

ALISTAIR BAILEY

An engineer by training, I have since worked primarily as an informatician and research scientist. I currently work as a learning technologist supporting Librarians at the University of Southampton.¹

The topic of my research career has been the role of HLA antigen processing and presentation in disease recognition by T cells. In cancer² this has focused on HLA-presented tumour antigens³, and in infectious disease the focus has been HLA-presented viral⁴ and bacterial antigens. Exploiting these targets has the potential for enhancing personalised therapies, vaccine development and understanding allergy.

I have contributed to research into COVID19⁵, skin sensitization to chemical allergens⁶, asthma⁷ and contagious cancer in the Tasmanian Devil⁸.

My core skills are processing and analysing data from whole exome sequencing, RNAseq, scRNAseq and proteomics assays. My workflow combines command line tools with micromamba, the R programming language and git version control.

Proteomics data I have curated, deposited and I am the data controller for is deposited at the PRoteomics IDentifications Archive⁹. Whole Exome and RNAseq data I have curated, deposited and I am the data controller for is deposited at the European Genome-phenome Archive¹⁰.

I am a Data and Software Carpentry¹¹ instructor and I have also created and delivered my own workshops to teach foundational R coding and data science skills¹² to bioscientists and web design¹³ to librarians.



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

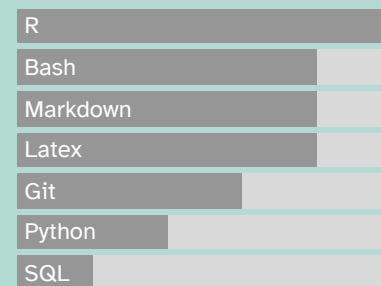
CONTACT

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- 👤 github.com/ab604
- 🐦 [alistair604](https://twitter.com/alistair604)

EDUCATION

- 2017 ● **Carpentries Instructor**
Worldwide 📍 The Carpentries
 - I trained as a Carpentries¹⁴ 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.

LANGUAGE SKILLS



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 2024-02-20.

2005
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2004

Engineering, Science & Mathematics Foundation Year

University of Southampton

📍 Southampton, UK

- Maths and physics foundation year preparation for undergraduate study.

1994
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1992

BTEC ND Audio-Visual Production

Bournemouth & Poole College of Art & Design

📍 Bournemouth, UK

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



TEACHING EXPERIENCE

2024

Webpage Design¹⁵

University of Southampton

📍 Southampton, UK

- I created a webpage design workshop and materials for Librarians at the University of Southampton

2022
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2021

BIOL 2013: Introduction to bioinformatics

University of Southampton

📍 Southampton, UK

- I taught the undergraduate introduction to bioinformatics module on variant discovery using the University Galaxy Server.

2020
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2019

Coding Together¹⁶

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
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2018

Academic Support Tutor

IntoUniversity Millbrook

📍 Southampton, UK

- IntoUniversity¹⁷ 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 Workshop¹⁸

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.

I 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 ● **Data Carpentry**
University of Southampton  Southampton, UK


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

2017 ● **Software Carpentry**
University of Southampton  Southampton, UK


- Assisted with python and git for reproducible research.



RESEARCH EXPERIENCE

2023 ● **Research Fellow**
School of Biological Sciences, University of Southampton  Southampton, UK

- scRNAseq analysis of T-cell response to neutrophil exposure. Bioinformatician maternity leave cover for Medical Research Council funded project.

2023
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2018 ● **Research Fellow**
Centre for Proteomic Research/Cancer Sciences,  Southampton, UK
University of Southampton


- Cancer Research UK Accelerator: this project aims to identify potential treatment targets for hard to treat cancers using multi-omics methods. In this project our focus was on oesophageal, lung and neuroendocrine cancers.

As an informatician I processed, analysed and managed data from whole exome sequencing, RNAseq, scRNAseq and proteomics.

For sequencing fastq data, my workflow comprised of a mixture of command line tools using bash scripts and R/RStudio. I followed the Broad Institute Best Practices for genomic data analysis¹⁹ and Cornell Bioinformatics Core²⁰. For proteomics data, my workflow used Peaks Studio²¹, and post-process in R and RStudio.

Scripts and processed data were managed using git version control. Raw data was deposited along with processed outputs in PRoteomics IDentifications Archive²² and the European Phenome-Genome Archive²³.

We also developed our method to identify treatment targets for infectious diseases from influenza and bacterial proteins. In 2020 I also worked to develop a COVID19 test using proteomics methods.

