

# Alistair Bailey

I am a researcher at the Centre for Proteomic Research and Cancer Sciences Unit at the University of Southampton. My research interests are in antigen processing and presentation by class I MHC molecules, data science and Omics. My role is primarily as an informatician. The project I currently work on aims to improve immunotherapy treatment for cancer patients.<sup>7</sup> I also contribute to research into the role of MHC molecules in skin sensitization to chemical allergens, and contagious cancer in the Tasmanian Devil. I am also a Data and Software Carpentry<sup>2</sup> instructor.

## EDUCATION

- 2017  
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2017
- CARPENTRIES INSTRUCTOR**  
Worldwide 📍 The Carpentries
- I trained as a Carpentries<sup>3</sup> 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  
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2016
- MACHINE LEARNING**  
Stanford University 📍 Coursera
- 10 week online introduction to machine learning.
- 2015  
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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  
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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  
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2005
- BENG, CIVIL ENGINEERING**  
University of Southampton 📍 Southampton, UK
- First Class Honours in Civil Engineering.
- 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.

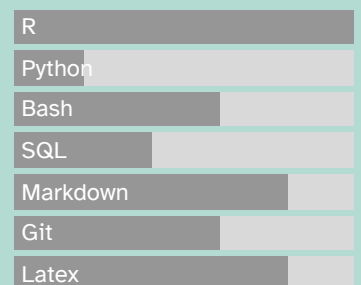


View this CV online with links at [ab604.uk/cv/cv.html](http://ab604.uk/cv/cv.html)

## CONTACT

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🔗 [github.com/ab604](https://github.com/ab604)  
🔗 [ab604.uk](http://ab604.uk)  
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## LANGUAGE SKILLS



Made with the R package *pagedown*.

The source code is available on [github.com/ab604/abailey-cv](https://github.com/ab604/abailey-cv).

The font is Atkinson Hyperlegible

Last updated on 2022-09-25.

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.



## RESEARCH EXPERIENCE

Current  
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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<sup>4</sup>, 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<sup>5</sup> and Cornell Bioinformatics Core<sup>6</sup> 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<sup>7</sup> and the European Phenome-Genome Archive<sup>8</sup> following FAIR protocols<sup>9</sup>. 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  
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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  
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2013

### RESEARCH FELLOW

Cancer Sciences, University of Southampton

📍 Southampton, UK

- MRC Centenary Fellow



## INDUSTRY EXPERIENCE

2012  
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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.

## TEACHING EXPERIENCE

- 2020  
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2019  
● **CODING TOGETHER<sup>10</sup>**  
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  
  - IntoUniversity<sup>11</sup> 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  
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2018  
● **SOFTWARE CARPENTRY**  
Umeå University 📍 Umeå, Sweden  
  - Taught R for Reproducible Research and assisted in Command Line Basics.
- 2018  
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2018  
● **BRITISH SOCIETY FOR PROTEOMICS 2018 DATA SCIENCE WORKSHOP<sup>12</sup>**  
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  
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2017  
● **DATA CARPENTRY**  
University of Southampton 📍 Southampton, UK  
  - Taught R for Reproducible Research and assisted in Command Line Basics and git.
- 2017  
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2017  
● **DATA CARPENTRY**  
University of Southampton 📍 Southampton, UK  
  - Taught R for Reproducible Research and assisted in introduction to SQL.

I am passionate about 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  
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2017



## SOFTWARE CARPENTRY

University of Southampton

📍 Southampton, UK

- Assisted with python and git for reproducible research.



## PUBLICATIONS

2022  
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2022

### IDENTIFICATION OF NEOANTIGENS IN ESOPHAGEAL ADENOCARCINOMA<sup>13</sup>

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  
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2022

### ANALYSIS OF CELL-SPECIFIC PERIPHERAL BLOOD BIOMARKERS IN SEVERE ALLERGIC ASTHMA IDENTIFIES INNATE IMMUNE DYSFUNCTION<sup>14</sup>

Clinical & Experimental Allergy

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

2022  
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2022

### IMMUNOPEPTIDOMIC ANALYSIS OF INFLUENZA A VIRUS INFECTED HUMAN TISSUES IDENTIFIES INTERNAL PROTEINS AS A RICH SOURCE OF HLA LIGANDS<sup>15</sup>

PLoS Pathogens

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

2021  
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2021

### THE DIFFERENTIATION STATE OF THE SCHWANN CELL PROGENITOR DRIVES PHENOTYPIC VARIATION BETWEEN TWO CONTAGIOUS CANCERS<sup>16</sup>

