

Jacqueline H.Y Siu

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Research Experience

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

- Processing and analysing human fine-needle aspirant lymph node samples before and after influenza vaccination in an ethnically diverse healthy cohort using 10x single cell RNA sequencing with accompanying PBMC, genotyping and serology analysis.

Postdoctoral Researcher, Prof Jo Spencer, King's College London

- Researched development of B cells in the mucosal and skin environment by linking 10x genomics with image mass cytometry.

Undergraduate Researcher, Dr Neil Cashman, Centre for Brain Health, UBC

Created a universal fluorescent reporter of SOD1 protein misfolding

- Designed the SOD1-GFP fusion protein linkage for a misfolded SOD1 reporter system in stable cell lines, tested system by co-culturing misfolded SOD1 supernatant with the reporter system and monitoring GFP aggregation.

Education

PhD, Department of Surgery (Transplantation), University of Cambridge Cambridge, UK
Thesis: Lymphocyte subset variability between human lymphoid tissues
2016 – 2021

Supervisor: Prof Gavin Pettigrew (in collaboration with Prof Jo Spencer)

- Processed samples from deceased organ donor tissues, prepared samples for acquisition with Helios mass cytometer (CyTOF) and 10x 5' VDJ with CITE-Seq antibodies, developed a novel biological internal control for normalising batch effects.
- Designed an unsupervised, machine-learning analysis pipeline for comparing differential abundances between different human lymphoid tissues.
- Analysed single cell BCR repertoire data by tracking B cell clones between multiple tissues and linking clonality data to their transcriptome.
- Funded by Gates Cambridge, Canada National Sciences & Engineering Research Council.

BSc in Honours Microbiology and Immunology, University of British Columbia (UBC)

GPA: 4.30/4.33 (graduated with distinction, Science Scholar Dean's Honour List)

Thesis: Immunological implications of multi-step ALS model *Supervisor:* Dr. Neil Cashman Vancouver, Canada
2012 - 2016

- Mathematically modelled ALS disease progression by modifying a multi-step disease model, hypothesized a critical step in disease progression variation was sustained immune activation. Validated aspects of the model using in vitro experiments like testing aging effects on microglia activation by misfolded SOD1.

Selected Scholarships and Awards

National Sciences and Engineering Research Council of Canada, Postgraduate Scholarship 2019

Ranked 2 out of 214 applicants in cellular & molecular biology national selection pool

Canadian Centennial Scholarship Fund, Victor Dahdaleh Foundation Scholarship 2019

Conference Travel Grants x 4, for national and international immunology conferences 2016 - 2019

Awarded from BSI, EFIS, and EMBO

University of Cambridge, Gates Cambridge Scholarship 2016

University of British Columbia, Premier Undergraduate Scholarship (top 20 senior students) 2016

University of British Columbia, Provost's Major Entrance Scholarship 2012

Selected Publications (9 publications total, h-index 7)

Montorsi L, **Siu JHY**, Spencer J. B cells in human lymphoid structures. (Review) *Clinical and Experimental Immunology*. *uxac101*. (2022)

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)

Spencer J, **Siu JHY**, Montorsi L. Human intestinal lymphoid tissue in time and space. (Invited commentary) *Mucosal Immunology*. *12(2):296-298* (2019)

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)

Selected Conference Abstracts

Siu JHY, Pitcher MJ, Tull TJ, (...), Pettigrew GJ, Spencer J. Resolving human marginal zone B cells by global analysis of lymphoid tissues and blood. *Poster at BSI Congress 2021. Awarded BSI travel grant. December 2021*

Siu JHY, Parasasa C, (...), Pettigrew GJ, Spencer J. Investigating non-conventional memory B cells in human lymphoid tissues. *Oral Presentation at the Keystone Symposium: B cell and T cell Interactions. February 2019*

Siu JHY, Zhao Y, Tull TJ, Ellis R, Petrov N, Spencer J. A closer look at tissue-specific B cell regulation. *Poster at European Congress of Immunology 2018. Awarded ECI EFIS travel grant. September 2018*

Siu JHY, Zhao Y, Tull TJ, Ellis R, Petrov N, Spencer J. B cell heterogeneity across space and time. *Oral presentation at EMBO B cells in health & disease workshop. Awarded EMBO travel grant. Sept. 2017*

Academic Service

Canadian Centennial Scholarship Fund (CCSF) London, UK
Committee Member 2021 - present

- Review, shortlist, and interview potential Canadian scholars in the UK for a scholarship.

University of Cambridge, Cambridge Immunology Network Cambridge, UK
PhD Representative 2017 - 2020

- Organized the Early Careers journal club, Research Day with 100+ delegates, invited international speakers

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

- Represented graduate students on a committee to improve equality and diversity practices
- 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
- Led a pilot social media campaign to demonstrate importance of having a strong social media presence for the scholarship's diversity recruitment initiatives, resulted in new public relations officer role being created

UBC, Undergraduate Research Opportunities (student club with 500+ members) Vancouver, Canada
Co-President and Science Officer 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 Cambridge, Institute of Continuing Education 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.

National Student Network Canada
National Young Leader 2015 - present

- Mentored 10+ high school students and undergraduates to provide career advice, panelist on national career panels, and contributor to online blog about pursuing an advanced research degree.

University of Cambridge, Department of Surgery Cambridge, UK
Project supervisor for two students completing their research-based course dissertation 2016 - 2018

- Supervised a final year undergraduate and a medical doctor (MD(Res)) on their research project by guiding their project design, teaching technical experimental skills, and providing dissertation feedback.

University of Cambridge, Girls in STEM Cambridge, UK
Coordinator 2016 - 2018

- Planned demonstrations and coordinated volunteers for school-aged female workshops with 100 participants.

University of British Columbia, Science One Biology Vancouver, Canada
Research and Teaching Assistant 2015 - 2016

- Designed a new first year biology lab that introduced concepts including DNA extraction, PCR, restriction enzyme digest, DNA gel electrophoresis.
- Held workshops/weekly office hours and helped lecture classes when the main instructor was away.