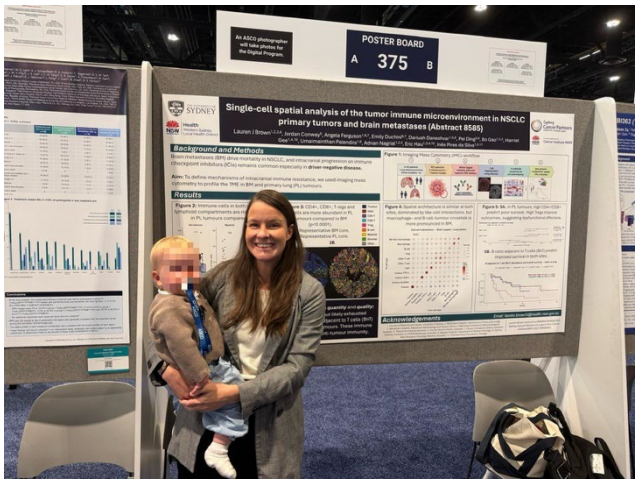
Name: Dr Lauren Julia Brown
Position & Affiliation: PhD Candidate, University of Sydney and Westmead Institute for Medical Research
Full Reference: **Brown LJ**, Conway JW, Ferguson AL, Duchini E, Daneshvar D, Ding PN, Gao B, Gee H, Palendira U, Nagrial A, Hau E, Pires da Silva I. *Single-cell spatial analysis of the tumor immune microenvironment in NSCLC primary tumors and brain metastases.*
Conference/Meeting Name: American Society of Clinical Oncology Conference 2026 (ASCO)
Location: Chicago, Illinois, USA
Dates: 28 May – 2 June
Presentation Type: Poster



Standing next to my poster with my daughter.

In May this year, I had the opportunity to attend the American Society of Clinical Oncology (ASCO) Annual Meeting 2026 in Chicago to present my PhD research. ASCO is the world's largest clinical cancer conference, bringing together more than 40,000 clinicians, researchers and industry partners to showcase the latest advances in cancer research and their translation into patient care.

One of the more memorable aspects of this year's meeting was attending with my 12-month-old daughter, Poppy, who accompanied me throughout the conference. I was fortunate that ASCO provided on-site childcare facilities, making it possible to balance conference attendance with parenting. Balancing conference sessions with parenting was challenging but rewarding, highlighting the importance of supporting researchers with young families to remain engaged in international collaboration.

I presented my PhD research during the Metastatic Non-Small Cell Lung Cancer poster session, comparing the tumour microenvironment of brain metastases with primary lung tumours. We demonstrated that brain metastases have a more immune-depleted microenvironment, with greater spatial separation between immune and tumour cells. These findings may explain why some patients experience progression confined to the brain despite disease control elsewhere on immunotherapy and may inform future trial design.

As my PhD focuses on lung cancer, I spent much of the meeting attending thoracic oncology sessions. Given my interest in brain metastases, I was excited by the DeLLphi-304 study in relapsed small cell lung cancer, which demonstrated that the bispecific T-cell engager tarlatamab provides clinically meaningful benefit for patients with central nervous system involvement. Another important presentation was the LIBRETTO-432 trial, which demonstrated a substantial improvement in event-free survival with adjuvant selpercatinib for patients with resected stage IB–IIIA RET fusion-positive non-small cell lung cancer. These

findings further support routine next-generation sequencing in early-stage lung cancer to identify patients who may benefit from curative targeted therapy.

One of the defining moments of this year's meeting was the plenary presentation of daraxonrasib, an oral RAS inhibitor for patients with RAS-mutant pancreatic cancer. The study demonstrated a marked improvement in overall survival compared with chemotherapy, representing one of the most significant advances in metastatic pancreatic cancer in decades. The presentation received an almost one-minute standing ovation, reflecting the significance of this breakthrough in a disease that has seen few therapeutic advances. It was inspiring to witness this landmark moment as both a medical oncologist and cancer researcher.

I was fortunate to attend the meeting alongside my PhD supervisor, Associate Professor Inês Pires da Silva, and my mentor, Associate Professor Matteo Carlino, both of whom were presenting throughout the conference. Their guidance helped me navigate such a large international meeting and provided valuable opportunities to discuss emerging research and career development.

