JACK GISBY

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EDUCATION

Imperial College London *August 2020 – July 2023*
PhD Candidate

· Thesis: Using multi-omics to investigate the host response in COVID-19, supervised by Dr James Peters.

University of Birmingham *September 2016 – June 2020*
Biochemistry with Professional Placement (MSci) - First Class

· Dissertation: A prior knowledge-based computational workflow for *de novo* structural elucidation of small molecules in mass spectrometry metabolomics, supervised by Dr Ralf Weber.

RESEARCH EXPERIENCE

PhD Research *August 2020 – July 2023*
Immunology and Inflammation, Imperial College London

· Integrated proteomic, transcriptomic and genetic data to investigate the pathology of severe COVID-19.
· Applied longitudinal models, network analyses and machine learning to high-dimensional datasets.
· Employed Mendelian randomisation and colocalisation to identify molecules that cause severe disease.
· Used and developed Nextflow & HPC-based pipelines to process sequence and variant data.
· Disseminated research findings through peer-reviewed publications and conference presentations.

Research volunteer *July 2019 – July 2020*
School of Biosciences, University of Birmingham

· Developed an R/Bioconductor package for annotating rare transposons in genome sequences.
· Mined genome sequence data to uncover the impact of DNA transposons on the evolution of host genes.

MSci Research *October 2019 – May 2020*
School of Biosciences, University of Birmingham

· Developed a Python package for improved annotation of LC-MS metabolomics spectra.
· Created a deep learning-based anomaly detection model that classifies molecular structures.
· Adhered to software engineering best practices, including version control and automated testing.

Industrial placement *August 2018 – July 2019*
The Binding Site, Birmingham

· Took responsibility for the timely delivery of assay development projects and statistical reports.
· Communicated with, and delivered presentations to, a wide variety of interdisciplinary staff.

TEACHING EXPERIENCE

Graduate Teaching Assistant *December 2022 - January 2023*
Immunology MSc Programme, Imperial College London

· Aided in the development and delivery of a series of "Introduction to R programming" workshops.

Lecturing *September 2021 – December 2022*
Molecular Epidemiology MSc Module, Imperial College London

· Developed and delivered lectures for RNA sequencing in the context of investigating genetic variation.
· Set homework and reading, in addition to final exam questions and marking schemes.

Graduate Teaching Assistant *May 2022 – August 2022*
Research Computing, Imperial College London

- Developed a parallelised pipeline for processing RNA-seq data using Docker and Nextflow.
- Created teaching materials demonstrating best practices for building data pipelines.

Mentoring *July 2021 – August 2022*
Immunology and Inflammation, Imperial College London

- Co-supervised an undergraduate research project utilising proteomics to investigate Lupus.

SKILLS

Languages	Python, R, Bash, SQL
Tools	Git/GitHub, Docker, Conda, Nextflow, Airflow, LaTeX
Compute	High performance computing clusters, Google Cloud Platform
Data	Transcriptomics (bulk & single-cell RNA-seq), proteomics (Olink & SomaLogic assays), genomics (sequences and summary), ontologies and clinical data
Statistics	Linear & mixed models, joint models, Mendelian randomisation & colocalisation, supervised learning (caret, scikit-learn, pytorch), network analysis (WGCNA)
Software	Package development (R, Python), containerisation (Docker, Singularity), continuous integration (unittest, testthat), version control (Git, GitHub)

FIRST AUTHOR PUBLICATIONS

- **Jack S. Gisby**†, Norzawani B. Buang†, [...], David C. Thomas†, James E. Peters†. **Multi-omics identify falling LRRC15 as a COVID-19 severity marker and persistent pro-thrombotic signals in convalescence.** *Nature Communications* 2022. 10.1038/s41467-022-35454-4
- **Jack S. Gisby**†, Candice L Clarke†, Nicholas Medjeral-Thomas†, [...], Michelle Willicombe†, David C Thomas†, James E Peters†. **Longitudinal proteomic profiling of dialysis patients with COVID-19 reveals markers of severity and predictors of death.** *eLife* 2021. 10:e64827
- **Jack S. Gisby**, Marco Catoni. **The widespread nature of Pack-TYPE transposons reveals their importance for plant genome evolution.** *PLOS Genetics* 2022. 10.1371/journal.pgen.1010078

†Equal contributions orcid.org/0000-0003-0511-8123

OTHER RESEARCH WORKS

- Lucija Klaric†, **Jack S. Gisby**†, Artemis Papadaki†, [...], James F Wilson†, James E Peters†. **Mendelian randomisation identifies alternative splicing of the FAS death receptor as a mediator of severe COVID-19.** *medRxiv* 2021. 2021.04.01.21254789

†Equal contributions orcid.org/0000-0003-0511-8123

CONFERENCES AND PRESENTATIONS

- **Rising Scientist Day 2022 (Poster)** - Multi-omics identify LRRC15 as a COVID-19 severity predictor and persistent pro-thrombotic signals in convalescence
- **Biomarkers of the Future 2021 (Presentation)** - Longitudinal proteomic profiling of dialysis patients with COVID-19 reveals markers of severity and predictors of death
- **HUPO Reconnect 2021 (Poster)** - Longitudinal proteomic profiling of dialysis patients with COVID-19 reveals markers of severity and predictors of death

· **UK-CIC Immunology 2021 (Poster)** - Longitudinal proteomic profiling of dialysis patients with COVID-19 reveals markers of severity and predictors of death

· **Longitudinal Studies 2021, Wellcome Genome Campus (Presentation)** - Longitudinal proteomic profiling of dialysis patients with COVID-19 reveals markers of severity and predictors of death

ADDITIONAL COURSES

· "From large datasets to biological insight" by Wellcome Connecting Science & EMBL-EBI

· "FAIR in (Biological) Practice" by University of Edinburgh (Ed-DaSH)

· "Data Science workflows with Nextflow" by University of Edinburgh (Ed-DaSH)

· "Introduction to Assessment and Feedback" by Imperial College London Graduate School

· "Introduction to Teaching and Learning" by Imperial College London Graduate School

· "Profiling and optimisation in Python" by Imperial College London Research Computing

· "Deep Learning in the Life Sciences" by MITx

· "Software Development with C++" by University of Birmingham Research Computing

REFERENCES

Dr James Peters (PhD Supervisor)
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Dr Marco Catoni (Undergraduate Project)
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