

# 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.<sup>1</sup>

My most recent project was CRUK Accelerator: Improving immunotherapy treatment for cancer patients.<sup>2</sup> 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<sup>3</sup> 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.



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

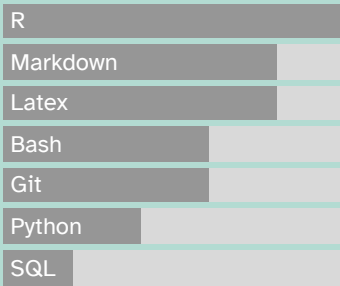
## EDUCATION

2017	<b>CARPENTRIES INSTRUCTOR</b> Worldwide	The Carpentries	<ul style="list-style-type: none"><li>I trained as a Carpentries<sup>4</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.</li></ul>
2016	<b>MACHINE LEARNING</b> Stanford University	Coursera	<ul style="list-style-type: none"><li>10 week online introduction to machine learning.</li></ul>
2015	<b>DATA SCIENCE SPECIALIZATION</b> John Hopkins University	Coursera	<ul style="list-style-type: none"><li>12 month online set of courses on data science using R, git and command line tools.</li></ul>
2013   2008	<b>PHD, IMMUNOLOGY</b> Cancer Sciences, University of Southampton	Southampton, UK	<ul style="list-style-type: none"><li>Thesis: Relating the structure, function and dynamics of the MHC Class I antigen presenting molecule.</li></ul>
2008   2005	<b>BENG, CIVIL ENGINEERING</b> University of Southampton	Southampton, UK	<ul style="list-style-type: none"><li>First Class Honours in Civil Engineering.</li></ul>

## CONTACT

- ✉ [ab604@soton.ac.uk](mailto:ab604@soton.ac.uk)
- 🌐 [ab604.uk](https://ab604.uk)
- 🆔 0000-0003-0023-8679
- 🐙 [github.com/ab604](https://github.com/ab604)
- 🐦 [alistair604](https://alistair604)

## 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 2024-02-10.

- 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

- 2020  
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2019  
● **CODING TOGETHER<sup>5</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>6</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  
● **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<sup>7</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  
● **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.
- 2017  
● **SOFTWARE CARPENTRY**  
University of Southampton  Southampton, UK
  - Assisted with python and git for reproducible research.

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.



## RESEARCH EXPERIENCE

2023  
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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>8</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>9</sup> and Cornell Bioinformatics Core<sup>10</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>11</sup> and the European Phenome-Genome Archive<sup>12</sup> following FAIR protocols<sup>13</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



## RESEARCH DATA

### IMMUNOPEPTIDOMIC ANALYSIS OF INFLUENZA A VIRUS INFECTED HUMAN TISSUES IDENTIFIES INTERNAL PROTEINS AS A RICH SOURCE OF HLA LIGANDS<sup>14</sup>, PUBLICLY RELEASED

- Proteomics data: PRIDE Project PXD022884<sup>15</sup>

### IDENTIFICATION OF NEOANTIGENS IN ESOPHAGEAL ADENOCARCINOMA<sup>16</sup>, PUBLICLY RELEASED

- Proteomics data: PRIDE Project ID PXD031108<sup>17</sup>
- WES & RNAseq data EGA Study ID EGAS000001005957

## CHARACTERIZATION OF THE CLASS I MHC PEPTIDOME RESULTING FROM DNCB EXPOSURE OF HACAT CELLS<sup>18</sup>, PUBLICLY RELEASED

- Proteomics data: PRIDE Project PXD021373<sup>19</sup>

## 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.

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

|  
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.

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.



## 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<sup>20</sup>  
Clinical Chemistry and Laboratory Medicine  
• Jenny Hällqvist, Benjamin I. Nicholas, Alistair Bailey et al.
- 2022 ● IDENTIFICATION OF NEOANTIGENS IN ESOPHAGEAL ADENOCARCINOMA<sup>21</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 ● ANALYSIS OF CELL-SPECIFIC PERIPHERAL BLOOD BIOMARKERS IN SEVERE ALLERGIC ASTHMA IDENTIFIES INNATE IMMUNE DYSFUNCTION<sup>22</sup>  
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<sup>23</sup>  
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<sup>24</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 ● CHARACTERIZATION OF THE CLASS I MHC PEPTIDOME RESULTING FROM DNCB EXPOSURE OF HACAT CELLS<sup>25</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 ● **THE IMMUNOPEPTIDOMES OF TWO TRANSMISSIBLE CANCERS AND THEIR HOST HAVE A COMMON, DOMINANT PEPTIDE MOTIF<sup>26</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 ● **DYNAMICALLY DRIVEN ALLOSTERY IN MHC PROTEINS: PEPTIDE-DEPENDENT TUNING OF CLASS I MHC GLOBAL FLEXIBILITY<sup>27</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 ● **DIRECT EVIDENCE FOR CONFORMATIONAL DYNAMICS IN MAJOR HISTOCOMPATIBILITY COMPLEX CLASS I MOLECULES<sup>28</sup>**  
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<sup>29</sup>**  
F1000 Research  
• Andy van Hateren, Alistair Bailey, Tim Elliott.
- 2015 ● **SELECTOR FUNCTION OF MHC I MOLECULES IS DETERMINED BY PROTEIN PLASTICITY<sup>30</sup>**  
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<sup>31</sup>**  
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<sup>32</sup>**  
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 UNDERSTANDING<sup>33</sup>

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://ab604.github.io/docs/coding-together-2019/>
- 6• <https://intouniversity.org/>
- 7• [https://ab604.github.io/docs/bspr\\_workshop\\_2018/index.html](https://ab604.github.io/docs/bspr_workshop_2018/index.html)
- 8• <https://www.bioinform.com/peaks-studio/>
- 9• <https://gatk.broadinstitute.org/hc/en-us>
- 10• <https://abc.med.cornell.edu/>
- 11• <https://www.ebi.ac.uk/pride/>
- 12• <https://ega-archive.org/>
- 13• <https://www.go-fair.org/fair-principles/>
- 14• <https://doi.org/10.1371/journal.ppat.1009894>
- 15• <https://www.ebi.ac.uk/pride/archive/projects/PXD022884>
- 16• <https://doi.org/10.1111/imm.13578>
- 17• <https://www.ebi.ac.uk/pride/archive/projects/PXD031108>
- 18• <https://doi.org/10.1093/toxsci/kfaa184>
- 19• <https://www.ebi.ac.uk/pride/archive/projects/PXD021373>
- 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>