ASCO provided valuable insights into emerging translational research and opportunities to discuss my work with international thoracic oncology researchers, establishing new collaborations. The knowledge gained will directly inform the next phase of my PhD exploring strategies to enhance immunotherapy responses in non-small cell lung cancer. More broadly, the meeting reinforced the importance of integrating molecular biomarkers and novel therapeutics to deliver increasingly personalised cancer care, an approach highly relevant to Sydney Cancer Partners.

Outside the conference, I enjoyed exploring Chicago, walking along Lake Michigan and visiting the iconic Cloud Gate sculpture (“The Bean”). Unfortunately, I never managed to try the city’s famous deep-dish pizza, so I will have to save that for my next visit.

A personal highlight was sharing the experience with Poppy while reconnecting with colleagues and collaborators from around the world. I returned home with new ideas, renewed collaborations and enthusiasm for applying these advances to both research and clinical practice.

I am sincerely grateful to Sydney Cancer Partners for their financial support, which made it possible for me to attend this outstanding conference.

Single-cell spatial analysis of the tumor immune microenvironment in NSCLC primary tumors and brain metastases (Abstract 8585)

Lauren J Brown[1,2,3,4], Jordan Conway[5], Angela Ferguson[1,6,7], Emily Duchini[6,7], Dariush Daneshvar[1,5,8], Pei Ding[2,9], Bo Gao[1,2,3], Harriet Gee[1,4,10], Umaimainthan Palendira[1,6], Adnan Nagrial[1,2,3], Eric Hau[1,3,4,10], Inês Pires da Silva[1,5,11]

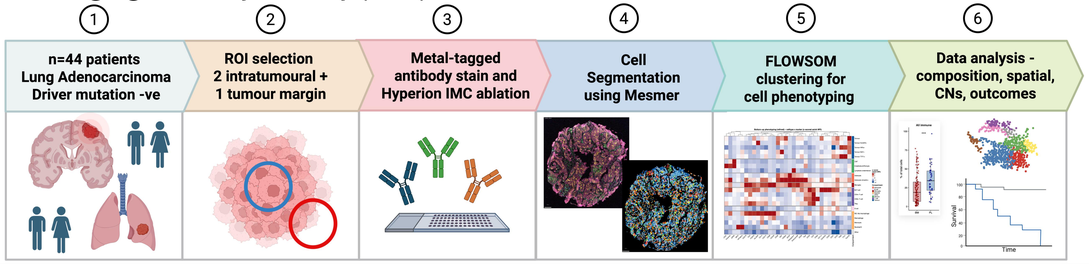
Proudly supported by Cancer Institute NSW

Background and Methods

Brain metastases (BM) drive mortality in NSCLC, and intracranial progression on immune checkpoint inhibitors (ICIs) remains common especially in **driver-negative disease.**

Aim: To define mechanisms of intracranial immune resistance, we used imaging mass cytometry to profile the TME in BM and primary lung (PL) tumours.

Figure 1: Imaging Mass Cytometry (IMC) workflow



Results

Figure 2: Immune cells, driven by the lymphoid compartment, are more abundant in PL tumours compared to BM

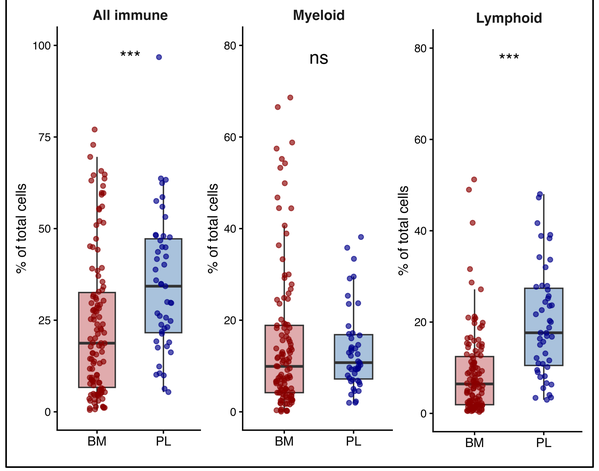


Figure 3: CD4+, CD8+, T-regs and B cells are more abundant in PL tumours compared to BM ($p<0.0001$).
3A. Representative BM core,
3B. Representative PL core.