PLOS Pathogens

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

2021  
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2021

### CHARACTERIZATION OF THE CLASS I MHC PEPTIDOME RESULTING FROM DNCB EXPOSURE OF HACAT CELLS<sup>17</sup>

Toxicological Sciences

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

2021  
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2021

### THE IMMUNOPEPTIDOMES OF TWO TRANSMISSIBLE CANCERS AND THEIR HOST HAVE A COMMON, DOMINANT PEPTIDE MOTIF<sup>18</sup>

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  
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2019
- **DYNAMICALLY DRIVEN ALLOSTERY IN MHC PROTEINS: PEPTIDE-DEPENDENT TUNING OF CLASS I MHC GLOBAL FLEXIBILITY<sup>19</sup>**  
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  
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2017
- **DIRECT EVIDENCE FOR CONFORMATIONAL DYNAMICS IN MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I MOLECULES<sup>20</sup>**  
JBC
- Andy van Hateren, Malcolm Anderson, Alistair Bailey, Jörn M. Werner, Paul Skipp, Tim Elliott.
- 2017  
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2017
- **RECENT ADVANCES IN MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I ANTIGEN PRESENTATION: PLASTIC MHC MOLECULES AND TAPBP MEDIATED QUALITY CONTROL<sup>21</sup>**  
F1000 Research
- Andy van Hateren, Alistair Bailey, Tim Elliott.
- 2015  
|  
2015
- **SELECTOR FUNCTION OF MHC I MOLECULES IS DETERMINED BY PROTEIN PLASTICITY<sup>22</sup>**  
Scientific Reports
- Alistair Bailey, Neil Dalchau, Rachel Carter, Stephen Emmott, Andrew Phillips, Jörn M. Werner, Tim Elliott
- 2014  
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2014
- **TWO POLYMORPHISMS FACILITATE DIFFERENCES IN PLASTICITY BETWEEN TWO CHICKEN MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I PROTEINS<sup>23</sup>**  
PLoS One
- Alistair Bailey, Andy van Hateren, Tim Elliott, Jörn M. Werner.
- 2013  
|  
2013
- **A MECHANISTIC BASIS FOR THE CO-EVOLUTION OF CHICKEN TAPASIN AND MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I PROTEINS<sup>24</sup>**  
JBC
- Andy van Hateren, Rachel Carter, Alistair Bailey, Nasia Kontouli, Anthony P. Williams, Jim Kaufman, Tim Elliott.
- 2010  
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2010
- **THE CELL BIOLOGY OF MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I ASSEMBLY: TOWARDS A MOLECULAR UNDERSTANDING<sup>25</sup>**  
Tissue Antigens
- A. Van Hateren, E. James, A. Bailey, A. Phillips, N. Dalchau, T. Elliott



1. <https://www.cancerresearchuk.org/funding-for-researchers/accelerator-award/portfolio-funded-projects-outputs>
2. <https://carpentries.org/>
3. <https://carpentries.org/>
4. <https://www.bioinform.com/peaks-studio/>
5. <https://gatk.broadinstitute.org/hc/en-us>
6. <https://abc.med.cornell.edu/>
7. <https://www.ebi.ac.uk/pride/>
8. <https://ega-archive.org/>
9. <https://www.go-fair.org/fair-principles/>
10. <https://ab604.github.io/docs/coding-together-2019/>
11. <https://intouniversity.org/>
12. [https://ab604.github.io/docs/bspr\\_workshop\\_2018/index.html](https://ab604.github.io/docs/bspr_workshop_2018/index.html)
13. <https://doi.org/10.1111/imm.13578>
14. <https://doi.org/10.1111/cea.14197>
15. <https://doi.org/10.1371/journal.ppat.1009894>
16. <https://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1010033>
17. <https://doi.org/10.1093/toxsci/kfaa184>
18. <https://doi.org/10.1111/imm.13307>
19. <https://doi.org/10.3389/fimmu.2019.00966>
20. <https://doi.org/10.1074/jbc.M117.809624>
21. <https://doi.org/10.12688/f1000research.10474.1>
22. <https://doi.org/10.1038/srep14928>
23. <https://doi.org/10.1371/journal.pone.0089657>
24. <https://doi.org/10.1074/jbc.M113.474031>
25. <https://doi.org/10.1111/j.1399-0039.2010.01550.x>