Jacqueline H.Y Siu

Email: jacqueline.siu@kennedy.ox.ac.uk

Research Experience

Wellcome Trust Early Career Fellow in Immunology, Kennedy Institute of Rheumatology/ Somerville College, University of Oxford — Oxford, UK, 2023 - present

- Integrating longitudinal human experimental medicine trials with single-cell multi-modal omics (RNA, protein, immune repertoire, spatial) to understand the role of early responding extrafollicular human B cells and their impact on long-lived antibodies.
- Developing a novel digital PCR assay to estimate B cell recruitment from bone marrow.
- Creating ground-truth datasets for machine learning algorithm development to identify what immune B cells can respond to and how the cells evolve after a stimulus.
- Engaged in collaborations providing systems immunology and genomics expertise including UK's first uterus transplant trial (Miss Isabel Quiroga), and a Salmonella challenge trial (Dr Malick Gibani)

Senior Bioinformatician in Immune Single Cell Genomics, Prof Mark Coles & Dr Calliope Dendrou, University of Oxford — Oxford, UK, 2022 - 2023

- Processing and analysing human fine-needle aspirant lymph node samples before and after influenza vaccination in an ethnically diverse healthy cohort using multi-modal single cell RNA, ADT, VDJ sequencing with accompanying PBMC, genotyping and serology analysis to understand ancestral differences in tissue immune responses.
- Established experimental & bioinformatic pipeline to utilise rare longitudinal tissue samples in individuals to investigate stimulus-specific responses for vaccine design.
- Created a new outreach activity to increase study recruitment.

Postdoctoral Researcher, Prof Jo Spencer, King's College London — London, UK, 2021 – 2022

- Investigated how immune B cells develop in the skin and the gut across autoimmune diseases using single-cell RNA sequencing data and spatial data.
- Integrated spatial image processing such as segmentation with single-cell multi-omics analysis, immune repertoire tracking across tissues

Education

University of Cambridge *PhD in Department of Surgery (Transplantation)* — Cambridge, UK, 2016–2021

- **Supervisor:** Prof Gavin J Pettigrew
- **Dissertation**: Lymphocyte subset variability between human lymphoid tissues
    - Studied tissue-specific characteristics, cell trafficking, and B cell receptor clonal links between healthy human lymphoid organs with wet-lab and dry-lab techniques.
    - Processed samples from deceased organ donor tissues for acquisition with Helios mass cytometer and multi-modal 10x single-cell genomics. Designed an unsupervised, machine-learning analysis pipeline for comparing differential abundances between human lymphoid tissues with novel internal control for normalizing batch effects.
- **Research Impact:** Published 5 papers in top peer-reviewed journals, selected speaker at 2 international conferences, awarded 4 conference travel grants to present research.

University of British Columbia *BSc in Honours Microbiology and Immunology* — Vancouver, Canada, 2012 -2016

- **GPA**: 4.30 (graduated with distinction, Science Scholar Dean's Honour List)
- **Dissertation supervisor:** Prof Neil Cashman
- **Dissertation:** Improved a multi-step theoretical model on amyotrophic lateral sclerosis (ALS) disease to include immunological considerations to explain disease trajectory.

Grants and awards

Wellcome Trust Early Career Fellowship (2023 - present)

- Wellcome Trust Early Career Award (£768,500/5 years), Chan-Zuckerberg Initiative Pilot Grant ($19,900 USD/1 year), IFReC Kishimoto Foundation Fellowship (visiting fellowship at the University of Osaka), University of Oxford John Fell Fund (£10,000/2 year)

PhD University of Cambridge (2016 – 2021)

- Gates Cambridge Scholarship (£150,000; awarded to top 0.5%), 2019 National Sciences and Engineering Research Council of Canada--postgraduate scholarship in cellular biology (ranked 2 out of 214 applicants), 2019 Canadian Centennial Scholarship (£5000), BSI and EFIS and EMBO travel grants

BSc University of British Columbia (2012 – 2016)

- 2012 Provost's Major Entrance Scholarship ($15,000 CAD), 2016 Premiere Undergraduate Scholarship ($10,000 CAD; top 20 senior undergraduates), 2016 Faces of Today award recipient, 5 undergraduate summer research awards (NSERC, Crohn's & Colitis Canada, CFRI, UBC Faculty of Medicine)

Leadership

Canadian Centennial Scholarship Fund (CCSF) London, UK
Co-chair (2024), Trustee 2021 - present

- Guided the charity through a three-way merger with other UK-based Canadian charities to increase fundraising opportunities, visibility, and impact potential.
- Review, shortlist, and interview potential Canadian scholars in the UK for top-up scholarships.