2018
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2015 ● **Research Fellow**
Centre for Proteomic Research/Cancer Sciences,  Southampton, UK
University of Southampton

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

2015
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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 ligands²⁴, Publicly released**

- Proteomics data: PRIDE Project PXD022884²⁵

● **Identification of neoantigens in esophageal adenocarcinoma²⁶, Publicly released**

- Proteomics data: PRIDE Project ID PXD031108²⁷
- WES & RNAseq data EGA Study ID EGAS000001005957

● **Characterization of the Class I MHC Peptidome Resulting From DNCB Exposure of HaCaT Cells²⁸, Publicly released**

- Proteomics data: PRIDE Project PXD021373²⁹

● **Neoantigen identification in pancreatic neuroendocrine tumours, Unreleased pending publication**

- Proteomics data: PRIDE Project ID PXD037449
- WES & RNAseq data EGA Study ID EGAS000001006722

● **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 EGAS000001005499

● **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
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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
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2000

● **Satellite Communications Engineer**
Globecast 📍 London, UK

 - Full time engineer working in global broadcast TV primarily on sports, news and live entertainment events.
- 2000
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1995

● **Film and television post-production engineer**
Telecine 📍 London, UK

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



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 use³⁰**
Clinical Chemistry and Laboratory Medicine

 - Jenny Hällqvist, Benjamin I. Nicholas, Alistair Bailey et al.
- 2022

● **Identification of neoantigens in esophageal adenocarcinoma³¹**
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 dysfunction³²**
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 ligands³³**
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 cancers³⁴**
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 Cells³⁵**
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 motif³⁶**
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 Flexibility³⁷**
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 molecules³⁸**
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 control³⁹**
F1000 Research
- Andy van Hateren, Alistair Bailey, Tim Elliott.
- 2015 ● **Selector function of MHC I molecules is determined by protein plasticity⁴⁰**
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 Proteins⁴¹**
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 Proteins⁴²**
JBC
- Andy van Hateren, Rachel Carter, Alistair Bailey, Nasia Kontouli, Anthony P. Williams, Jim Kaufman, Tim Elliott.

The cell biology of major histocompatibility complex class I assembly: towards a molecular understanding⁴³

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://doi.org/10.1111/imm.13578>
- 4• <https://doi.org/10.1371/journal.ppat.1009894>
- 5• <https://doi.org/10.1515/cclm-2022-1000>
- 6• <https://doi.org/10.1093/toxsci/kfaa184>
- 7• <https://doi.org/10.1111/cea.14197>
- 8• <https://doi.org/10.1111/imm.13307>
- 9• <https://www.ebi.ac.uk/pride/>
- 10• <https://ega-archive.org/>
- 11• <https://carpentries.org/>
- 12• <https://ab604.github.io/docs/coding-together-2019/>
- 13• <https://ab604.github.io/webpage-design/>
- 14• <https://carpentries.org/>
- 15• <https://ab604.github.io/webpage-design/>
- 16• <https://ab604.github.io/docs/coding-together-2019/>
- 17• <https://intouniversity.org/>
- 18• https://ab604.github.io/docs/bspr_workshop_2018/index.html
- 19• <https://gatk.broadinstitute.org/hc/en-us>
- 20• <https://abc.med.cornell.edu/>
- 21• <https://www.bioinfor.com/peaks-studio/>
- 22• <https://www.ebi.ac.uk/pride/>
- 23• <https://ega-archive.org/>
- 24• <https://doi.org/10.1371/journal.ppat.1009894>
- 25• <https://www.ebi.ac.uk/pride/archive/projects/PXD022884>
- 26• <https://doi.org/10.1111/imm.13578>
- 27• <https://www.ebi.ac.uk/pride/archive/projects/PXD031108>
- 28• <https://doi.org/10.1093/toxsci/kfaa184>
- 29• <https://www.ebi.ac.uk/pride/archive/projects/PXD021373>
- 30• <https://doi.org/10.1515/cclm-2022-1000>
- 31• <https://doi.org/10.1111/imm.13578>
- 32• <https://doi.org/10.1111/cea.14197>
- 33• <https://doi.org/10.1371/journal.ppat.1009894>
- 34• <https://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1010033>
- 35• <https://doi.org/10.1093/toxsci/kfaa184>
- 36• <https://doi.org/10.1111/imm.13307>
- 37• <https://doi.org/10.3389/fimmu.2019.00966>
- 38• <https://doi.org/10.1074/jbc.M117.809624>
- 39• <https://doi.org/10.12688/f1000research.10474.1>

- 40• <https://doi.org/10.1038/srep14928>
- 41• <https://doi.org/10.1371/journal.pone.0089657>
- 42• <https://doi.org/10.1074/jbc.M113.474031>
- 43• <https://doi.org/10.1111/j.1399-0039.2010.01550.x>