THE SCHWANN CELL PROGENITOR DRIVES PHENOTYPIC VARIATION BETWEEN TWO CONTAGIOUS CANCERS[24]

PLOS Pathogens

- Rachel S. Owen, Sri H. Ramarathinam, Alistair Bailey, Annalisa Gastaldello, Kathryn Hussey, Paul J. Skipp, Anthony W. Purcell, Hannah V. Siddle

2021

CHARACTERIZATION OF THE CLASS I MHC PEPTIDOME RESULTING FROM DNCB EXPOSURE OF HACAT CELLS[25]

Toxicological Sciences

- Alistair Bailey, Ben Nicholas, Rachel Darley, Erika Parkinson, Ying Teo, Maja Aleksic, Gavin Maxwell, Tim Elliott, Michael Ardern-Jones, Paul Skipp.

2021

THE IMMUNOPEPTIDOMES OF TWO TRANSMISSIBLE CANCERS AND THEIR HOST HAVE A COMMON, DOMINANT PEPTIDE MOTIF[26]

Immunology

- Annalisa Gastaldello, Sri H. Ramarathinam, Alistair Bailey, Rachel Owen, Steven Turner, N. Kontouli, Tim Elliott, Paul Skipp, Anthony W. Purcell, Hannah V. Siddle.

2019

DYNAMICALLY DRIVEN ALLOSTERY IN MHC PROTEINS: PEPTIDE-DEPENDENT TUNING OF CLASS I MHC GLOBAL FLEXIBILITY[27]

Frontiers in Immunology

- Cory M. Ayres, Esam T. Abualrous, Alistair Bailey, Christian Abraham, Lance M. Hellman, Steven A. Corcelli, Frank Noé, Tim Elliott, Brian M. Baker.

2017

DIRECT EVIDENCE FOR CONFORMATIONAL DYNAMICS IN MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I MOLECULES[28]

JBC

- Andy van Hateren, Malcolm Anderson, Alistair Bailey, Jörn M. Werner, Paul Skipp, Tim Elliott.

2017

RECENT ADVANCES IN MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I ANTIGEN PRESENTATION: PLASTIC MHC MOLECULES AND TAPBPR MEDIATED QUALITY CONTROL[29]

F1000 Research

- Andy van Hateren, Alistair Bailey, Tim Elliott.

2015

SELECTOR FUNCTION OF MHC I MOLECULES IS DETERMINED BY PROTEIN PLASTICITY[30]

Scientific Reports

- Alistair Bailey, Neil Dalchau, Rachel Carter, Stephen Emmott, Andrew Phillips, Jörn M. Werner, Tim Elliott

2014

TWO POLYMORPHISMS FACILITATE DIFFERENCES IN PLASTICITY BETWEEN TWO CHICKEN MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I PROTEINS[31]

PLoS One

- Alistair Bailey, Andy van Hateren, Tim Elliott, Jörn M. Werner.

2013

A MECHANISTIC BASIS FOR THE CO-EVOLUTION OF CHICKEN TAPASIN AND MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I PROTEINS[32]

JBC

- Andy van Hateren, Rachel Carter, Alistair Bailey, Nasia Kontouli, Anthony P. Williams, Jim Kaufman, Tim Elliott.

2010

THE CELL BIOLOGY OF MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I ASSEMBLY: TOWARDS A MOLECULAR UNDERSTANDING[33]

Tissue Antigens

- A. Van Hateren, E. James, A. Bailey, A. Phillips, N. Dalchau, T. Elliott

LINKS

1. https://www.soton.ac.uk
2. https://www.cancerresearchuk.org/funding-for-researchers/accelerator-award/portfolio-funded-projects-outputs
3. https://carpentries.org/
4. https://carpentries.org/
5. https://www.bioinfor.com/peaks-studio/
6. https://gatk.broadinstitute.org/hc/en-us
7. https://abc.med.cornell.edu/
8. https://www.ebi.ac.uk/pride/
9. https://ega-archive.org/
10. https://www.go-fair.org/fair-principles/
11. https://doi.org/10.1371/journal.ppat.1009894
12. https://www.ebi.ac.uk/pride/archive/projects/PXD022884
13. https://doi.org/10.1111/imm.13578
14. https://www.ebi.ac.uk/pride/archive/projects/PXD031108
15. https://doi.org/10.1093/toxsci/kfaa184
16. https://www.ebi.ac.uk/pride/archive/projects/PXD021373
17. https://ab604.github.io/docs/coding-together-2019/
18. https://intouniversity.org/
19. https://ab604.github.io/docs/bspr_workshop_2018/index.html
20. https://doi.org/10.1515/cclm-2022-1000
21. https://doi.org/10.1111/imm.13578
22. https://doi.org/10.1111/cea.14197
23. https://doi.org/10.1371/journal.ppat.1009894
24. https://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1010033
25. https://doi.org/10.1093/toxsci/kfaa184
26. https://doi.org/10.1111/imm.13307
27. https://doi.org/10.3389/fimmu.2019.00966
28. https://doi.org/10.1074/jbc.M117.809624
29. https://doi.org/10.12688/f1000research.10474.1
30. https://doi.org/10.1038/srep14928
31. https://doi.org/10.1371/journal.pone.0089657
32. https://doi.org/10.1074/jbc.M113.474031
33. https://doi.org/10.1111/j.1399-0039.2010.01550.x