University of Cambridge, Clinical School Athena SWAN Steering Group Cambridge, UK
Graduate Student Representative (first person in the role) 2017 - 2020

- Created objectives for the role based on previous feedback to include graduate students in workplace policies
- Established a graduate student representative network across Clinical School to evaluate student experiences

University of Cambridge, Gates Cambridge Scholars' Council Cambridge, UK
Alumni Officer, Communication Officer, Technology Officer (elected positions) 2016 - 2019

- Developed a virtual networking scheme between current scholars and alumni with over 40 pairings in pilot
- Designed, deployed, analyzed the annual scholars' feedback survey for the Gates Cambridge Trustee Board

UBC, Undergraduate Research Opportunities *(student club with 500+ members)* Vancouver, Canada
Co-President 2014 - 2016

- Established a new undergraduate conference travel grant by acquiring industry sponsorship ($3000)
- Expanded mentorship program into 7 new faculties, increased participation from 40 to 250+ undergraduates
- **Club awards won**: Helen McCrae for outstanding university student service (2016), Best Science club (2015)

Teaching, mentoring, outreach experience

University of Oxford, Kennedy Institute of Rheumatology Oxford, UK
Supervisor for two MPhil students, two DPhil students 2022 – present

- Designed and supervised students on their research projects by guiding the project design, teaching technical bioinformatics skills, and providing dissertation feedback.

MPhil in Genomics Medicine, University of Oxford Oxford, UK
Lecturer/ module co-lead for single-cell omics/ spatial omics module 2022 - present

- Designed and delivered a multi-day bioinformatics practical session to introduce students to the principals of single-cell analysis.

Institute of Continuing Education, University of Cambridge Cambridge, UK
Guest lecturer 2021 - present

- Lectured about transplant immunology to undergraduates, provided additional learning resources, and hosted a "retro journal club" about a milestone transplant rejection paper.

Additional Skills and Interests

Programming Languages, Software: Bash, R, Python, MATLAB, Wolfram Mathematica, Adobe Creative Suite
Languages: English (Native), Cantonese (Fluent Spoken), French (Advanced), Mandarin (Intermediate)

Selected invited talks, panel chairs and conferences

- Session chair for British Society of Immunology Congress parallel session (December 2025)
- Invited speaker at Peter Doherty Institute, Melbourne, Australia (December 2024)
- Invited speaker at Sydney Precision Data Science Centre, University of Sydney (December 2024)
- Guest speaker at Immunology Frontier Research Center, University of Osaka (July 2023)
- Oral Presentation at the Keystone Symposium: B cell and T cell Interactions (February 2019)

Selected Publications (ORCID: 0000-0001-5181-407X)

Siu JHY, S Coelho, (…) Coles M, Dendrou CA, Pollock KM. Early regional lymph node activation drives influenza vaccine responses in an ancestrally diverse cohort. *[under review]*

CZI Data Insights Network. Insights, opportunities, and challenges provided by large cell atlases. (Review) *Genome Biology.* (in press, 2025)

Fergusson JR, **Siu JHY**, (…), Coles M, Dendrou CA, Milicic A. Ex vivo model of functioning human lymph node reveals role for innate lymphocytes and stroma in response to vaccine adjuvant. *Cell Reports. 44 (7), 115938* (2025)

Thomas T (…) **Siu JHY** (…) Uhlig HH, Dendrou CA, Buckley CD. A longitudinal single-cell atlas of anti-tumour necrosis factor treatment in inflammatory bowel disease. *Nature Immunology. 25(11),2152-2165* (2024)

Siu JHY, Pitcher MJ, Tull TJ, Guesdon W, (…) Saeb-Parsy K, Bemark M, Pettigrew GJ, Spencer J. Two subsets of human marginal zone B cells resolved by global analysis of lymphoid tissues and blood. *Science Immunology. 7(69):eabm9060* (2022)

Zhao Y*,Uduman M*, **Siu JHY*** (co-primary), Tull TJ*, Sanderson JD, Wu YB, Zhou JQ, Petrov N, (…) Heck S, Kleinstein S, Bemark M, Spencer J. Spatiotemporal segregation of human marginal zone and memory B cell populations in lymphoid tissues. *Nature Communications. 9(1):3857 (2018)*

Siu JHY, Surendrakumar V, Richards JA, Pettigrew GJ. T cell allorecognition pathways in transplant rejection. (Review) *Frontiers in Immunology. 5;9:2548 (2018)*