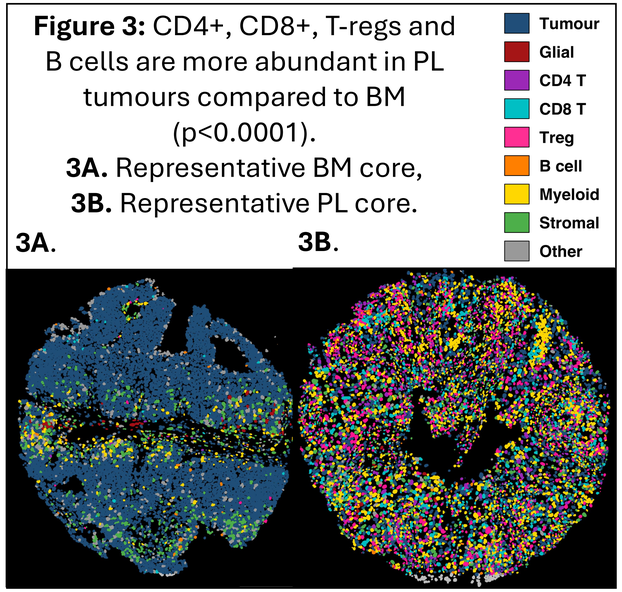


Figure 4: Spatial architecture is similar at both sites, dominated by like-cell interactions, but macrophage– and B cell–tumour crosstalk is more pronounced in BM.

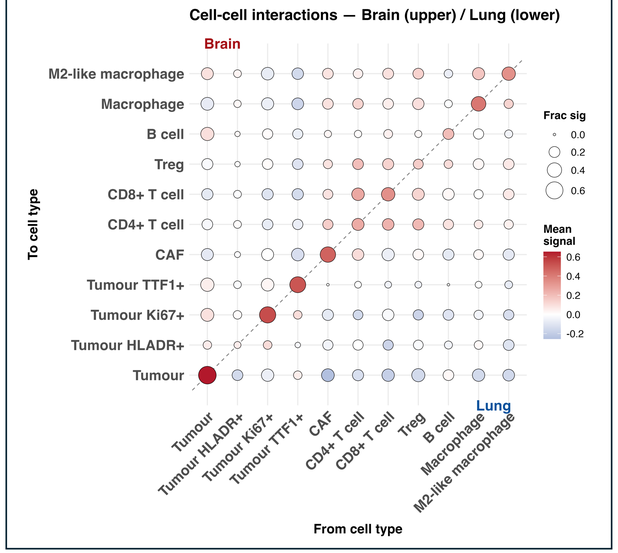
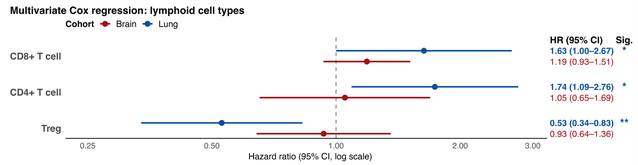
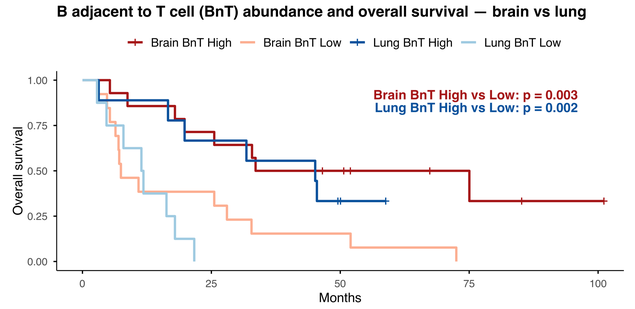


Figure 5: 5A. In PL tumours, high CD4+/CD8+ predict poor survival. High Tregs improve outcomes, suggesting dysfunctional effectors.



5B. B cells adjacent to T cells (BnT) predict improved survival in both sites.



Conclusions:

Immune resistance in NSCLC reflects both ***quantity*** and ***quality***: BM are immune-depleted. PL tumours harbour abundant but likely exhausted CD4+/CD8+ cell populations linked to poor survival. B cells adjacent to T cells (BnT) were associated with improved survival in both BM and PL tumours. These immune biomarkers warrant validation to identify targets restoring anti-tumour immunity.

Acknowledgements

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1. Faculty of Medicine and Health, University of Sydney, 2. Westmead Hospital, Department of Medical Oncology, 3. Blacktown Hospital, Blacktown Haematology and Cancer Centre, 4. Westmead Institute for Medical Research, Australia, 5. Melanoma Institute Australia, 6. Charles Perkins Centre, Australia, 7. Cancer Innovations Centre, Centenary Institute, Australia. 8. ICPMR-Westmead, Australia. 9. Nepean Hospital, Department of Medical Oncology, 10. Sydney West Radiation Oncology Network, Australia, 11. Champalimaud Foundation, Portugal

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